I'm not a robot

Teaching subtraction can be notoriously more challenging than teaching addition. For some students, it just doesnt come as naturally as what addition does!In this blog post I am going to talk about why children should learn subtraction and how it relates to real life. I am also going to explore different strategies of teaching subtraction as well as some difficulties your students may face. There will be different activity ideas for teaching subtraction for you to try out too!Do you want some free Math resources? Sign up here to receive a free Math Early Skills Pack, perfect for assessing a range of your students math skills all year round. After signing up, you will be the first to learn about my new teaching resources, teacher tips and blog posts making sure you always have fun teaching ideas all year round! Click here to sign up!Simply put, subtraction is the process of taking one quantity or number away from another and finding what is left. Subtraction is the opposite of addition and is usually written with the minus sign (-). You may see subtraction represented using different vocabulary especially when working with subtraction word problems. It is important that your students become familiar with the different ways of saying subtraction. You may come across terms like taking away, minus, decrease, deduct or find the difference. That last one always confused my students so it would be beneficial to ensure your kids know what they mean.Subtraction helps children to understand and associate numbers with objects and further develops their number sense. Subtraction is important to learn as it will allow students to function well in real life. We use subtraction when dealing with money, cooking, travel times and many other day to day aspects.Students usually begin to learn subtraction between the ages 5 and 7, but some children may be different. Students need to have the adequate number sense first and should be able to count accurately. If a child can count to 10, they are ready learn subtraction within 10. Usually, students will have learned how to add first, then will be ready to move onto subtraction.A suitable way, would be to explain and demonstrate that subtraction is the opposite of addition. Visually show taking away using concrete materials and show how the amount left will always be less than what we started with. With younger students, it is a good idea to start off using concrete materials. Ask students to count out a number of cubes, counters etc, then physically show your students taking away a certain number of objects. Ask children to count how many are left. This would also be a good time to introduce how to write a subtraction problem or calculation. Explain that we always start with the larger number and introduce the minus symbol. Once confident using concrete materials, your students can move onto using visuals such as pictures, ten frames etc. Doing this means children still have something to count that is in front of them. Ask students to look at the number of pictures you are starting with but this time to represent the taking away action, your kids can cross out the quantity they are subtracting, then count how many are left. Next, you can introduce subtracting on a number line. As your students will be already familiar with adding on a number line, they may get confused here. Ensure to spend a lot of time explaining what number to start on, which way to jump to subtract and that the number we land on is the answer.Now, your class can practise mentally subtracting. You could explain that your students could count back, however a lot of students may struggle with this. Another method would be explaining how to count on. If we start on the smaller number and count on until we reach the larger number, it is the same as finding the difference and will give us the correct answer to our subtraction problem. It would be a good idea to use a number line here to help your students visualise this. This leads us on to number bonds. If your students are confident at using the Part Part Whole model to represent subtraction, they can easily link this to number bonds up to 5, 10, 20 etc depending on where your students are in their learning. Next, your students can practise subtraction using word problems. Ensure to spend time picking out the key information from the word problem as well as the different vocabulary that may be used. Give your students lots of opportunities to use concrete materials and visuals.Spend time talking about the vocabulary subtraction, taking away, find the difference etc.Explore different strategies number line, visuals, part part whole etc.Spend time on word problems. Link it real life this can be done through word problems. Set up independent activities around your classroom to give children lots of practise.Make subtraction fun!When teaching subtraction to your students you can keep it fun and engaging by using various strategies and hands on activities.Concrete materials & visuals set up areas in your classroom for children to practise reading subtraction problems and working out answer. This can be done with cubes, counters, loose parts etc. It would be a good idea to use word problems here too! If your children need support with reading you can even use small battery powered recording devices to record you saying the math problem that your students need to work out. Your class can also practise subtraction in Math centers with an adult using task cards. Number lines You can start off with a giant number line maybe drawn in the playground or on a large strip of paper and children can physically practise jumping backwards on the number line. This will really help them understand the movement of jumping backwards on the number line. Then they can move onto using resources such as worksheets, task cards and things they can draw jumps onto so they can still visualise the jumps. When ready, your class can move onto using their finger or a counter to do jumps on a number line. These kinds of activities can be set up in your classroom or used as a Math center. Part Part Whole Model Using large Part Part Whole diagrams, you can count out the number of counters etc that you are starting with and place these in the largest part of the Part Part Whole model. You can then show taking away an amount by putting it into one of the smaller sections of the diagram. Then push what is left into the other smaller section. This helps your students to visualise partitioning a number into two parts. After exploring this with concrete materials you can then move onto writing the numbers into the correct sections of the Part Part Whole model.Word problems Exploring subtraction word problems can be done with the whole class. You can even act out word problems using props or concrete materials. Your students can then move onto independent activities in your classroom or as a math centre. Task cards can be used as independent activities, or you can record subtraction word problems on small recording devices for your students to solve.Ensure to spend time explaining that finding the difference is a form of subtraction. The goal is to find how many numbers lie between two given numbers. You can show that if you start off with smaller number and count on until reach the larger number, the number of jumps between these two numbers is finding the difference.There are numerous reasons why some students struggle with subtraction. Children can sometimes get mixed up with addition. As your students learned addition first it is almost an instinct to add rather subtract. You may notice this when using a number line as your childrens first step would normally be to jump up the number line. It can take a lot of getting used to doing it the other way and jumping backwards. Another difficulty students may encounter is if they are not confident with their addition facts or number bonds. If they are confident with these, this will greatly help with subtraction. As it is just the other part of same the calculation. This skill is what is being developed when we are exploring the Part Part Whole model. Revising number bonds and addition facts will help here. Students not having appropriate number sense can be another difficulty they may face. Children need to be confident with counting to 5, 10 or 20 depending on what numbers they are working with when subtracting. Students need to be able to accurately count out the number they are starting with and accurately take away the correct number as well as count what is left. Your class will also need good number sense when figuring out what number to begin with (the larger number) and know that their answer should be less than what they started with. An excellent way to develop number sense is giving your class lots of opportunities to count and explore number sequencing. Overall, subtraction is usually a trickier concept for your children to grasp as it does not come as naturally as addition. Keep in mind there are many different subtraction strategies to explore and that some children may find one strategy easier than others.Remember to keep your students engaged by giving them lots of opportunities to explore subtraction using concrete materials and that exploring the vocabulary of subtraction will be well worth it! Suppose we purchase ice cream for a certain amount of money, say $\$140$, and we give $\$200$ to the cashier. Now, the cashier returns the excess amount by performing subtraction such as $200 140 = 60$. Then, the cashier will return $\$60$. What is exactly happening here? The answer to this question is subtraction. Subtraction is one of the four basic arithmetic operations in mathematics. The other three being addition, multiplication, and division. We can observe the applications of subtraction in our day-to-day life in different situations. For example, if we have 3 candies and our friend asks us for 1 candy, how many candies are we left with? Simply, $3 1 = 2$ Lets understand the concept with the help of the following example of apples. In the example above, if Harry has 6 apples and he gives 3 apples to Jim, How many apples are left with him? We can calculate this by subtracting 3 from 6: $6 3 = 3$ Harry is left with 3 apples. More Worksheets The operation or process of finding the difference between two numbers or quantities is known as subtraction. To subtract a number from another number is also referred to as taking away one number from another. Some instances where we use subtraction are while making payments, transferring money to our friends and many more. In mathematics, we have generally used different symbols for different operators. We have symbols like $+, , /, *$ and many more. The subtraction symbol $$ is one of the most important math symbols that we use. In the above section, we read about subtracting two numbers 6 and 3. If we observe this expression: $(6 3 = 3)$, the symbol $()$ between the two numbers is what denotes subtraction. This symbol is also known as the minus $()$ sign. When we subtract two numbers, we commonly use some terms that are used in a subtraction expression: Minuend: A minuend is the number from which the other number is subtracted. Subtrahend: A subtrahend is the number which is to be subtracted from the minuend. Difference: A difference is the final result after subtracting the subtrahend from the minuend. The subtraction formula is written as Minuend $$ Subtrahend $=$ Difference For example, $7 3 = 4$ Here, $7 =$ Minuend $3 =$ Subtrahend $4 =$ Difference Minus is a sign or a symbol that is represented by a horizontal line. We use minus in mathematics for multiple representations. Minus represents the arithmetic operation of subtraction between two numbers. We use minus sign to denote subtract, decreased by, take away, etc. For example, Minus sign also means how much is one value more than the other value. For example, Darby has 8 gingerbread with her and Olive has 3 gingerbreads. Darby has more gingerbreads by $(8 3) = 5$ Integers are the numbers that are not in decimal or fractional form and include positive and negative numbers along with 0. We use the minus sign to represent the negative integers, i.e., the whole numbers which are less than zero (no fractions). For representing a negative integer, we add a negative or minus sign in front of a whole number. For example, negative integer 5 is represented as: $(5)$ We also use the minus sign in measurement specially in temperature. For example, a temperature of $ 4^{\circ} \text{C}$ means 4 degrees below zero. Another example: The temperature is $5^{\circ} \text{C}$ and then drops $ 10^{\circ} \text{C}$. What is the temperature now? The temperature now $= 5 10 = 5^{\circ} \text{C}$ We also use the minus sign to represent a negative direction on a graph paper to show the coordinates. The graph also runs in the negative direction. In the first quadrant, the coordinates are of the form $(x,y)$. In the second quadrant, the coordinates are of the form $(x,y)$. In the third quadrant, the coordinates are of the form $(x,y)$. In the fourth quadrant, the coordinates are of the form $(x,y)$.Multiplication of two negative numbers gives a positive number. Negative $\times$ Negative $=$ Positive For example, $(5) \times (15) = + 75$ Multiplication of a negative number and a positive number gives a negative number. Negative $\times$ Positive $=$ Negative For example, $(5) \times (15) = 75$ Addition of a negative number with a negative number will always give a negative number. Negative $+$ Negative $=$ Negative For example, $(3) + (4) = (7)$ Subtracting a positive number from a negative number will always give a negative number. If we subtract a positive number from a negative number, we start at the negative number and count backwards. Negative $$ Positive $=$ Negative Using the number line, lets start at $ 3$. For example: Say, we have the problem $(2) 3$. Now count backwards 3 units. So, keep counting back three spaces from $ 2$ on the number line, we get The answer is $(2) 3 = 5$. Subtracting a negative number from a negative number A negative sign followed by a negative sign, turns the two signs into a positive sign. So, instead of subtracting a negative, you are adding a positive. The answer could be either positive or negative, depending on the magnitude of the numbers. Negative $$ Negative $=$ Negative $+$ Positive Basically, $ (5)$ becomes $+ 5$, and then you add the numbers. For example, we have $(2) (5)$. We can read it as negative two minus negative 5. Were changing the two negative signs into a positive, so the equation now becomes $(2) + 5$. On the number line, it starts at $ 2$. Then we move forward 5 units: $+ 5$. The answer is $ 2 (5) = 3$. Subtracting a negative number from a positive number will always give a positive number. When we subtract a negative number from a positive number, we turn the subtraction sign followed by a negative sign into a plus sign. So, instead of subtracting a negative, youre adding a positive. So the equation turns into a simple addition problem. Positive Negative = Positive + Positive For example, lets say we have the problem $2 (4)$. This reads two minus negative four. The $ (4)$ turns into $+ 4$. On the number line we start at 2. Then we move forward three units: $2 + 4$. The answer is $2 (4) = 6$. There are various methods for subtraction. In this article, we shall be discussing three of them. One of the methods is to use a diagram showing what you start with, what you are taking away, and what you are left with. For example, we have 5 balls, now a friend asks for 2 balls, we can easily calculate that we are left with 2 balls using the concept of subtraction by depicting it through a diagram as given below: Another method to perform subtraction is by using a number line. If we want to calculate 5 minus 2, we start from 5. Since we need to subtract 2, we take 2 steps back. Finally we observe that we are standing at 3. So, this is how $5 2$ is calculated on the number line. This is a number line representation of the expression. The generally used method is the column method of subtraction, where we separate the numbers into ones, tens, hundreds and so on and write the minuend above the subtrahend, where all the ones are in one column, all the tens are in another column and so on. In this method, we always start the subtraction with the ones and proceed from right to left. Regrouping in math can be defined as the process of making/breaking groups when carrying out operations like addition and subtraction. To regroup means to rearrange groups in place value to carry out an operation. We use regrouping in subtraction, when digits in the minuend are smaller than the digits in the same place of the subtrahend. This process is called regrouping as we are regrouping numbers or rearranging them into their place value to carry out this process. When we use regrouping in subtraction, it is also sometimes called borrowing. In subtraction, we sometimes use the concept of regrouping between numbers. When the numbers are subtracted using the column method and the bottom digit is greater than the upper digit, we regroup the numbers to be able to subtract. Let us understand subtraction using this regrouping example, which includes finding the answer to the expression $31 19$. Here, we first subtract the unit place digit of the number in the lower slot with the upper slot. If the number in the lower slot is larger than the number in the upper slot, regrouping takes place, also called borrowing. In this case, we subtract one from the tens place digit from the upper slot number and write the remaining number above it, that is, we take 1 from 3 making it 2 which we wrote above 3, while this 1 that we subtracted is borrowed to the unit place, making it a 10 and adding it to the unit place existing number, giving us a two digit number. In simpler words 10 is borrowed from the tens place digit and added to the unit place digit. In the above example, 10 is added to the unit place digit i.e. 1 and we write 11 above the unit place digit. Now, we move on to the real subtraction of the two numbers. The number of the unit place of the upper slot can now be subtracted from the unit place number of the lower slot, i.e. $11 9$ giving us 2. While we normally take the remaining number from the upper slot i.e. 2 and subtract the lower slot number from it, i.e., $2 1$, giving us 1, which leaves us with 12 as the final answer. Heres how we regroup hundred and tens to subtract 182 from 427: Here are a few important properties of subtraction in our everyday life. Commutative property of subtraction: Commutative property states that swapping of numbers does not alter the result. But in subtraction, we cannot get the same output when we put minuend in place of subtrahend and vice versa. Hence, commutative property is not possible in case of subtraction. For example, $8 5$ is not equal to $5 8$. Identity property of subtraction: Identity property states that when we subtract 0 from a number, the resultant is the number itself. For example, $5 0 = 5$. Inverse Property of Subtraction (Subtracting a number by itself): When we subtract a number from itself, the resultant is always 0. $\text{A} \text{A} = 0$ For example, $9 9 = 0$. Subtraction Property of Equality According to the property, if we subtract any number on both sides of an equation, the equality of the equation still holds. For the given algebra equation; $\Rightarrow \times 3 = 5$ If we subtract the same number on both sides, the equation will still hold true. Here we will subtract 8 from both sides. $\Rightarrow \times 3 8 = 5 8$ $\Rightarrow \times 11 = 3$ Distributive Property of Subtraction According to the property, the multiplication of subtraction of numbers is equal to subtraction of the multiplication of individual numbers. $\text{A} \times (\text{B} \text{C}) = \text{A} \times \text{B} \text{A} \times \text{C}$ For example: $3 \times (5 2) = 3 \times 3 = 9$ and $3 \times 5 3 \times 2 = 15 6 = 9$ In this article, we have learned about subtraction, its definition with example, the symbols used for it, the common methods used for subtraction. We also learned about the minus sign. The minus sign is used for different purposes. Lets practice our understanding with a few solved examples and practice problems and solved examples. 1. In a soccer match, Team A scored 5 goals and Team B scored 9 goals. Which team scored more goals and by how much? Solution: Goals scored by Team $\text{A} = 5$; Goals scored by Team $\text{B} = 9$ We can clearly see that Team B scored more goals. To calculate the numbers of goals by which Team B exceeded, we will subtract 5 from 9. $9 5 = 4$ Therefore, Team B scored 4 more goals than Team A. 2. Jeff has 120 pens. Her friend Tim has 50 pens less than Jeff. How many pens does Tim have? Solution: As we know, the term less than refers to the operation subtraction. Given, Jeff $= 120$ Tim $= 120 50 = 70$ Therefore, Tim has 70 pens. 3. During an annual Easter egg hunt, the participants found 52 eggs in the clubhouse, out of which 14 Easter eggs were broken. Can you find out the exact number of unbroken eggs? Solution: The number of easter eggs found in the Clubhouse $= 52$; Number of easter eggs that were broken $= 14$; The total number of unbroken eggs $=$ ? Now, we will subtract the number of broken eggs from the total number of eggs. Therefore, the number of unbroken eggs is 38. 4. Jerry collected 194 fishes and Evan collected 132 fishes. Who collected more fish and by how much? Solution: Number of fishes collected by Jerry $= 194$; Number of fishes collected by Evan $= 132$ This shows that Jerry collected more fish. Let us subtract $194 132$ to get the difference. Therefore, Jerry collected 62 fish more than Evan. 5. By how much is 5251 less than 6556? Solution: From the given, it is clear that 6556 is greater than 5251 . Now subtract 5251 from 6556. $6556 5251 = 1305$ Therefore, 5251 is less than 6556 by 1305. 6. What is the value of 794 minus 658? Solution: $794 658 = 136$ 7. When Steve woke up, his temperature was $101^{\circ} \text{F}$. Two hours later, it was 3 lower. What was his temperature after two hours? Solution: Temperature at the time of Steve waking up $= 101^{\circ} \text{F}$ Temperature after 2 hours $= 101^{\circ} \text{F} 3^{\circ} \text{F} = 98^{\circ} \text{F}$ 8. What will be the coordinates of A if $x = 5$ and $y = 7$. In which quadrant will A lie? Solution: Since it is given that $x = 5$ and $y = 7$, the coordinates of A will be $(5, 7)$. Also, as both the coordinates are negative, i.e., $(x, y)$, A will lie in the third quadrant. 9. An elevator is on the eighteenth floor. It goes down 13 floors. What floor is the elevator on now? Solution: The floor on which the elevator is now $= 18 13 = 5$th floor 10. Is $(4 6) = (6 4)$? Solution: Let us find the solution to both of them. On the left side, $4 6 = 2$ Whereas, on the right side, $6 4 = 2$ We can clearly see that $2 eq 2$. So, $(4 6)$ is not equal to $(6 4)$. Attend this quiz & Test your knowledge.Correct answer is: 39Lets use the steps for subtraction with regrouping.Correct answer is: 99Lets use the steps for subtraction with regrouping.Correct answer is: 7Here, we will subtract 18 from 25 to find the answer.Correct answer is: $7 5 = 2$Starting from 7, we took 5 steps back and landed on 2. So, the image shows the equation $7 5 = 2$.Correct answer is: 246C Why is the answer to a subtraction problem called the difference? Because if you subtract a smaller number from a bigger number the result is the difference between the two numbers. Example: Subtract 2 from 6 $6 2 = 4$ But, the number 6 is also 4 bigger than 2. It is the difference between the two numbers. Which other operation has the output smaller than the input? Another operation where the output is smaller than the input is division. Is subtraction associative? No, subtraction is not associative. Let us look at it using an example.$10 (5 1) eq (10 5) 1$ Can we subtract a larger number from a smaller number? Yes, we can subtract a larger number from a smaller number. The resultant will be a negative number. Mathematically speaking, why does subtraction by counting up work? When we subtract 2 numbers, we can do it in two ways. Lets take an example of subtracting 5 from 8. You can either take 8 and subtract 5 from it, or you can begin with 5 and count up to 8. When you begin with 5 and count up to 8, you do it 3 times: 6, 7 and 8. So, 3 will be the difference between 5 and 8. What is the difference between minus sign and plus sign? Minus sign is denoted by a horizontal symbol, i.e., $$, and it means to subtract or take away. Whereas, the plus sign is denoted by intersection of horizontal and vertical lines, i.e., $+$ which means to add or find the sum. Does commutative property hold true for subtraction? The commutative property does not hold for subtraction. It means for any two whole numbers, $\text{A} \text{B} eq \text{B} \text{A}$.For example: $3 5 = 2$ and $5 3 = 2$ and $ 2 eq 2$. Does Associative property hold true for subtraction? The associative property does not hold for subtraction. It means for any three whole numbers A, B, and C. $\text{A} (\text{B} \text{C}) eq (\text{A} \text{B}) \text{C}$ For example: $(2 3) 5 = 1 5 = 6$ and $2 (3 5) = 2 + 2$ and $ 6 eq 4$. What is a minuend and a subtrahend? In a subtraction equation, minuend is the highest number from which a component would be subtracted. A subtrahend is the term that denotes the number being subtracted from another. Who discovered the minus sign? Robert Recorde introduced the modern use of minus to the UK in 1557. The first appearance of the minus sign was given by Johannes Widmann in 1489 and was found in his book called Mercantile Arithmetic. These preschool and kindergarten worksheets help students build basic subtraction skills. The emphasis initially is on subtraction using objects or pictures to help students understand the meaning of subtraction. Explore all of our subtraction worksheets, from subtracting by counting objects to subtracting large numbers in columns. One of the best parts of being a kindergarten teacher is helping children learn foundational skills that they will use for years to come. Subtraction is one of these important skills! In this post, Im sharing some of my favorite tips for teaching subtraction in kindergarten. With these tips, your students will understand what subtraction means and will be able to use a variety of strategies to solve subtraction problems. By the time we teach students how to subtract, they have already had exposure to addition. However, teaching subtraction isnt as simple as telling students to do the opposite of adding. Keep reading for several ways that you can make the most of your kindergarten subtraction instruction. One of the most important parts of teaching new math concepts, including subtraction, is to start with concrete examples. Our young students need to be able to actually hold and move objects in order to understand the concept of subtraction. Being able to physically remove manipulatives from a group to model take away is very important to kindergarten students learning subtraction. Luckily kindergarten classrooms are full of fun and engaging manipulatives to help model subtraction for young students! Be sure to check out the blog post where I share my favorite manipulatives to keep on hand in the classroom. As students grow more comfortable with concrete examples of subtraction, they are ready for more abstract strategies. One of my favorite parts of teaching subtraction is showing students how many helpful strategies they can use as they problem solve! Count back Use your fingers Cross out Use a ten frame Draw a picture Use a number line Use mental mathUse cubes Write an equation Use a rekenrek Number bonds Use manipulatives Draw dots Use counters Chances are that your students are already familiar with many of these strategies from learning addition. In fact, it can help students to see how they use the strategy differently for subtraction than they do for addition. This will give students a foundation of how the two operations are related to each other. Once you have introduced your students to a variety of subtraction strategies, its important to remind them of these options! An easy way to keep subtraction strategies available for students is through a subtraction anchor chart or bulletin board. I have created subtraction strategy posters to display in the classroom. As each strategy is introduced, the poster is hung up on a bulletin board until students have a bank of subtraction strategies. They are able to reference these posters any time they are looking for a strategy to use! As with any new skill, students need to practice, practice, and practice some more! In order to keep students engaged in practicing subtraction, its helpful to have a variety of hands-on, engaging activities available. I love to incorporate different subtraction strategies and activities into the classroom during math centers. Subtraction task cards are perfect for centers! Each set of task cards can be completed independently during math rotations because they use strategies that the students have already been taught. Once the task cards have been laminated for durability, they can be used over and over again. This is a great low-prep option for subtraction practice! If youre interested in trying subtraction task cards, you can find them in my shop. The most important part of teaching any math concept is to make it meaningful for students. One of the best ways to do this is by teaching students how to solve story problems. These real-life examples will encourage students to look for math all around them! Plus, they will be able to use their knowledge of subtraction strategies to help them solve these problems. My word problem worksheets include their own manipulatives! Students can cut out the objects on each worksheet to help them model the word problem. Not only does this help students visualize addition and subtraction, but it also adds some extra fine motor practice to math time. Finally, dont forget to help students have fun as they learn! There are a variety of engaging games and activities that will help students practice subtraction: Board Games There are many board games that require students to subtract. Hi-Ho Cherry-O is a fun game that practices both adding and taking away! Bowling Set up an indoor bowling set and have students figure out how many pins are left standing after each turn. Play Dough Students can roll and smash balls of play dough to model subtraction. This is also a great fine motor activity! Mini Erasers Do you have a stash of mini erasers? Swap out your traditional manipulatives to add some seasonal fun to your subtraction practice. Songs Students love to learn through music! Songs like Five Little Monkeys can help students practice subtraction in a fun way. Read Alouds There are plenty of fun and engaging picture books that model subtraction scenarios. When reading these books aloud to your students, be sure to take the time to point out how subtraction is being used in the story. I hope that this post served as inspiration for hands-on and engaging subtraction activities for kindergarten. Are you interested in the resources I shared in this post? All of the printables mentioned above can be found in one money-saving bundle. The Addition and Subtraction Practice Activities Bundle has everything you need to keep your students engaged in addition and subtraction practice: Strategy posters, task cards, story problems, and more! You can find this bundle in my shop. Are you short on time but want to come back to these subtraction tips and resources? Just save this post to your favorite math board on Pinterest! Youll be able to quickly find this post when youre ready to download and print these subtraction teaching resources. Taking one number away from another.If we have 5 apples and then subtract 2 we are left with 3.The symbol of subtraction is Example: 5 2 = 3PPTXDivisibility Rules for 2, 5 and 10Emerson SalesPPTXSubtractionanumrehan1PPTPlace value pptmkwoods77PPTXMultiplying 2 to 3 multiplicand by 2-digit multiplierhaighdz27PPTXCONCEPT OF ADDITIONKhushbooAggarwal34PPTXAdding numbers mentally grade 1Yolanda N. 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Help your students progress with their learning while saving you time and money with unlimited monthly downloads. Debit, credit cards and PayPal accepted.Every monthFind all your teaching resources in one place!Enjoy hundreds of engaging teaching resourcesUnlimited downloads per monthNew teaching resources added monthly!Find teaching resources for younger learnersSave time and moneyMembership will auto-renew 1 year after sign up. This website uses cookies to improve your experience while you navigate through the website. Out of these, the cookies that are categorized as necessary are stored on your browser as they are essential for the working of basic functionalities of the website. We also use third-party cookies that help us analyze and understand how you use this website. These cookies will be stored in your browser only with your consent. You also have the option to opt-out of these cookies. But opting out of some of these cookies may affect your browsing experience. Lets talk the best way to teach subtraction. For adults, its a simple concepttake something away, and you have less. But for kindergarten students? Its a wild ride. One minute, theyre confidently counting to ten, and the next, theyre staring at you in complete confusion when you ask them what happens if you take two away from five. Cue the blank stares, exaggerated sighs, and maybe even a dramatic "This is too hard!" moment.But dont worrysubtraction doesnt have to feel like a battlefield. With the right approach,subtraction lessons for kindergartencan be engaging, hands-on, and, dare I say it, fun! Lets dive into how we can introduce subtraction in a way that actually makes sense to little learners.Before we throw worksheets and word problems at our students, they need to understand what the concept of subtraction actually means. Young students are concrete thinkers and can't just be presented with a subtraction sentencethey need to see it, touch it and experience it before they truly get it. Thats why starting with real-world scenarios is key.Use Storytelling:Create asimple subtraction storyproblem like, "There were five apples on the table. You ate two. How many are left?" Suddenly, subtraction is personal (and a little heartbreaking, if they love apples).Subtraction Story SlidesAct It Out:Have students act out simple subtraction problems by physically removing objects from a group. Hands-on learning is a game changer, whether its erasers, blocks, or fingers. Students could also createsubtraction towers. They can easily show the subtraction with two different cube colours, block colours, etc. All of these activities will help students to achieve subtraction success, and build a deeper understanding of the basics of subtraction. Subtraction TowersIntroduce Subtraction Words:Instead of just talking about the "minus sign" and "take away," use words theyll actually hear in daily life, like "gone," "disappear," or "left." Havingsubtraction lesson plansfor kindergarten can help ensure you introduce all the right vocabulary!Make It Hands-On (Because Worksheets Alone Wont Cut It)Kindergarteners learn best when theyre moving, touching and playing. There are lots of hands-on ways to give students subtraction practice. Here are a few hands-on subtraction activities and subtraction games that will keep them engaged - you can use these math games with small groups for math centers, or as a whole group to consolidate different strategies for subtracting:Snack Subtraction Who doesnt love a math lesson that involves food? Give students a small handful of crackers or fruit snacks. Have them eat one at a time while saying, "I had five, I ate one, now I have four." Its subtraction in action (and youll be the favourite teacher for using snacks).Hungry Shark Subtraction Mats For a fun ocean-themed twist, theseHungry Shark Subtraction Matsmake practising subtraction interactive. Kids "feed" the hungry shark by taking away fish and solving subtraction problems along the way.Hungry Shark SubtractionBowling for Numbers This makes an amazing subtraction game, and it will fast become a favorite activity! Set up six bowling pins (or plastic cups). Have students roll a ball and knock some down, then count how many are left standing. Boomstudents are working on subtraction strategies without even realising it!Takeaway Trash Game Thisfun subtraction gameturns subtraction into a hands-on, engaging experience. Kids take turns removing "trash" from a pile, visually seeing subtraction in action while having fun. You can easily differentiate this activity by providing students with different subtraction equations, depending on what level they're at. For example, some students might work with numbers to ten, while other students might be working with bigger numbers such as teen numbers.Takeaway TrashTakeaway Trash in action (old design)Toy Takeaway Story problems can be great for teaching subtraction. Line up some small toys or stuffed animals, then remove a few while asking students to count how many remain. See if they can also verbalise subtraction number sentences.Subtraction Hopscotch For this fun game, draw numbers on the pavement or classroom floor and have kids jump to different numbers as they "subtract" steps. This is a super fun way to work on subtraction skills, and it's the perfect way to get some extra practice of gross motor skills at the same time!Playdough SmashSubtraction Smashis always a favourite subtraction activity with students. Give them a set number of play dough balls and let them smash one at a time as they subtract. Its surprisingly satisfying.Subtraction SmashWhile hands-on activities are great, kids also need visual support to make subtraction click. Consider using:Ten Frames These help kids "see" subtraction by filling up a frame with counters or small objects, and then removing them.Number Lines Having kids physically hop backward on a number line makes subtraction more concrete.Picture Books Stories likePete the Cat and His Four Groovy Buttonsmake subtraction fun and relatable.Anchor Charts Create colourful posters or a subtraction anchor chart with subtraction keywords and examples so students can refer back to them.The Hivehas many digital learning tools to support your Kindergarten subtraction lessons, including ten frames, counting apps, number lines and more.The Hive's Ten Frame AppThe Hive's Number Line AppWhile worksheets arent the main event, they do have their placeespecially when paired with interactive activities. The trick is making sure theyre engaging, simple and not just busy work.Look forcolouring-basedsubtraction worksheets where students can cross out objects or draw pictures to solve problems. Here are a few examples that are included in oursubtraction lessons for kindergarten.Try cut-and-paste activities where students physically remove images to show subtraction in action.Use dice and spinners to generate numbers for subtraction problems, making it feel more like a game.At the end of the day, subtraction doesnt have to be a subject that students (and teachers!) fear. By incorporating movement, stories, visuals and real-life experiences, kindergarteners can build a strong foundation without feeling overwhelmed.So, the next time your students groan at the thought of "taking away," just grab some crackers, a bowling ball, or even a few stuffed animals, and watch subtraction start making sense. Who knew math could be this fun?Looking for more?InThe Hive, you'll find evidence-based lesson plans to help you teachsubtraction lessons in Kindergarten- as well as every other Kindergarten math concept too! There are also units of work for first grade and second grade too, where students will explore a variety of strategies and different ways to solve subtraction problems. Each subtraction unit of work is designed to build a solid foundation, withfive days of differentiated learning activities with learning intentions and success criteria, explicit teaching lessons, guided and independent activities, and matching resources, games and worksheets.Plus, you'll love our growing library of digital learning tools to help support your subtraction lessons. Our digital learning tools includeCountersTen framesBase 10 BlocksNumber LineNumber of the DayPart Part WholeSubitisingTalliesHundreds SquareDiceDominoesAbacusRekenrekSkip Counting/Reverse Skip Counting... and so much more!Check them out with a 14 day free trial. Related posts Subtraction is one of the most foundational math skills, and introducing it to children in kindergarten can set them up for future success in mathematics. Teaching subtraction at this young age can be both fun and engaging if done with the right methods. This article will cover why its important to teach subtraction in kindergarten, how to prepare for teaching it, common challenges teachers and parents face, and tips to overcome them. Lets check it out! Why is it Important to Learn Subtraction in Kindergarten? Subtraction, along with addition, is a key building block in a childs mathematical development. Here are a few reasons why learning subtraction in kindergarten is important: 1. Foundation for Future Math Skills Subtraction helps children understand the concept of "taking away" or "reducing," which is essential for more advanced math skills such as division, fractions, and algebra. When children grasp subtraction early, they build a strong foundation for future math learning. 2. Problem-Solving Skills Subtraction is more than just numbers, but it also teaches children to solve problems. Whether its figuring out how many apples are left in a basket or how many toys to share, subtraction plays a role in daily life. Introducing subtraction early helps children develop these problem-solving skills. 3. Boosts Confidence When children learn subtraction in a fun and engaging way, they become confident in their math abilities. This confidence helps them as they encounter more complex math concepts in the future. Understanding the Kindergarten Math Curriculum In kindergarten, the math curriculum focuses on the basics oflearning numbers and simple operations, such as addition and subtraction. Subtraction is usually introduced after children are familiar with the concept of addition. Heres what the kindergarten math curriculum typically includes for subtraction: A. Basic Concept of Taking Away At this stage, subtraction is taught as taking away objects from a set. Children are encouraged to visualize subtraction as removing items to see how many are left. B. Number Bonds Number bonds are pairs of numbers that combine to form another number. For example, in subtraction, if a child knows that 5 + 3 equals 8, they can also understand that 8 - 3 equals 5. Number bonds help children see the relationship between addition and subtraction. C. Using Visuals and Manipulatives The curriculum often includes visual aids and manipulatives like blocks, counters, or pictures to represent subtraction problems. These hands-on tools make it easier for young children to understand the abstract concept of subtraction. Fun and Engaging Ways to Teach Subtraction Here are some exciting and interactive ways to teach subtraction that will keep kindergarteners interested and eager to learn: 1. Subtraction Bowling Bowling and math? Yes, please! This activity brings the fun of bowling into your subtraction lessons. This game not only teaches subtraction but also builds coordination and focus. Children love seeing the pins fall, and it makes subtraction physically interactive and easy to grasp. How it works: Set up a mini bowling alley using empty plastic bottles, toy pins, or even small boxes. Each child gets a turn to roll a soft ball and knock down as many pins as they can. After their turn, ask them how many pins they knocked down and how many are still standing. For example, if you set up 10 pins and 3 fall down, you can say, "10 - 3 = ? How many pins are left?" 2. Subtraction with Snacks Who doesnt love a math lesson that involves snacks? This is a delicious way to engage children in subtraction while keeping them energized. The motivation to eat the snack helps kids stay engaged, and since theyre physically taking away the snacks, the subtraction process becomes easy to understand. How it works Use small snacks like crackers, raisins, or fruit pieces to practice subtraction. Start with a set number of snacks. For example, give each child 5 crackers. Then, ask them to eat 2 crackers and tell you how many they have left. You could even ask them to write the subtraction sentence on a whiteboard: 5 - 2 = 3. 3. Subtraction Treasure Hunt This treasure hunt is not just about finding objects but also about learning how to subtract them along the way. The excitement of searching for hidden objects keeps children engaged, and they naturally practice subtraction as they calculate how many more items they need to find. How it works: Hide small objects like toys, colored blocks, or even coins around the room. Give each child a number of objects they need to find (e.g., 10 blocks). As they find the objects, ask them to subtract the number of blocks theyve already found from the total they need. For example, if they have found 3 blocks out of 10, they can say, "10 - 3 = 7. I still need to find 7 blocks." 4. Subtraction Stories with Puppets Who said subtraction couldnt be a part of storytelling? Puppets can act out subtraction problems in a way that feels like a performance, making learning much more enjoyable for kids. How it works: Use puppets, stuffed animals, or toys to create a subtraction story. For example, if you have 5 animal puppets, you can tell a story like, "Once there were 5 bears playing in the forest. Two of the bears went home to take a nap. How many bears are still playing?" The children then figure out the subtraction by seeing how many puppets are left. 5. Play Subtraction Bingo A twist on the classic game of Bingo, Subtraction Bingo helps children practice math skills in a playful environment. How it works: Create Bingo cards where each space contains a different number. Call out subtraction problems, such as "8 - 3" or "6 - 2," and have children figure out the answer. If they have that answer on their Bingo card, they mark it off. The first to complete a row wins! Subtraction for Kindergarten is Important! Teaching subtraction in fun and engaging ways is key to building a strong foundation in math for kindergarteners. Its important to find the right preschool that includes both addition and subtraction in its curriculum to support children's early math skills. One of the best options isRockstar Academy, where your child can experience a well-roundedPreschool and Kindergarten education combined with various physical activities, events, and competitions designed for different ages and interests. With guidance from Rockstar Academys experienced teachers, your child will develop confidence and adaptability in both academic and physical activities, essential for their overall wellbeing and success. On top of that, Rockstar Academy offers afree trial class, so if you're interested in giving your child the best start, be sure to reach out and see what they have to offer! FAQ When should subtraction be introduced in kindergarten? Subtraction is usually introduced after children are comfortable with numbers and basic addition. It typically starts midway through the kindergarten year, once children understand the concept of adding objects together. How do I make subtraction less confusing for my child? Use physical objects, visuals, and clear language to differentiate subtraction from addition. Ensure your child understands that subtraction is about "taking away" rather than "putting together." What are some easy games to teach subtraction? Subtraction bowling, using snacks, treasure hunts, and interactive whiteboard games are all fun ways to practice subtraction. These games make learning subtraction hands-on and engaging. Share copy and redistribute the material in any medium or format for any purpose, even commercially. Adapt remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms. Attribution You must give appropriate credit , provide a link to the license, and indicate if changes were made . You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. ShareAlike If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original. No additional restrictions You may not apply legal terms or technological measures that legally restrict others from doing anything the license permits. You do not have to comply with the license for elements of the material in the public domain or where your use is permitted by an applicable exception or limitation . No warranties are given. The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. One of the four basic arithmetic operations"Subtract" redirects here. For other uses, see Subtraction (disambiguation).This article needs additional citations for verification. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.Find sources:"Subtraction"news newspapers books scholar JSTOR (May 2018) (Learn how and when to remove this message)"5 2 = 3" (verbally, "five minus two equals three")Arithmetic operationsvteAddition (+) term + term summand + summand addend + addend augend + addend } = {\displaystyle \scriptstyle \left.{\begin{matrix}\scriptstyle {\text{term}}\,+\,{\text{term}}\\\scriptstyle {\text{summand}}\,+\,{\text{summand}}\\\scriptstyle {\text{addend}}\,+\,{\text{addend}}\\\scriptstyle {\text{augend}}\,+\,{\text{addend}}\end{matrix}}\right\}\,=\,} sum {\displaystyle \scriptstyle {\text{sum}}} Subtraction () term term minuend subtrahend } = {\displaystyle \scriptstyle \left.{\begin{matrix}\scriptstyle {\text{term}}\,-\,{\text{term}}\\\scriptstyle {\text{minuend}}\,-\,{\text{subtrahend}}\end{matrix}}\right\}\,=\,} difference {\displaystyle \scriptstyle {\text{difference}}} Multiplication () factor factor multiplier multiplicand } = {\displaystyle \scriptstyle \left.{\begin{matrix}\scriptstyle {\text{factor}}\,\times \,{\text{factor}}\\\scriptstyle {\text{multiplier}}\,\times \,{\text{multiplicand}}\end{matrix}}\right\}\,=\,} product {\displaystyle \scriptstyle {\text{product}}} Division () dividend divisor numerator denominator } = {\displaystyle \scriptstyle \left.{\begin{matrix}\scriptstyle {\frac {\scriptstyle {\text{dividend}}}{\scriptstyle {\text{divisor}}}}\\[1ex]\scriptstyle {\frac {\scriptstyle {\text{numerator}}}{\scriptstyle {\text{denominator}}}}\end{matrix}}\right\}\,=\,} { fraction quotient ratio {\displaystyle \scriptstyle \left\{{\begin{matrix}\scriptstyle {\text{fraction}}\\\scriptstyle {\text{quotient}}\\\scriptstyle {\text{ratio}}\end{matrix}}\right.} Exponentiation base exponent base power } = {\displaystyle \scriptstyle \left.{\begin{matrix}\scriptstyle {\text{base}}^{\text{exponent}}\\\scriptstyle {\text{base}}^{\text{power}}\end{matrix}}\right\}\,=\,} power {\displaystyle \scriptstyle {\text{power}}} nth root () radicand degree = {\displaystyle \scriptstyle {\sqrt[{\text{degree}}]{\scriptstyle {\text{radicand}}}}\,=\,} root {\displaystyle \scriptstyle {\text{root}}} Logarithm (log) log base (anti-logarithm) = {\displaystyle \scriptstyle \log _{\text{base}}({\text{anti-logarithm}})\,=\,} logarithm {\displaystyle \scriptstyle {\text{logarithm}}} vtePlacard outside a shop in Bordeaux advertising subtraction of 20% from the price of the second perfume purchased.Subtraction (which is signified by the minus sign,) is one of the four arithmetic operations along with addition, multiplication and division. Subtraction is an operation that represents removal of objects from a collection.[1] For example, in the adjacent picture, there are 5 2 peachesmeaning 5 peaches with 2 taken away, resulting in a total of 3 peaches. Therefore, the difference of 5 and 2 is 3; that is, 5 2 = 3. While primarily associated with natural numbers in arithmetic, subtraction can also represent removing or decreasing physical and abstract quantities using different kinds of objects including negative numbers, fractions, irrational numbers, vectors, decimals, functions, and matrices.[2]In a sense, subtraction is the inverse of addition. That is, c = a b if and only if c + b = a. In words: the difference of two numbers is the number that gives the first one when added to the second one.Subtraction follows several important patterns. It is anticommutative, meaning that changing the order changes the sign of the answer. It is also not associative, meaning that when one subtracts more than two numbers, the order in which subtraction is performed matters. Because 0 is the additive identity, subtraction of it does not change a number. Subtraction also obeys predictable rules concerning related operations, such as addition and multiplication. All of these rules can be proven, starting with the subtraction of integers and generalizing up through the real numbers and beyond. General binary operations that follow these patterns are studied in abstract algebra.In computability theory, considering subtraction is not well-defined over natural numbers, operations between numbers are actually defined using "truncated subtraction" or monus.[3]Subtraction is usually written using the minus sign "" between the terms; that is, in infix notation. The result is expressed with an equals sign. For example, 2 1 = 1 {\displaystyle 2-1=1} (pronounced as "two minus one equals one") and 4 6 = 2 {\displaystyle 4-6=-2} (pronounced as "four minus six equals negative two"). Nonetheless, some situations where subtraction is "understood", even though no symbol appears; in accounting, a column of two numbers, with the lower number in red, usually indicates that the lower number in the column is to be subtracted, with the difference written below, under a line.[4]The number being subtracted is the subtrahend, while the number it is subtracted from is the minuend. The result is the difference, that is:[5] m i n u e n d s u b t r a h e n d = d i f f e r e n c e {\displaystyle {\rm {minuend}}-{\rm {subtrahend}}={\rm {difference}}} .All of this terminology derives from Latin. "Subtraction" is an English word derived from the Latin verb subtrahere, which in turn is a compound of sub "from under" and trahere "to pull". Thus, to subtract is to draw from below, or to take away.[6] Using the gerundive suffix -nd results in "subtrahend", "thing to be subtracted".[a] Likewise, from minuere "to reduce or diminish", one gets "minuend", which means "thing to be diminished".Imagine a line segment of length b with the left end labeled a and the right end labeled c.Starting from a, it takes b steps to the right to reach c. This movement to the right is modeled mathematically by addition:a + b = c.From c, it takes b steps to the left to get back to a. This movement to the left is modeled by subtraction:c b = a.Now, a line segment labeled with the numbers 1, 2, and 3. From position 3, it takes no steps to the left to stay at 3, so 3 0 = 3. It takes 2 steps to the left to get to position 1, so 3 2 = 1. This picture is inadequate to describe what would happen after going 3 steps to the left of position 3. To represent such an operation, the line must be extended.To subtract arbitrary natural numbers, one begins with a line containing every natural number (0, 1, 2, 3, 4, 5, 6, ...). From 3, it takes 3 steps to the left to get to 0, so 3 3 = 0. But 3 4 is still invalid, since it again leaves the line. The natural numbers are not a useful context for subtraction.The solution is to consider the integer number line (..., 3, 2, 1, 0, 1, 2, 3, ...). This way, it takes 4 steps to the left from 3 to get to 1:3 4 = 1.Subtraction of natural numbers is not closed: the difference is not a natural number unless the minuend is greater than or equal to the subtrahend. For example, 26 cannot be subtracted from 11 to give a natural number. Such a case uses one of two approaches:Conclude that 26 cannot be subtracted from 11; subtraction becomes a partial function.Give the answer as an integer representing a negative number, so the result of subtracting 26 from 11 is 15.The field of real numbers can be defined specifying only two binary operations, addition and multiplication, together with unary operations yielding additive and multiplicative inverses. The subtraction of a real number (the subtrahend) from another (the minuend) can then be defined as the addition of the minuend and the additive inverse of the subtrahend. For example, 3 = 3 + (). Alternatively, instead of requiring these unary operations, the binary operations of subtraction and division can be taken as basic.Subtraction is anti-commutative, meaning that if one reverses the terms in a difference left-to-right, the result is the negative of the original result. Symbolically, if a and b are any two numbers, thena b = (b a).Subtraction is non-associative, which comes up when one tries to define repeated subtraction. In general, the expression"a b c"can be defined to mean either (a b) c or a (b c), but these two possibilities lead to different answers. To resolve this issue, one must establish an order of operations, with different orders yielding different results.In the context of integers, subtraction of one also plays a special role: for any integer a, the integer (a 1) is the largest integer less than a, also known as the predecessor of a.When subtracting two numbers with units of measurement such as kilograms or pounds, they must have the same unit. In most cases, the difference will have the same unit as the original numbers.Changes in percentages can be reported in at least two forms, percentage change and percentage point change. Percentage change represents the relative change between the two quantities as a percentage, while percentage point change is simply the number obtained by subtracting the two percentages.[7][8][9]As an example, suppose that 30% of widgets made in a factory are defective. Six months later, 20% of widgets are defective. The percentage change is 20% 30%/30% = 1/3 = 33+1/3%, while the percentage point change is 10 percentage points.The method of complements is a technique used to subtract one number from another using only the addition of positive numbers. This method was commonly used in mechanical calculators, and is still used in modern computers.BinarydigitOnes' complement0110To subtract a binary number y (the subtrahend) from another number x (the minuend), the ones' complement of y is added to x and one is added to the sum. The leading digit "1" of the result is then discarded.The method of complements is especially useful in binary (radix 2) since the ones' complement is very easily obtained by inverting each bit (changing "0" to "1" and vice versa). And adding 1 to get the two's complement can be done by simulating a carry into the least significant bit. For example: 01100100 (x, equals decimal 100)- 00010110 (y, equals decimal 22)becomes the sum: 01100100 (x)+ 11101001 (ones' complement of y)+ 1 (to get the two's complement) 101001110Dropping the initial "1" gives the answer: 01001110 (equals decimal 78)Methods used to teach subtraction to elementary school vary from country to country, and within a country, different methods are adopted at different times. In what is known in the United States as traditional mathematics, a specific process is taught to students at the end of the 1styear (or during the 2ndyear) for use with multi-digit whole numbers, and is extended in either the fourth or fifth grade to include decimal representations of fractional numbers.Almost all American schools currently teach a method of subtraction using borrowing or regrouping (the decomposition algorithm) and a system of markings called crutches.[10][11] Although a method of borrowing had been known and published in textbooks previously, the use of crutches in American schools spread after William A. Brownell published a studyclaiming that crutches were beneficial to students using this method.[12] This system caught on rapidly, displacing the other methods of subtraction in use in America at that time.Some European schools employ a method of subtraction called the Austrian method, also known as the additions method. There is no borrowing in this method. There are also crutches (markings to aid memory), which vary by country.[13][14]Both these methods break up the subtraction as a process of one digit subtractions by place value. Starting with a least significant digit, a subtraction of the subtrahend:sj sj1 ... s1from the minuendmk mk1 ... m1,where each si and mi is a digit, proceeds by writing down m1 s1, m2 s2, and so forth, as long as si does not exceed mi. Otherwise, mi is increased by 10 and some other digit is modified to correct for this increase. The American method corrects by attempting to decrease the minuend digit mi+1 by one (or continuing the borrow leftwards until there is a non-zero digit from which to borrow). The European method corrects by increasing the subtrahend digit si+1 by one.Example: 704 512. 1 C D U 7 0 4 5 1 2 1 9 2 c a r r y M i n u e n d S u b t r a h e n d R e s t o r D i f f e r e n c e {\displaystyle {\begin{array}{rrrr}&\color {Red}-1\\&C&D&U\\&7&0&4\\&5&1&2\\\hline &1&9&2\\\end{array}}{\begin{array}{l}{\color {Red}\longleftarrow {\rm {carry}}}\\\\\longleftarrow \;{\rm {Minuend}}\\\longleftarrow \;{\rm {Subtrahend}}\\\longleftarrow {\rm {Rest\;or\;Difference}}\\\end{array}}} The minuend is 704, the subtrahend is 512. The minuend digits are m3 = 7, m2 = 0 and m1 = 4. The subtrahend digits are s3 = 5, s2 = 1 and s1 = 2. Beginning at the one's place, 4 is not less than 2 so the difference 2 is written down in the result's one's place. In the ten's place, 0 is less than 1, so the 0 is increased by 10, and the difference with 1, which is 9, is written down in the ten's place. The American method corrects for the increase of ten by reducing the digit in the minuend's hundreds place by one. That is, the 7 is struck through and replaced by a 6. The subtraction then proceeds in the hundreds place, where 6 is not less than 5, so the difference is written down in the result's hundred's place. We are now done, the result is 192.The Austrian method does not reduce the 7 to 6. Rather it increases the subtrahend hundreds digit by one. A small mark is made near or below this digit (depending on the school). Then the subtraction proceeds by asking what number when increased by 1, and 5 is added to it, makes 7. The answer is 1, and is written down in the result's hundreds place.There is an additional subtlety in that the student always employs a mental subtraction table in the American method. The Austrian method often encourages the student to mentally use the addition table in reverse. In the example above, rather than adding 1 to 5, getting 6, and subtracting that from 7, the student is asked to consider what number, when increased by 1, and 5 is added to it, makes 7.Example:[citation needed]1 + ... = 3The difference is written under the line.9 + ... = 5The required sum (5) is too small.So, we add 10 to it and put a 1 under the next higher place in the subtrahend.9 + ... = 15Now we can find the difference as before.(4 + 1) + ... = 7The difference is written under the line.The total difference.Example:[citation needed]7 4 = 3This result is only penciled in.Because the next digit of the minuend is smaller than the subtrahend, we subtract one from our penciled-in-number and mentally add ten to the next.15 9 = 6Because the next digit in the minuend is not smaller than the subtrahend, we keep this number.3 1 = 2In this method, each digit of the subtrahend is subtracted from the digit above it starting from right to left. If the top number is too small to subtract the bottom number from it, we add 10 to it; this 10 is "borrowed" from the top digit to the left, which we subtract 1 from. Then we move on to subtracting the next digit and borrowing as needed, until every digit has been subtracted. Example:[citation needed]3 1 = ...We write the difference under the line.5 9 = ... The minuend (5) is too small!So, we add 10 to it. The 10 is "borrowed" from the digit on the left, which goes down by 1.15 9 = ... Now the subtraction works, and we write the difference under the line.6 4 = ...We write the difference under the line.The total difference.A variant of the American method where all borrowing is done before all subtraction.[15]Example:1 3 = not possible.We add a 10 to the 1. Because the 10 is "borrowed" from the nearby 5, the 5 is lowered by 1.4 9 = not possible.So we proceed as in step 1.Working from right to left:11 3 = 814 9 = 56 4 = 2The partial differences method is different from other vertical subtraction methods because no borrowing or carrying takes place. In their place, one places plus or minus signs depending on whether the minuend is greater or smaller than the subtrahend. The sum of the partial differences is the total difference.[16]Example:The smaller number is subtracted from the greater:700 400 = 300Because the minuend is greater than the subtrahend, this difference has a plus sign.The smaller number is subtracted from the greater:90 50 = 40Because the minuend is smaller than the subtrahend, this difference has a minus sign.The smaller number is subtracted from the greater:3 1 = 2Because the minuend is greater than the subtrahend, this difference has a plus sign.+300 40 + 2 = 262Instead of finding the difference digit by digit, one can count up the numbers between the subtrahend and the minuend.

[17]Example:1234 567 = can be found by the following steps:567 + 3 = 570570 + 30 = 600600 + 400 = 10001000 + 234 = 1234Add up the value from each step to get the total difference: 3 + 30 + 400 + 234 = 667.Another method that is useful for mental arithmetic is to split up the subtraction into small steps.[18]Example:1234 567 = can be solved in the following way:1234 500 = 734734 60 = 674674 7 = 667The same change method uses the fact that adding or subtracting the same number from the minuend and subtrahend does not change the answer. One simply adds the amount needed to get zeros in the subtrahend.[19]Example:"1234 567 =" can be solved as follows:1234 567 = 1237 570 = 1267 600 = 667Absolute differenceDecrementElementary arithmeticMethod of complementsNegative numberPlus and minus signsMonus (truncated subtraction)^ "Subtrahend" is shortened by the inflectional Latin suffix -us, e.g. remaining un-declined as in numerus subtrahendus "the number to be subtracted".^ "What is to Subtract?". SplashLearn. 28 April 2022. Retrieved 2022-12-13.^ Weisstein, Eric W. "Subtraction". mathworld.wolfram.com. Retrieved 2020-08-26.^ Cutland, Nigel. Computability: an introduction to recursive function theory.^ Cole (1921), p.145.^ Musser, Peterson & Burger (2013), p.94.^ "Subtraction". Oxford English Dictionary (Onlineed.). Oxford University Press. (Subscription or participating institution membership required.)^ Paul E. Peterson, Michael Henderson, Martin R. West (2014) Teachers Versus the Public: What Americans Think about Schools and How to Fix Them Brookings Institution Press, p. 163^ Janet Kolodzy (2006) Convergence Journalism: Writing and Reporting across the News Media Rowman & Littlefield Publishers, p. 180^ David Gillborn (2008) Racism and Education: Coincidence Or Conspiracy? Routledge p. 46^ Klapper, Paul (1916). The Teaching of Arithmetic: A Manual for Teachers. pp.80. Retrieved 2016-03-11.^ Susan Ross and Mary Pratt-Cotter. 2000. "Subtraction in the United States: An Historical Perspective," The Mathematics Educator 8(1):411. p. 8: "This new version of the decomposition algorithm [i.e., using Brownell's crutch] has so completely dominated the field that it is rare to see any other algorithm used to teach subtraction today [in America]."^ Ross, Susan C.; Pratt-Cotter, Mary (1999). "Subtraction From a Historical Perspective". School Science and Mathematics. 99 (7): 38993. doi:10.1111/j.1949-8594.1999.tb17499.x.^ Klapper 1916, pp. 177.^ David Eugene Smith (1913). The Teaching of Arithmetic. Ginn. pp.77. Retrieved 2016-03-11.^ The Many Ways of Arithmetic in UCSMP Everyday Mathematics Archived 2014-02-25 at the Wayback Machine Subtraction: Trade First^ Partial-Differences Subtraction Archived 2014-06-23 at the Wayback Machine; The Many Ways of Arithmetic in UCSMP Everyday Mathematics Archived 2014-02-25 at the Wayback Machine Subtraction: Partial Differences^ The Many Ways of Arithmetic in UCSMP Everyday Mathematics Archived 2014-02-25 at the Wayback Machine Subtraction: Counting Up^ The Many Ways of Arithmetic in UCSMP Everyday Mathematics Archived 2014-02-25 at the Wayback Machine Subtraction: Left to Right Subtraction^ The Many Ways of Arithmetic in UCSMP Everyday Mathematics Subtraction: Same Change RuleBrownell, W.A. (1939). Learning as reorganization: An experimental study in third-grade arithmetic, Duke University Press.Cole, Williams (1921). The Fundamentals of Accounting. Houghton Mifflin. ISBN978-1-178-36252-7. {{cite book}}: ISBN / Date incompatibility (help)Musser, Gary L.; Peterson, Blake E.; Burger, William F. (2013). Mathematics for Elementary Teachers: A Contemporary Approach. John Wiley & Sons. ISBN978-1-118-48700-6.Subtraction in the United States: An Historical Perspective, Susan Ross, Mary Pratt-Cotter, The Mathematics Educator, Vol. 8, No. 1 (original publication) and Vol. 10, No. 1 (reprint.) PDFLook up subtraction in Wiktionary, the free dictionary.Wikimedia Commons has media related to Subtraction."Subtraction", Encyclopedia of Mathematics, EMS Press, 2001 [1994]Printable Worksheets: Subtraction Worksheets, One Digit Subtraction, Two Digit Subtraction, Four Digit Subtraction, and More Subtraction WorksheetsSubtraction Game at cut-the-knotSubtraction on a Japanese abacus selected from Abacus: Mystery of the BeadRetrieved from " 2NumberThis article is about the number. For the year AD 1, and other uses, see One (disambiguation) and Number One (disambiguation)This article contains special characters. Without proper rendering support, you may see question marks, boxes, or other symbols.Natural number 0 1 2 1 0 1 2 3 4 5 6 7 8 9 List of numbersIntegers 0 10 20 30 40 50 60 70 80 90 CardinaloneOrdinal1st(first)Numeral systemunaryFactorizationDivisors1Greek numeralRoman numeralI, iGreek prefixmono-/haplo-Latin prefixuni-Binary12Ternary13Senary16Octal18Duodecimal112Hexadecimal116Greek numeral'Arabic, Kurdish, Persian, Sindhi, UrduAssamese & BengaliChinese numeral//DevangarSantaliGe'ezGeorgian//(Ani)HebrewJapanese numeral/KannadaKhmerArmenianMalayalamMeiteiThaiTamilTeluguBabylonian numeralEgyptian hieroglyph, Aegean numeral, Chinese counting rodMayan numeralMorse code. _ _ _ _1 (one, unit, unity) is a number, numeral, and glyph. It is the first and smallest positive integer of the infinite sequence of natural numbers. This fundamental property has led to its unique uses in other fields, ranging from science to sports, where it commonly denotes the first, leading, or top thing in a group. 1 is the unit of counting or measurement, a determiner for singular nouns, and a gender-neutral pronoun. Historically, the representation of 1 evolved from ancient Sumerian and Babylonian symbols to the modern Arabic numeral.In mathematics, 1 is the multiplicative identity, meaning that any number multiplied by 1 equals the same number. 1 is by convention not considered a prime number. In digital technology, 1 represents the "on" state in binary code, the foundation of computing. Philosophically, 1 symbolizes the ultimate reality or source of existence in various traditions.The number 1 is the first natural number after 0. Each natural number, including 1, is constructed by succession, that is, by adding 1 to the previous natural number. 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In Giuseppe Peano's original formulation of the Peano axioms, a set of postulates to define the natural numbers in a precise and logical way, 1 was treated as the starting point of the sequence of natural numbers.[4][5] Peano later revised his axioms to begin the sequence with 0.[4][6] In the Von Neumann cardinal assignment of natural numbers, where each number is defined as a set that contains all numbers before it, 1 is represented as the singleton { 0 } {\displaystyle \{0\}} , a set containing only the element 0.[7]The unary numeral system, as used in tallying, is an example of a "base-1" number system, since only one mark the tally itself is needed. While this is the simplest way to represent the natural numbers, base-1 is rarely used as a practical base for counting due to its difficult readability.[8][9]In many mathematical and engineering problems, numeric values are typically normalized to fall within the unit interval ([0,1]), where 1 represents the maximum possible value. For example, by definition 1 is the probability of an event that is absolutely or almost certain to occur.[10] Likewise, vectors are often normalized into unit vectors (i.e., vectors of magnitude one), because these often have more desirable properties. Functions are often normalized by the condition that they have integral one, maximum value one, or square integral one, depending on the application.[11]1 is the value of Legendre's constant, introduced in 1808 by Adrien-Marie Legendre to express the asymptotic behavior of the prime-counting function.[12] The Weil's conjecture on Tamagawa numbers states that the Tamagawa number (G) {\displaystyle \tau (G)} , a geometrical measure of a connected linear algebraic group over a global number field, is 1 for all simply connected groups (those that are path-connected with no 'holes').[13][14]1 is the most common leading digit in many sets of real-world numerical data. 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The tendency for real-world numbers to grow exponentially or logarithmically biases the distribution towards smaller leading digits, with 1 occurring approximately 30% of the time.[15]See also: One (pronoun)One originates from the Old English word an, derived from the Germanic root *ainaz, from the Proto-Indo-European root *oi-no- (meaning "one, unique").[16] Linguistically, one is a cardinal number used for counting and expressing the number of items in a collection of things.[17] One is most commonly a determiner used with singular countable nouns, as in one day at a time.[18] The determiner has two senses: numerical one (I have one apple) and singulative one (one day I'll do it).[19] One is also a gender-neutral pronoun used to refer to an unspecified person or to people in general as in one should take care of oneself.[20]Words that derive their meaning from one include alone, which signifies all one in the sense of being by oneself, none meaning not one, once denoting one time, and atone meaning to become at one with the someone. Combining alone with only (implying one-like) leads to lonely, conveying a sense of solitude.[21] Other common numeral prefixes for the number 1 include uni- (e.g., unicycle, universe, unicorn), sol- (e.g., solo dance), derived from Latin, or mono- (e.g., monorail, monogamy, monopoly) derived from Greek.[22][23]See also: History of the HinduArabic numeral systemAmong the earliest known records of a numeral system, is the Sumerian decimal-sexagesimal system on clay tablets dating from the first half of the third millenniumBCE.[24] Archaic Sumerian numerals for 1 and 60 both consisted of horizontal semi-circular symbols, [25] by c.2350 BCE, the older Sumerian curviform numerals were replaced with cuneiform symbols, with 1 and 60 both represented by the same mostly vertical symbol. The Sumerian cuneiform system is a direct ancestor to the Eblaite and Assyro-Babylonian Semitic cuneiform decimal systems.[26] Surviving Babylonian documents date mostly from Old Babylonian (c.1500 BCE) and the Seleucid (c.300 BCE) eras.[24] The Babylonian cuneiform script notation for numbers used the same symbol for 1 and 60 as in the Sumerian system.[27]The most commonly used glyph in the modern Western world to represent the number 1 is the Arabic numeral, a vertical line, often with a serif at the top and sometimes a short horizontal line at the bottom. It can be traced back to the Brahmic script of ancient India, as represented by Ashoka as a simple vertical line in his Edicts of Ashoka in c.250BCE.[28] This script's numeral shapes were transmitted to Europe via the Maghreb and Al-Andalus during the Middle Ages [29] The Arabic numeral, and other glyphs used to represent the number one (e.g., Roman numeral (I), Chinese numeral ()) are logograms. These symbols directly represent the concept of 'one' without breaking it down into phonetic components.[30]This Woodstock typewriter from the 1940s lacks a separate key for the numeral 1.Hoefler Text, a typeface designed in 1991, uses text figures and represents the numeral 1 as similar to a small-caps I.In modern typefaces, the shape of the character for the digit 1 is typically typeset as a lining figure with an ascender, such that the digit is the same height and width as a capital letter. However, in typefaces with text figures (also known as Old style numerals or non-lining figures), the glyph usually is of x-height and designed to follow the rhythm of the lowercase, as, for example, in .[31] In many typefaces with text figures, the numeral 1 features parallel serifs at the top and bottom, resembling a small caps version of the Roman numeral I.[32][33] Many older typewriters do not have a dedicated key for the numeral 1, requiring the use of the lowercase letter L or uppercase I as substitutes.[34][35][36][37]The 24-hour tower clock in Venice, using J as a symbol for 1The lower case "j" can be considered a swash variant of a lower-case Roman numeral "i", often employed for the final i of a "lower-case" Roman numeral. It is also possible to find historic examples of the use of j or J as a substitute for the Arabic numeral 1.[38][39][40][41] In German, the serif at the top may be extended into a long upstroke as long as the vertical line. This variation can lead to confusion with the glyph used for seven in other countries and so to provide a visual distinction between the two the digit 7 may be written with a horizontal stroke through the vertical line.[42]In digital technology, data is represented by binary code, i.e., a base-2 numeral system with numbers represented by a sequence of 1s and 0s. Digitised data is represented in physical devices, such as computers, as pulses of electricity through switching devices such as transistors or logic gates where "1" represents the value for "on". As such, the numerical value of true is equal to 1 in many programming languages.[43][44] In lambda calculus and computability theory, natural numbers are represented by Church encoding as functions, where the Church numeral for 1 is represented by the function f {\displaystyle f} applied to an argument x {\displaystyle x} once (1 f x = f x {\displaystyle fx=fx}).[45]In physics, selected physical constants are set to 1 in natural unit systems in order to simplify the form of equations; for example, in Planck units the speed of light equals 1.[46] Dimensionless quantities are also known as 'quantities of dimension one'.[47] In quantum mechanics, the normalization condition for wavefunctions requires the integral of a wavefunction's squared modulus to be equal to 1.[48] In chemistry, hydrogen, the first element of the periodic table and the most abundant element in the known universe, has an atomic number of 1. Group 1 of the periodic table consists of hydrogen and the alkali metals.[49]In philosophy, the number 1 is commonly regarded as a symbol of unity, often representing God or the universe in monotheistic traditions.[50] The Pythagoreans considered the numbers to be plural and therefore did not classify 1 itself as a number, but as the origin of all numbers. In their number philosophy, where odd numbers were considered male and even numbers female, 1 was considered neutral capable of transforming even numbers to odd and vice versa by addition.[50] The Neopythagorean philosopher Nicomachus of Gerasa's number treatise, as recovered by Boethius in the Latin translation Introduction to Arithmetic, affirmed that one is not a number, but the source of number.[51] In the philosophy of Plotinus (and that of other neoplatonists), 'The One' is the ultimate reality and source of all existence.[52] Philo of Alexandria (20BC AD50) regarded the number one as God's number, and the basis for all numbers.[53]10.999... Alternative decimal expansion of 1^ Colman 1912, pp.910, chapt.2.^ Graham, Knuth & Patashnik 1994, p.111.^ Caldwell & Xiong 2012, pp.89.^ a b Kennedy 1974, pp.389.^ Peano 1889, p.1.^ Peano 1908, p.27.^ Halmos 1974, p.32.^ Hodges 2009, p.14.^ Hext 1990.^ Graham, Knuth & Patashnik 1994, p.381.^ Blokhintsev 2012, p.35.^ Pintz 1980, pp.733735.^ Gaitsgory & Lurie 2019, pp.204307.^ Kottwitz 1988.^ Miller 2015, pp.34.^ "Online Etymology Dictionary". etymonline.com. Douglas Harper. Archived from the original on December 30, 2013. Retrieved December 30, 2013.^ Hurford 1994, pp.2324.^ Huddleston, Pullum & Reynolds 2022, p.117.^ Huddleston & Pullum 2002, pp.386.^ Huddleston & Pullum 2002, p.426-427.^ Conway & Guy 1996, pp.34.^ Chrisomalis, Stephen. "Numerical Adjectives, Greek and Latin Number Prefixes". The Phrontistery. Archived from the original on January 29, 2022. Retrieved February 24, 2022.^ Conway & Guy 1996, p.4.^ a b Conway & Guy 1996, p.17.^ Chrisomalis 2010, p.241.^ Chrisomalis 2010, p.244.^ Chrisomalis 2010, p.249.^ Acharya, Eka Ratna (2018). "Evidences of Hierarchy of Brahmi Numeral System". Journal of the Institute of Engineering. 14 (1): 136142. doi:10.3126/jie.v14i1.20077.^ Schubring 2008, pp.147.^ Crystal 2008, pp.289.^ Cullen 2007, p.93.^ Hendel, Richard (2013). Aspects of Contemporary Book Design. University of Iowa Press. p.146. ISBN9781609381752.^ Katz, Joel (2012). Designing Information: Human Factors and Common Sense in Information Design. John Wiley & Sons. p.82. ISBN9781118420096.^ "Why Old Typewriters Lack A "1" Key". Post Haste Telegraph Company. April 2, 2017.^ Polt 2015, pp.203.^ Chicago 1993, pp.52.^ Guastello 2023, pp.453.^ Khler, Christian (November 23, 1693). "Der allzeitfertige Rechenmeister". p.70 via Google Books.^ "Naeuw-keurig reys-boek: bysonderlijk dienstig voor kooplieden, en reysende persoonen, sijnde een trysoor voor den koophandel, in sigh begrijpende alle maate, en gewighte, Boekhouden, Wissel, Asseurantie ...: vorders hoe men ... kan reysen ... door Neederlandt, Duytschlandt, Vrankryk, Spanjen, Portugael en Italin ..." by Jan ten Hoorn. November 23, 1679. p.341 via Google Books.^ "Articvli Defensionales Peremptoriales & Elisivi, Bvrgermaister vnd Raths zu Nrnberg, Contra Brandenburg, In causa die Fraiszlich Obrigkait [et]c: Produ. 7. Feb. Anno [et]c. 33". Heuler. November 23, 1586. p.3. Archived from the original on November 13, 2024. Retrieved December 2, 2023 via Google Books.^ August (Herzog), Braunschweig-Lneburg (November 23, 1624). "Gustavi Seleni Cryptomenytices Et Cryptographiae Libri IX.: In quibus & planiima Steganographiae a Johanne Trithemio ... magice & aenigmatice olim conscriptae, Enodatio traditur; Inspersis ubique Authoris ac Aliorum, non contemnendis inventis". Johann & Heinrich Stern. p.285 via Google Books.^ Huber & Headrick 1999, pp.181.^ Woodford 2006, p.9.^ Godbole 2002, p.34.^ Hindley & Seldin 2008, p.48.^ Glick, Darby & Marmodoro 2020, pp.99.^ Mills 1995, pp.538539.^ McWeeny 1972, pp.14.^ Emsley 2001.^ a b Stewart 2024.^ British Society for the History of Science (July 1, 1977). "From Abacus to Algorism: Theory and Practice in Medieval Arithmetic". The British Journal for the History of Science. 10 (2). Cambridge University Press: Abstract. doi:10.1017/S0007087400015375. S2CID145065082. Archived from the original on May 16, 2021. Retrieved May 16, 2021.^ Halfwassen 2014, pp.182183.^ "De Allegoriis Legum", ii.12 [i.66]Blokhintsev, D. I. (2012). Quantum Mechanics. Springer Science & Business Media. ISBN978-9401097116.Caldwell, Chris K.; Xiong, Yeng (2012). "What is the smallest prime?". Journal of Integer Sequences. 15 (9, Article 12.9.7). Waterloo, CA: University of Waterloo David R. Cheriton School of Computer Science: 114. arXiv:1209.2007. MR3005530. Zbl1285.11001. Archived from the original on 2023-12-16. Retrieved 2023-12-16.Chicago, University of (1993). The Chicago Manual of Style (14thed.). University of Chicago Press. ISBN0-226-10389-7.Chrisomalis, Stephen (2010). Numerical Notation: A Comparative History. New York: Cambridge University Press. doi:10.1017/CBO9780511676062. ISBN978-0-521-87818-0.Colman, Samuel (1912). Coan, C. Arthur (ed.). Nature's Harmonic Unity: A Treatise on Its Relation to Proportional Form. New York and London: G.P. Putnam's Sons.Crystal, D. (2008). A Dictionary of Linguistics and Phonetics (6thed.). Malden, MA: Wiley-Blackwell. ISBN978-0631226642.Conway, John H.; Guy, Richard K. (1996). The Book of Numbers. New York: Copernicus Publications. doi:10.1007/978-1-4612-4072-3. ISBN0614971667. Archived from the original on 2024-11-18. Retrieved 2023-12-17.Cullen, Kristin (2007). Layout Workbook: A Real-World Guide to Building Pages in Graphic Design. Gloucester, MA: Rockport Publishers. pp.1240. ISBN978-1-592-533-527.Emsley, John (2001). Nature's Building Blocks: An A-Z Guide to the Elements (illustrated, reprinted.). Oxford, UK: Oxford University Press. ISBN0198503415.Gaitsgory, Dennis; Lurie, Jacob (2019). Weil's Conjecture for Function Fields (Volume I). Annals of Mathematics Studies. Vol.199. Princeton: Princeton University Press. pp.viii, 1311. doi:10.2307/j.ctv4v32qc. ISBN978-0-691-18213-1. MR3887650. Zbl1439.14006. Archived from the original on 2024-11-12. Retrieved 2023-12-16.Glick, David; Darby, George; Marmodoro, Anna (2020). The Foundation of Reality: Fundamentality, Space, and Time. Oxford University Press. ISBN978-0198831501.Guastello, Stephen J. (2023). Human Factors Engineering and Ergonomics: A Systems Approach (3rded.). CRC press. ISBN978-1000822045.Godbole, Achyut S. (2002). Data Comms & Networks. Tata McGraw-Hill Education. ISBN978-1-259-08223-8.Graham, Ronald L.; Knuth, Donald E.; Patashnik, Oren (1994). Concrete Mathematics (2ed.). Reading, MA: Addison-Wesley. ISBN0-201-14236-8.Halfwassen, Jens (2014). "The Metaphysics of the One". In Remes, Pauliina; Slaveva-Griffin, Svetla (eds.). The Routledge Handbook of Neoplatonism. Routledge Handbooks in Philosophy. Abingdon, Oxfordshire and New York: Routledge. ISBN9781138573963.Halmos, Paul R. (1974). Naive Set Theory. Undergraduate Texts in Mathematics. Springer. pp.vii, 1104. doi:10.1007/978-1-4757-1645-0. ISBN0-387-90092-6. MR0453532.Hext, Jan (1990). Programming Structures: Machines and programs. Vol.1. Prentice Hall. p.33. ISBN9780724809400..Hindley, J. Roger; Seldin, Jonathan P. (2008). Lambda-Calculus and Combinators: An Introduction (2nded.). Cambridge, UK: Cambridge University Press. pp.xi, 1358. ISBN978-1-139-473-248. MR2435558.Hodges, Andrew (2009). One to Nine: The Inner Life of Numbers. New York, NY: W. W. Norton & Company. pp.1330. ISBN9780385672665. S2CID118490841.Huber, Roy A.; Headrick, A. M. (1999). Handwriting Identification: Facts and Fundamentals. CRC Press. ISBN1420048775.Huddleston, Rodney D.; Pullum, Geoffrey K.; Reynolds, Brett (2022). A student's Introduction to English Grammar (2nded.). Cambridge: Cambridge University Press. pp.1418. ISBN978-1-316-51464-1. OCLC1255524478. Archived from the original on 2024-07-12. Retrieved 2023-12-16.Huddleston, Rodney D.; Pullum, Geoffrey K. (2002). The Cambridge grammar of the English language. Cambridge, UK; New York: Cambridge University Press. ISBN978-0-521-43146-0.Hurford, James R. (1994). Grammar: A Student's Guide. Cambridge, UK: Cambridge University Press. pp.1288. ISBN978-0-521-45627-2. OCLC29702087.Kennedy, Hubert C. (1974). "Peano's concept of number". Historia Mathematica. 1 (4): 387408. doi:10.1016/0315-0860(74)90031-7.Kottwitz, Robert E. (1988). "Tamagawa numbers". Annals of Mathematics. 2. 127 (3). Princeton, NJ: Princeton University & the Institute for Advanced Study: 629646. doi:10.2307/2007007. JSTOR2007007. MR0942522.McWeeny, Roy (1972). Quantum Mechanics: Principles and Formalism. Dover Books on Physics (reprinted.). Courier Corporation, 2012. ISBN0486143805.Miller, Steven J., ed. (2015). Benford's law: theory and applications. Princeton, NJ: Princeton University Press. pp.xxvi, 1438. ISBN978-0-691-14761-1. MR3408774. Archived from the original on 2024-07-14. Retrieved 2023-12-16.Mills, I. M. (1995). "Unity as a Unit". Metrologia. 31 (6): 537541. Bibcode:1995Metro..31..537M. doi:10.1088/0026-1394/31/6/013.Peano, Giuseppe (1889). Arithmetices principia, nova methodo exposita [The principles of arithmetic, presented by a new method]. An excerpt of the treatise where Peano first presented his axioms, and recursively defined arithmetical operations. Turin: Fratres Bocca. pp.xvi, 120. JFM21.0051.02.Peano, Giuseppe (1908). Formulario Mathematico [Mathematical Formulary] (Ved.). Turin: Fratres Bocca. pp.xxxvi, 1463. JFM39.0084.01.Pintz, Janos (1980). "On Legendre's Prime Number Formula". The American Mathematical Monthly. 87 (9): 733735. doi:10.2307/2321863. ISSN0002-9890. JSTOR2321863.Polt, Richard (2015). The Typewriter Revolution: A Typist's Companion for the 21st Century. The Countryman Press. ISBN978-1581575873.Schubring, Gert (2008). "Processes of Algebraization". Semiotics in Mathematics Education: Epistemology, History, Classroom, and Culture. By Radford, Luis; Schubring, Gert; Seeger, Falk. Kaiser, Gabriele (ed.). Semiotic Perspectives in the Teaching and Learning of Math Series. Vol.1. Netherlands: Sense Publishers. ISBN978-9087905972.Stewart, Ian (2024). "Number Symbolism". Brittanica. Archived from the original on 2008-07-26. Retrieved 2024-08-21.Woodford, Chris (2006). Digital Technology. Evans Brothers. ISBN978-0-237-52725-9. Retrieved 2016-03-24.Retrieved from " 3

NumberThis article is about the number. For the year AD 1, and other uses, see One (disambiguation) and Number One (disambiguation)This article contains special characters. Without proper rendering support, you may see question marks, boxes, or other symbols.Natural number 0 1 2 1 0 1 2 3 4 5 6 7 8 9 List of numbersIntegers 0 10 20 30 40 50 60 70 80 90 CardinaloneOrdinal1st(first)Numeral systemunaryFactorizationDivisors1Greek numeralRoman numeralI, iGreek prefixmono-/haplo-Latin prefixuni-Binary12Ternary13Senary16Octal18Duodecimal112Hexadecimal116Greek numeral'Arabic, Kurdish, Persian, Sindhi, UrduAssamese & BengaliChinese numeral//DevangarSantaliGe'ezGeorgian//(Ani)HebrewJapanese numeral/KannadaKhmerArmenianMalayalamMeiteiThaiTamilTeluguBabylonian numeralEgyptian hieroglyph, Aegean numeral, Chinese counting rodMayan numeralMorse code. _ _ _ _1 (one, unit, unity) is a number, numeral, and glyph. It is the first and smallest positive integer of the infinite sequence of natural numbers. 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This is a consequence of Benfords law, which states that the probability for a specific leading digit d {\displaystyle d} is log 10 (d + 1 d) {\textstyle \log _{10}\left({\frac {d+1}{d}}\right)} . The tendency for real-world numbers to grow exponentially or logarithmically biases the distribution towards smaller leading digits, with 1 occurring approximately 30% of the time.[15]See also: One (pronoun)One originates from the Old English word an, derived from the Germanic root *ainaz, from the Proto-Indo-European root *oi-no- (meaning "one, unique").[16] Linguistically, one is a cardinal number used for counting and expressing the number of items in a collection of things.[17] One is most commonly a determiner used with singular countable nouns, as in one day at a time.[18] The determiner has two senses: numerical one (I have one apple) and singulative one (one day I'll do it).[19] One is also a gender-neutral pronoun used to refer to an unspecified person or to people in general as in one should take care of oneself.[20]Words that derive their meaning from one include alone, which signifies all one in the sense of being by oneself, none meaning not one, once denoting one time, and atone meaning to become at one with the someone. Combining alone with only (implying one-like) leads to lonely, conveying a sense of solitude.[21] Other common numeral prefixes for the number 1 include uni- (e.g., unicycle, universe, unicorn), sol- (e.g., solo dance), derived from Latin, or mono- (e.g., monorail, monogamy, monopoly) derived from Greek.[22][23]See also: History of the HinduArabic numeral systemAmong the earliest known records of a numeral system, is the Sumerian decimal-sexagesimal system on clay tablets dating from the first half of the third millenniumBCE.[24] Archaic Sumerian numerals for 1 and 60 both consisted of horizontal semi-circular symbols, [25] by c.2350 BCE, the older Sumerian curviform numerals were replaced with cuneiform symbols, with 1 and 60 both represented by the same mostly vertical symbol. The Sumerian cuneiform system is a direct ancestor to the Eblaite and Assyro-Babylonian Semitic cuneiform decimal systems.[26] Surviving Babylonian documents date mostly from Old Babylonian (c.1500 BCE) and the Seleucid (c.300 BCE) eras.[24] The Babylonian cuneiform script notation for numbers used the same symbol for 1 and 60 as in the Sumerian system.[27]The most commonly used glyph in the modern Western world to represent the number 1 is the Arabic numeral, a vertical line, often with a serif at the top and sometimes a short horizontal line at the bottom. It can be traced back to the Brahmic script of ancient India, as represented by Ashoka as a simple vertical line in his Edicts of Ashoka in c.250BCE.[28] This script's numeral shapes were transmitted to Europe via the Maghreb and Al-Andalus during the Middle Ages [29] The Arabic numeral, and other glyphs used to represent the number one (e.g., Roman numeral (I), Chinese numeral ()) are logograms. These symbols directly represent the concept of 'one' without breaking it down into phonetic components.[30]This Woodstock typewriter from the 1940s lacks a separate key for the numeral 1.Hoefler Text, a typeface designed in 1991, uses text figures and represents the numeral 1 as similar to a small-caps I.In modern typefaces, the shape of the character for the digit 1 is typically typeset as a lining figure with an ascender, such that the digit is the same height and width as a capital letter. However, in typefaces with text figures (also known as Old style numerals or non-lining figures), the glyph usually is of x-height and designed to follow the rhythm of the lowercase, as, for example, in .[31] In many typefaces with text figures, the numeral 1 features parallel serifs at the top and bottom, resembling a small caps version of the Roman numeral I.[32][33] Many older typewriters do not have a dedicated key for the numeral 1, requiring the use of the lowercase letter L or uppercase I as substitutes.[34][35][36][37]The 24-hour tower clock in Venice, using J as a symbol for 1The lower case "j" can be considered a swash variant of a lower-case Roman numeral "i", often employed for the final i of a "lower-case" Roman numeral. It is also possible to find historic examples of the use of j or J as a substitute for the Arabic numeral 1.[38][39][40][41] In German, the serif at the top may be extended into a long upstroke as long as the vertical line. This variation can lead to confusion with the glyph used for seven in other countries and so to provide a visual distinction between the two the digit 7 may be written with a horizontal stroke through the vertical line.[42]In digital technology, data is represented by binary code, i.e., a base-2 numeral system with numbers represented by a sequence of 1s and 0s. Digitised data is represented in physical devices, such as computers, as pulses of electricity through switching devices such as transistors or logic gates where "1" represents the value for "on". As such, the numerical value of true is equal to 1 in many programming languages.[43][44] In lambda calculus and computability theory, natural numbers are represented by Church encoding as functions, where the Church numeral for 1 is represented by the function f {\displaystyle f} applied to an argument x {\displaystyle x} once (1 f x = f x {\displaystyle fx=fx}).[45]In physics, selected physical constants are set to 1 in natural unit systems in order to simplify the form of equations; for example, in Planck units the speed of light equals 1.[46] Dimensionless quantities are also known as 'quantities of dimension one'.[47] In quantum mechanics, the normalization condition for wavefunctions requires the integral of a wavefunction's squared modulus to be equal to 1.[48] In chemistry, hydrogen, the first element of the periodic table and the most abundant element in the known universe, has an atomic number of 1. Group 1 of the periodic table consists of hydrogen and the alkali metals.[49]In philosophy, the number 1 is commonly regarded as a symbol of unity, often representing God or the universe in monotheistic traditions.[50] The Pythagoreans considered the numbers to be plural and therefore did not classify 1 itself as a number, but as the origin of all numbers. In their number philosophy, where odd numbers were considered male and even numbers female, 1 was considered neutral capable of transforming even numbers to odd and vice versa by addition.[50] The Neopythagorean philosopher Nicomachus of Gerasa's number treatise, as recovered by Boethius in the Latin translation Introduction to Arithmetic, affirmed that one is not a number, but the source of number.[51] In the philosophy of Plotinus (and that of other neoplatonists), 'The One' is the ultimate reality and source of all existence.[52] Philo of Alexandria (20BC AD50) regarded the number one as God's number, and the basis for all numbers.[53]10.999... Alternative decimal expansion of 1^ Colman 1912, pp.910, chapt.2.^ Graham, Knuth & Patashnik 1994, p.111.^ Caldwell & Xiong 2012, pp.89.^ a b Kennedy 1974, pp.389.^ Peano 1889, p.1.^ Peano 1908, p.27.^ Halmos 1974, p.32.^ Hodges 2009, p.14.^ Hext 1990.^ Graham, Knuth & Patashnik 1994, p.381.^ Blokhintsev 2012, p.35.^ Pintz 1980, pp.733735.^ Gaitsgory & Lurie 2019, pp.204307.^ Kottwitz 1988.^ Miller 2015, pp.34.^ "Online Etymology Dictionary". etymonline.com. Douglas Harper. Archived from the original on December 30, 2013. Retrieved December 30, 2013.^ Hurford 1994, pp.2324.^ Huddleston, Pullum & Reynolds 2022, p.117.^ Huddleston & Pullum 2002, pp.386.^ Huddleston & Pullum 2002, p.426-427.^ Conway & Guy 1996, pp.34.^ Chrisomalis, Stephen. "Numerical Adjectives, Greek and Latin Number Prefixes". The Phrontistery. Archived from the original on January 29, 2022. Retrieved February 24, 2022.^ Conway & Guy 1996, p.4.^ a b Conway & Guy 1996, p.17.^ Chrisomalis 2010, p.241.^ Chrisomalis 2010, p.244.^ Chrisomalis 2010, p.249.^ Acharya, Eka Ratna (2018). "Evidences of Hierarchy of Brahmi Numeral System". Journal of the Institute of Engineering. 14 (1): 136142. doi:10.3126/jie.v14i1.20077.^ Schubring 2008, pp.147.^ Crystal 2008, pp.289.^ Cullen 2007, p.93.^ Hendel, Richard (2013). Aspects of Contemporary Book Design. University of Iowa Press. p.146. ISBN9781609381752.^ Katz, Joel (2012). Designing Information: Human Factors and Common Sense in Information Design. John Wiley & Sons. p.82. ISBN9781118420096.^ "Why Old Typewriters Lack A "1" Key". Post Haste Telegraph Company. April 2, 2017.^ Polt 2015, pp.203.^ Chicago 1993, pp.52.^ Guastello 2023, pp.453.^ Khler, Christian (November 23, 1693). "Der allzeitfertige Rechenmeister". p.70 via Google Books.^ "Naeuw-keurig reys-boek: bysonderlijk dienstig voor kooplieden, en reysende persoonen, sijnde een trysoor voor den koophandel, in sigh begrijpende alle maate, en gewighte, Boekhouden, Wissel, Asseurantie ...: vorders hoe men ... kan reysen ... door Neederlandt, Duytschlandt, Vrankryk, Spanjen, Portugael en Italin ..." by Jan ten Hoorn. November 23, 1679. p.341 via Google Books.^ "Articvli Defensionales Peremptoriales & Elisivi, Bvrgermaister vnd Raths zu Nrnberg, Contra Brandenburg, In causa die Fraiszlich Obrigkait [et]c: Produ. 7. Feb. Anno [et]c. 33". Heuler. November 23, 1586. p.3. Archived from the original on November 13, 2024. Retrieved December 2, 2023 via Google Books.^ August (Herzog), Braunschweig-Lneburg (November 23, 1624). "Gustavi Seleni Cryptomenytices Et Cryptographiae Libri IX.: In quibus & planiima Steganographiae a Johanne Trithemio ... magice & aenigmatice olim conscriptae, Enodatio traditur; Inspersis ubique Authoris ac Aliorum, non contemnendis inventis". Johann & Heinrich Stern. p.285 via Google Books.^ Huber & Headrick 1999, pp.181.^ Woodford 2006, p.9.^ Godbole 2002, p.34.^ Hindley & Seldin 2008, p.48.^ Glick, Darby & Marmodoro 2020, pp.99.^ Mills 1995, pp.538539.^ McWeeny 1972, pp.14.^ Emsley 2001.^ a b Stewart 2024.^ British Society for the History of Science (July 1, 1977). "From Abacus to Algorism: Theory and Practice in Medieval Arithmetic". The British Journal for the History of Science. 10 (2). Cambridge University Press: Abstract. doi:10.1017/S0007087400015375. S2CID145065082. Archived from the original on May 16, 2021. Retrieved May 16, 2021.^ Halfwassen 2014, pp.182183.^ "De Allegoriis Legum", ii.12 [i.66]Blokhintsev, D. I. (2012). Quantum Mechanics. Springer Science & Business Media. ISBN978-9401097116.Caldwell, Chris K.; Xiong, Yeng (2012). "What is the smallest prime?". Journal of Integer Sequences. 15 (9, Article 12.9.7). Waterloo, CA: University of Waterloo David R. Cheriton School of Computer Science: 114. arXiv:1209.2007. MR3005530. Zbl1285.11001. Archived from the original on 2023-12-16. Retrieved 2023-12-16.Chicago, University of (1993). The Chicago Manual of Style (14thed.). University of Chicago Press. ISBN0-226-10389-7.Chrisomalis, Stephen (2010). Numerical Notation: A Comparative History. New York: Cambridge University Press. doi:10.1017/CBO9780511676062. ISBN978-0-521-87818-0.Colman, Samuel (1912). Coan, C. Arthur (ed.). Nature's Harmonic Unity: A Treatise on Its Relation to Proportional Form. New York and London: G.P. Putnam's Sons.Crystal, D. (2008). A Dictionary of Linguistics and Phonetics (6thed.). Malden, MA: Wiley-Blackwell. ISBN978-0631226642.Conway, John H.; Guy, Richard K. (1996). The Book of Numbers. New York: Copernicus Publications. doi:10.1007/978-1-4612-4072-3. ISBN0614971667. Archived from the original on 2024-11-18. Retrieved 2023-12-17.Cullen, Kristin (2007). Layout Workbook: A Real-World Guide to Building Pages in Graphic Design. Gloucester, MA: Rockport Publishers. pp.1240. ISBN978-1-592-533-527.Emsley, John (2001). Nature's Building Blocks: An A-Z Guide to the Elements (illustrated, reprinted.). Oxford, UK: Oxford University Press. ISBN0198503415.Gaitsgory, Dennis; Lurie, Jacob (2019). Weil's Conjecture for Function Fields (Volume I). Annals of Mathematics Studies. Vol.199. Princeton: Princeton University Press. pp.viii, 1311. doi:10.2307/j.ctv4v32qc. ISBN978-0-691-18213-1. MR3887650. Zbl1439.14006. Archived from the original on 2024-11-12. Retrieved 2023-12-16.Glick, David; Darby, George; Marmodoro, Anna (2020). The Foundation of Reality: Fundamentality, Space, and Time. Oxford University Press. ISBN978-0198831501.Guastello, Stephen J. (2023). Human Factors Engineering and Ergonomics: A Systems Approach (3rded.). CRC press. ISBN978-1000822045.Godbole, Achyut S. (2002). Data Comms & Networks. Tata McGraw-Hill Education. ISBN978-1-259-08223-8.Graham, Ronald L.; Knuth, Donald E.; Patashnik, Oren (1994). Concrete Mathematics (2ed.). Reading, MA: Addison-Wesley. ISBN0-201-14236-8.Halfwassen, Jens (2014). "The Metaphysics of the One". In Remes, Pauliina; Slaveva-Griffin, Svetla (eds.). The Routledge Handbook of Neoplatonism. Routledge Handbooks in Philosophy. Abingdon, Oxfordshire and New York: Routledge. ISBN9781138573963.Halmos, Paul R. (1974). Naive Set Theory. Undergraduate Texts in Mathematics. Springer. pp.vii, 1104. doi:10.1007/978-1-4757-1645-0. ISBN0-387-90092-6. MR0453532.Hext, Jan (1990). Programming Structures: Machines and programs. Vol.1. Prentice Hall. p.33. ISBN9780724809400..Hindley, J. Roger; Seldin, Jonathan P. (2008). Lambda-Calculus and Combinators: An Introduction (2nded.). Cambridge, UK: Cambridge University Press. pp.xi, 1358. ISBN978-1-139-473-248. MR2435558.Hodges, Andrew (2009). One to Nine: The Inner Life of Numbers. New York, NY: W. W. Norton & Company. pp.1330. ISBN9780385672665. S2CID118490841.Huber, Roy A.; Headrick, A. M. (1999). Handwriting Identification: Facts and Fundamentals. CRC Press. ISBN1420048775.Huddleston, Rodney D.; Pullum, Geoffrey K.; Reynolds, Brett (2022). A student's Introduction to English Grammar (2nded.). Cambridge: Cambridge University Press. pp.1418. ISBN978-1-316-51464-1. OCLC1255524478. Archived from the original on 2024-07-12. Retrieved 2023-12-16.Huddleston, Rodney D.; Pullum, Geoffrey K. (2002). The Cambridge grammar of the English language. Cambridge, UK; New York: Cambridge University Press. ISBN978-0-521-43146-0.Hurford, James R. (1994). Grammar: A Student's Guide. Cambridge, UK: Cambridge University Press. pp.1288. ISBN978-0-521-45627-2. OCLC29702087.Kennedy, Hubert C. (1974). "Peano's concept of number". Historia Mathematica. 1 (4): 387408. doi:10.1016/0315-0860(74)90031-7.Kottwitz, Robert E. (1988). "Tamagawa numbers". Annals of Mathematics. 2. 127 (3). Princeton, NJ: Princeton University & the Institute for Advanced Study: 629646. doi:10.2307/2007007. JSTOR2007007. MR0942522.McWeeny, Roy (1972). Quantum Mechanics: Principles and Formalism. Dover Books on Physics (reprinted.). Courier Corporation, 2012. ISBN0486143805.Miller, Steven J., ed. (2015). Benford's law: theory and applications. Princeton, NJ: Princeton University Press. pp.xxvi, 1438. ISBN978-0-691-14761-1. MR3408774. Archived from the original on 2024-07-14. Retrieved 2023-12-16.Mills, I. M. (1995). "Unity as a Unit". Metrologia. 31 (6): 537541. Bibcode:1995Metro..31..537M. doi:10.1088/0026-1394/31/6/013.Peano, Giuseppe (1889). Arithmetices principia, nova methodo exposita [The principles of arithmetic, presented by a new method]. An excerpt of the treatise where Peano first presented his axioms, and recursively defined arithmetical operations. Turin: Fratres Bocca. pp.xvi, 120. JFM21.0051.02.Peano, Giuseppe (1908). Formulario Mathematico [Mathematical Formulary] (Ved.). Turin: Fratres Bocca. pp.xxxvi, 1463. JFM39.0084.01.Pintz, Janos (1980). "On Legendre's Prime Number Formula". The American Mathematical Monthly. 87 (9): 733735. doi:10.2307/2321863. ISSN0002-9890. JSTOR2321863.Polt, Richard (2015). The Typewriter Revolution: A Typist's Companion for the 21st Century. The Countryman Press. ISBN978-1581575873.Schubring, Gert (2008). "Processes of Algebraization". Semiotics in Mathematics Education: Epistemology, History, Classroom, and Culture. By Radford, Luis; Schubring, Gert; Seeger, Falk. Kaiser, Gabriele (ed.). Semiotic Perspectives in the Teaching and Learning of Math Series. Vol.1. Netherlands: Sense Publishers. ISBN978-9087905972.Stewart, Ian (2024). "Number Symbolism". Brittanica. Archived from the original on 2008-07-26. Retrieved 2024-08-21.Woodford, Chris (2006). Digital Technology. Evans Brothers. ISBN978-0-237-52725-9. Retrieved 2016-03-24.

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Lets sprinkle some subtraction magic and watch those little minds conquer numbers with flair. Here are some of my favorite tips on Teaching Subtraction To Little Learners. Teaching subtraction is no ordinary math mission. Your little learners must have already aced the art of addition. Now get ready to dive into a sea of creative strategies and activities to ensure your little learners are subtraction math whizzes in no time! Introducing Subtraction Concept Subtraction is a key mathematical process that focuses on determining the variance between two numbers, rather than just being the reverse of addition. To kick off, I utilize an anchor chart to explicitly explain the concept and engage the whole group in learning. (The Subtraction Strategies Book equips you with all the tools to effectively teach 8 diverse Subtraction Strategies to little learners! Can be found at my KC STORE and TPT.) Provide Hands-On Activities After introducing the subtraction concept and working with the whole group, its now time for independent practice. Engaging in hands-on activities is a highly effective method to enhance subtraction skills in mathematics for little learners. Use manipulatives such as blocks or counters to help make the concept more tangible and easier to understand for kindergarteners. Start with simple subtraction problems involving small numbers to build a strong foundation before moving on to more complex calculations. (Subtraction Strategies) Games and Interactive Practice Activities Integrate entertaining games and interactive activities to create an enjoyable and engaging experience for your kindergarten students while teaching subtraction. (Dice Games Year Long Bundle) @kindergarten_chaos Did you MISS THIS AWESOME RESOURCE?!One of the best tools for math practice is dice! Dice are inexpensive and can be found at any discount store. Dice Games and Activities can help little learners develop important skills such as counting, number ID, and basic math operations, plus its a hands-on activity, which means more purposeful practice. Have you ever wanted a BUNDLE of dice games and simple activities that you could pull out for math tubs and use ALL year long? Then this bundle is definitely for you and your little learners! 39 different dice games that can be played with or without partners. And dont forget that playing games with others can promote social and emotional development, as it encourages turn-taking, sharing, and communication.#kindergartenchaos #kindergarten #handsonlearning #morningbins sail away (instrumental) lovelytheband Providie visual aids like number lines or pictures to aid in reinforcing the concept of subtraction. (Subtraction Slide **FREEBIE**) Purposeful Practice Encouraging your little learners to apply subtraction in everyday scenarios like sharing snacks or counting objects can demonstrate the real-world relevance of this skill. Providing positive feedback and recognition when they effectively solve subtraction challenges can enhance their self-assurance and enthusiasm for further learning. Its important to be patient and provide ample opportunities for meaningful practice to ensure that your little learners master the skill of subtraction effectively. (Math Tool Kit For Little Learners) and (Purposeful Math Centers For Little Learners) Tagged 1st grade, freebies, games, homeschool, kindergarten, math, pre k, printables, subtraction, worksheets Mastering basic subtraction facts requires efficient methods and strategies for student success. This means that students need a variety of engaging activities to develop reasoning strategies that make sense and work. By practicing these strategies, students work towards automatically knowing their subtraction math facts.When students become fluent in their facts, they are able to:*show flexibility in solving problems*use appropriate strategies*become efficient in solving problems*show accuracyIn Unit 6 of the Math Made Fun Curriculum, students will be given a wide variety of opportunities and ways to solve simple math subtraction facts. Math becomes a game when provided with 24 hands-on learning centers and over 60 pages of NO PREP Practice Pages to help master basic subtraction facts up to 10. As students become proficient and confident in mastering these facts, they can move on to more complex math problems and procedures.KINDERGARTEN MATH MADE FUN CURRICULUMCheck out the other Kindergarten Math Units in action:Unit 1 (Numbers 1-10)Unit 2 (Numbers 11-20)Unit 3 (Counting to 100)Unit 4 (Comparing Numbers 1-10)Unit 5 (Addition)Unit 7 (Base Ten/Place Value)Unit 8 (Measurement and Data)Unit 9 (Shapes)Unit 10 (Time to the Hour)Unit 11 (Money)Click here to check out the 1st Grade Math Made Fun Curriculum!Save BIG with the BUNDLE! Available HERELETS LOOK AT THE MATH CENTERS FOR UNIT 6 IN ACTIONCenter Number 1:Fish Bowl Subtraction to 5Flip a card. Solve the subtraction problem and cover a fish on your board. Continue until your board is full. Center Number 2:Kitty Cat Subtraction:Flip a card. Solve the subtraction problem and cover a ball of yarn on your board. Continue until your board is full.Center Number 3:Ten Frame Subtraction within 5Color (or use other manipulatives) to show the total number sentence on the ten frame. Write an X over the number of squares you subtract to solve. In this example, we used playdoh and squashed the number to subtract. This can be a GREAT way to create kinesthetic learning. Record your answers.Center Number 4:Subtraction Within 10Use manipulatives to solve the subtraction problem. Write the answers with a dry erase marker on the card.Center Number 5:Cross-It-Off SubtractionWith a dry erase marker,cross off the number of objects to solve the subtraction problem. Center Number 6:Pumpkin Seed SubtractionCount the number of seeds on the pumpkin. Subtract the number in the corner. Then find an equation to match.Center Number 7:Bowling Pin SubtractionCount the number of bowling pins. Subtract the number in the corner.Then find an equation to match.Center Number 8: Bubble SubtractionCount the number of bubbles. Subtract the number in the corner.Then find an equation to match.Center Number 9: Bead SubtractionCount the number of beads. Subtract the number in the corner.Then find an equation to match.Center Number 10: Donut SubtractionUse the donut manipulatives and ten frame mat to solve the subtraction problem. Write the answer.Center Number 11: Domino SubtractionPick a domino. Subtract the smaller number of dots from the larger number of dots. Draw the dots and write the equation on the recording sheet.Center Number 12: Subtraction HousesUse a dry erase marker (or other manipulatives) to cross off or cover the objects to solve the subtraction problem. Number 13: Decomposing NumbersUse manipulatives to break up the numbers. Record the new number combinations on the recording sheet. Center Number 14: Popsicle SubtractionMatch up the subtraction problems with the correct answers. Then record the answers.Center Number 15: Subtraction Tic-Tac-ToeTake turns with a friend solving the subtraction problems on the board. Each player uses a different color to write the answers. The first person to get three in a row wins. Center Number 16: Apples Count and SubtractCount the number of apples. Then subtract the given number and record the answer.Center Number 17: Subtraction PuzzlesSolve the problem. Find a matching puzzle piece that shows the same subtraction problem. Record the subtraction equation.Center Number 18: Feed Me- True or False?Flip a card. Decide if the equation is true or false and feed the correct laundry basket. Center Number 19: I Spy Subtraction Up to 5Using a magnifying glass, find the subtraction facts in the picture. Solve the problems and record.Center Number 20: I Spy Subtraction Up to 10Using a magnifying glass, find the subtraction facts in the picture. Solve the problems and record.Center Number 21: Word Problems Up to 5Read the word problem. Use the dogs to build the problem on the five frame and solve. Center Number 22: Story ProblemsRead the story. Use a dry erase maker to draw a picture in the space, write the equation, and show your work on the number line. There are 20 word problems for students to solve.Center Number 23: Write the Room (Subtraction Up to 5)Find the cards around the room. Read the subtraction problem. Write the answer in the correct box.Center Number 24: Write the Room (Subtraction Up to 10)Find the cards around the room. Read the subtraction problem. Cross out the donuts to subtract. Write the problem.THERE ARE 61 NO PREP PRACTICE PAGES INCLUDED IN UNIT 6For each page, there is a grade level standard attached so you know EXACTLY what you are covering! You can feel confident that ALL the standards for Kindergarten are being covered!Lets see some pictures in action HOW DO I ORGANIZE THE UNITS?I chose to store the math centersin Sterilite bins, because they dont take up too much space. It is a tight fit, but I find that they work nicely for me. However, if you choose, you could store the centers in a larger container as well. Within the bin, each math center is stored in a gallon sized ziplock baggie.You can purchase Unit 6 individually HERE orSAVE BIG WITH THE BUNDLE HEREClick here to check out the 1st Grade Math Made Fun Curriculum! Today we are going to be talking about how to teach place value in Kindergarten. Place value is important as it builds the foundation to every maths concept within your students learning throughout their whole schooling career.Do you want some free Math resources? Sign up here to receive a free Math Early Skills Pack, perfect for assessing a range of your students math skills all year round. After signing up, you will be the first to learn about my new teaching resources, teacher tips and blog posts making sure you always have fun teaching ideas all year round! Click here to sign up!So simply put, place value is the value of each digit in a number. An example of this would be the value of the 6 in 560 is 60 but the value of the 6 in 670 is 600. Students need to learn that although the digit can be the same the value depends on its position in a number. Place value is essential as it is important that children understand the value of a digit in a number. They need to learn that even though the digit is the same, its value can be different depending on its position. Place value is important as it allows children to add, subtract, multiply and divide effectively and affects other areas of maths too. Learning place value forms the foundations of regrouping, multiple digit multiplication and the decimal system, which is key when learning about money as place value enables children to understand the true value of money. For ready made Place Value activities check out my activity bundle above!Place value is used in lots of areas of our lives making it an essential concept for children to understand. We use place value when telling the time as we deal with hours and minutesMoney is another area which features place value as we can deal with pounds & pence or dollars & cents etc. Children need to learn how to convert pounds into pence or how many cents are in a dollar. Measure is another area of our lives where place value is featured. When learning about distance, length, weight and volume, children need to effectively use different units of measurement such as kilometres, metres, kilograms, grams, litres, millimetres etc. Students also need to learn how to convert between different units of measure. When deciding if your children are ready to learn about place value, first you need to ensure they have a good understanding of adding and subtracting within ten as this forms the basis of place value. My addition and subtraction resources include various activities as well as a weekly plan to help you teach addition and subtraction using number lines, ten frames, the part part whole model and word problems. When explaining place value to your students, first you can talk about the difference between a digit and a number. Explain that numbers are made of digits and that digits can have different values depending on their position in the number. Ensure your students know what you mean by the words digit, number and value. Once you are happy your students are confident using these words and understand their meaning, you can then go on to explain how a digit in a number can have a different value have depending on its position. When teaching place value, first you need to ensure students have a good understanding of numbers 1-10 and can confidently add and subtract within ten. Your next step would be to introduce skip counting and counting in tens. This will give your students a sense of grouping numbers into ten. You can also show students how to group concrete materials into 2s, 5s and 10s and demonstrate to them that is easier to count objects in these groups. Make sure to give them lots of practise doing this with concrete materials. Next, you can explain the difference between numbers and digits to your students. Talk about how we combine digits to make numbers. You can show a few examples. So, if we have a 2 and 7, they can be just 2 and 7 on their own, however, if we put them together, we get 27, which is a different number. You can even swap the same digits about to show your students how the number changes even though we are using the same digits. So, for example, 71 is a much higher number than 17 but both numbers are using the same digits. This is a good way to explain place value to students who are finding it tricky to understand the importance of the position of the digit. Using base ten materials would be the next stage when teaching place value. Introduce exchanging 10 ones for 1 ten. Give your children lots of practise doing this. Make sure your students have a strong sense of ten. Ensure they are comfortable with counting to ten, exchanging whenever they reach ten and skip counting in tens. You can also do the reverse of this and ask your students to exchange 1 ten for 10 ones. This will be useful when learning how to regroup in subtraction later on.Next, you can show written numbers and explain the tens position and the ones position in the numbers. Ask students to tell you how many tens and ones are featured in the written numbers. Children can then practise building the numbers showing tens and ones using concrete materials. My Place Value activities which cover tens and ones as well as hundreds, tens and ones will give your students lots of practise at reading and representing two-digit and three-digit numbers. When students are ready, you can now ask them to write numbers in expanded form. This is a great way to develop place value understanding. For example, write the number 237 as 200+30+7. Keep an eye out for a common misconception here where students may write this is as 2+3+7. My Place Value task cards will give your students lots of practise at writing numbers in expanded form as well as standard form and word form.Some students struggle to understand why the same digit does not have the same value in a number. Why does a 9 in the ones place mean 9 and a 9 in the tens place mean 90? Often children with dyslexia find place value challenging. Sometimes children are taught a method, for example in multiple digit addition or subtraction but dont completely understand why they are borrowing or regrouping. They know the method but lack the understanding of what they are doing. Learning how the number 0 works within place value is another area of challenge for children when learning about place value. Students need to learn that 0 is a place holder. Place value can contradict what children have already learned about the number system which can cause some students to struggle with understanding place value. Why is the 1 in 1785 have a higher value then the 8 in the same number? Make sure to use lots of concrete materials. Base ten materials or dienes are great as you have materials that represent ones, tens, hundreds and so on. You can also use unifix cubes up to tens and ones or even loose parts. Having concrete materials when teaching place value will make it easier for your students to understand as they can manipulate and clearly see how numbers are structured. The resources included in my Place Value resource bundle all feature base ten materials giving your students even more practise at using these when learning about place value.Ensuring you spend enough time explaining each position in numbers for the ones, tens, hundreds etc will also make teaching place value easier. You can talk about the number of zeros if appropriate when looking at larger numbers such as 1000, 10 000 and so on.Practising exchanging will also make teaching place value easier for you and your students. Ensure you spend plenty of time exchanging 10 ones for 1 ten and using concrete materials. This will help consolidate that 1 ten is equal to 10 ones and 1 ten can be split up into 10 ones. This will also be useful when students then go on to learn addition & subtraction with regrouping.Lots and lots of practise! It is always a good idea to revisit place value with different ages and stages even if have covered it before. By using lots of hands-on place value activities featuring concrete materials and manipulatives, you are sure to make teaching place value fun. Ensure to have lots of opportunities to build numbers, exchanging tens and ones etc. My Place Value Build it Mats are great for giving your students lots of practise at building two digit numbers. You can also set up a classroom shop with money when your students are ready. Lots of games and activities like math centers are a great way to teaching place value in an engaging way too. I have described some examples below. Arranging & counting objects in 2s, 5s and 10s.Exchanging, counting out objects, when you reach ten you need to exchange 10 ones for 1 ten. You can do using a dice. Roll an amount of ones to add to your pile then exchange when you reach 10.Exchanging in reverse. Practise exchanging tens for groups of 10 ones.Building numbers give your students a number and ask them to build the number showing the tens and ones. You can use base ten materials, loose parts etc. My Place Value Build it Mats feature two digit numbers at the top of each mat for your students to build ensuring they show the correct number of tens and ones. Overall, Place value can be a tricky concept for children to grasp but it is extremely important as it forms the foundation of all other areas of numeracy and maths. Keep in mind, children may find understanding how the value of each digit can be different depending on its position and you may need to think of various ways to reinforce this concept. Remember to keep learning about place value engaging and fun to keep your students hooked. This should be easy as place value benefits from having lots of opportunities to use concrete materials. ,the free encyclopedia that anyone can edit.107,590 active editors 7,027,478 articles in EnglishDon Bradman, the Australian captainThe Second Test of the 1948 Ashes series was one of five Tests in The Ashes cricket series between Australia and England. The match was played at Lord's in London between 24 and 29June 1948. Australia won the match by 409 runs to take a 20 lead, meaning that England would need to win the remaining three matches to regain The Ashes. The Australian captain Don Bradman (pictured) won the toss and elected to bat. Australia scored 350 in their first innings. England finished their first innings at 215 early on the third morning; the Australian paceman Ray Lindwall took 5/70. Australia reached 460/7 in their second innings before Bradman declared, setting England a target of 596. The hosts reached 106/3 at stumps on the fourth day, but then collapsed on the final morning to be all out for 186, handing Australia a 409-run victory. The leading English batsman Len Hutton was controversially dropped for the following match. The match set a new record for the highest attendance at a Test in England. (Fullarticle...)Recently featured: Daily News BuildingHippocampusRed (Taylor Swift album)ArchiveBy emailMore featured articlesAboutOphicleide... that the ophicleide (example pictured) was used in early British brass bands in the 19th century before being replaced by the euphonium?... that, at the 1964 Summer Olympics, high jumper Henri Elend placed first in the qualifiers and placed last in the final?... that the audience at the premiere of the film Viet Flakes unknowingly controlled the projection equipment through their physical responses to images of the Vietnam War?... that luger Verona Marjanovi had to run through an airport while bullets were being fired to train in Germany?... that Robert Baker Park in Baltimore was named after Robert Lewis Baker, whose personal garden was recreated at the city's Flower and Garden Show the year after his death?... that Kathleen O'Melia's conversion to the Catholic Church so embarrassed the Anglican Church in Vancouver that there are almost no references to it in primary sources?... that a 1995 demonstration of the 1969-era AL1 microprocessor using Nintendo Entertainment System cartridges successfully challenged Texas Instruments' patents on the microprocessor?... that it took a two-year "campaign" from future NFL player Fred Shirey, his friends and coaches for Shirey's father to allow him to try out for his high school team?... that the reconstructed ancestral language of the Siouan languages had two sounds that linguists call "funny w" and "funny r"?ArchiveStart a new articleNominate an articleOzzy OsbourneOzzy Osbourne (pictured), the lead singer of Black Sabbath, dies at the age of 76.A fighter jet crashes into a college in Dhaka, Bangladesh, killing more than 30 people.In golf, Scottie Scheffler wins the Open Championship.A tourist boat capsizes during a thunderstorm in H Long Bay, Vietnam, leaving at least 36 people dead.Ongoing: Gaza warRussian invasion of UkrainetimelineSudanese civil wartimelineRecent deaths: Bryan BramanPhoebe AsiyoGary KarrClaus PeymannWayne ThomasAndrea GibsonNominate an articleJuly 24: Pioneer Day in Utah, United States (1847)Depiction of the Albanian revolt of 19101411 Scottish clansmen led by Donald of Islay, Lord of the Isles, and Alexander Stewart, Earl of Mar, fought the Battle of Harlaw near Inverurie, Scotland.1910 Ottoman forces captured the city of Shkodr, ending the Albanian revolt of 1910 (depicted).1920 Franco-Syrian War: At the Battle of Maysalun forces of the Arab Kingdom of Syria were defeated by a French army moving to occupy the territory allocated to them by the San Remo conference.1923 The Treaty of Lausanne was signed to settle part of the partition of the Ottoman Empire, establishing the boundaries of Greece, Bulgaria and Turkey.2019 Boris Johnson became Prime Minister of the United Kingdom after winning the Conservative Party leadership election.Martin Van Buren (d.1862)Zelda Fitzgerald (b.1900)Nayib Bukele (b.1981)Hamzah Haz (d.2024)More anniversaries: July 23July 24July 25ArchiveBy emailList of days of the yearAboutThe emperor angelfish (Pomacanthus imperator) is a species in the marine angelfish family Pomacanthidae. It is a reef-associated fish, native to the Indian and Pacific Oceans, from the Red Sea to Hawaii and the Austral Islands. Adults are found in areas where there is a rich growth of corals on clear lagoon, channel, or seaward reefs, at depths between 1 and 100 metres (3 and 330 feet). The emperor angelfish shows a marked difference between the juveniles and the adults. The juveniles have a dark blue body, which is marked with concentric curving lines, alternating between pale blue and white, while adults are striped with blue and yellow horizontal stripes, a light blue face with a dark blue mask over the eyes and a yellow caudal fin. It can attain a maximum total length of around 40 centimetres (16 inches). This adult emperor angelfish was photographed in the Red Sea off the coast of Egypt.Photograph credit: Diego DelsoRecently featured: Amlia RodriguesAtari video game burialSouthern scrub robinArchiveMore featured picturesCommunity portal The central hub for editors, with resources, links, tasks, and announcements.Village pump Forum for discussions about Wikipedia itself, including policies and technical issues.Site news Sources of news about Wikipedia and the broader Wikimedia movement.Teahouse Ask basic questions about using or editing Wikipedia.Help desk Ask questions about using or editing Wikipedia.Reference desk Ask research questions about encyclopedic topics.Content portals A unique way to navigate the encyclopedia.Wikipedia is written by volunteer editors and hosted by the Wikimedia Foundation, a non-profit organization that also hosts a range of other volunteer projects: CommonsFree media repository MediaWikiWiki software development Meta-WikiWikimedia project coordination WikibooksFree textbooks and manuals

WikidataFree knowledge base WikinewsFree-content news WikiquoteCollection of quotations WikisourceFree-content library WikispeciesDirectory of species WikiversityFree learning tools WikivoyageFree travel guide WiktionaryDictionary and thesaurusThis Wikipedia is written in English. Many other Wikipedias are available; some of the largest are listed below. 1,000,000+ articles DeutschEspaolFranaisItalianoNederlandsPolskiPortugusSvenskaTing Vit 250,000+ articles Bahasa IndonesiaBahasa MelayuBn-lm-gCataletinaDanskEestiEsperantoEuskaraMagyarNorsk bokmlRomnSimple EnglishSlovenaSrpskiSrpskohrvatskiSuomiTrkeOzbekcha 50,000+ articles AsturianuAzrbaycancaBosanskiFryskGaeilgeGalegoHrvatskiKurdLatvieuLietuviNorsk nynorskShqipSlovenaRetrieved from " 2Calendar yearYearsMillennium2ndmillenniumCenturies18thcentury19thcentury 20thcenturyDecades1820s1830s1840s 1850s1860sYears1844184518461847 184818491850vteSeptember 14: Mexico City, capital of Mexico, is captured by U.S. troops led by General Winfield Scott.May 8: Earthquake in Japan kills 8,600 people.1847 by topicHumanitiesArchaeologyArchitectureArtLiteraturePoetryMusicBy countryAustraliaBelgiumBrazilCanadaChinaDenmarkFranceGermanyMexicoNew ZealandNorwayPortugalSouth AfricaSwedenUnited KingdomUnited StatesOther topicsRail transportScienceSportsLists of leadersSovereign statesSovereign state leadersTerritorial governorsReligious leadersLawBirth and death categoriesBirthsDeathsEstablishments and disestablishments categoriesEstablishmentsDisestablishmentsWorks categoryWorksvte1847 in various calendarsGregorian calendar1847MDCCCXLVIIAb urbe condita2600Armenian calendar1296 Assyrian calendar6597Bah calendar34Balinese saka calendar17681769Bengali calendar12531254Berber calendar2797British Regnal year10Vict.111Vict.1Buddhist calendar2391Burmese calendar1209Byzantine calendar73557356Chinese calendar (FireHorse)4544 or 4337to (FireGoat)4545 or 4338Coptic calendar15631564Discordian calendar3013Ethiopian calendar18391840Hebrew calendar56075608Hindu calendars- Vikram Samvat19031904- Shaka Samvat17681769- Kali Yuga49474948Holocene calendar11847Igbo calendar847848Iranian calendar12251226Islamic calendar12631264Japanese calendarKka 4()Javanese calendar17741775Julian calendarGregorian minus 12 daysKorean calendar4180Minguo calendar65 before ROC65Nanakshahi calendar379Thai solar calendar23892390Tibetan calendar(male Fire-Horse)1973 or 1592 or 820to(female Fire-Sheep)1974 or 1593 or 821Wikimedia Commons has media related to 1847.1847 (MDCCCXLVII) was a common year starting on Friday of the Gregorian calendarand a common year starting on Wednesday of the Julian calendar, the 1847th year of the Common Era (CE) and Anno Domini (AD) designations, the 847th year of the 2ndmillennium, the 47th year of the 19thcentury, and the 8th year of the 1840s decade. As of the start of 1847, the Gregorian calendar was 12 days ahead of the Julian calendar, which remained in localized use until 1923. Calendar year January 4 Samuel Colt sells his first revolver pistol to the U.S. government.January 13 The Treaty of Cahuenga ends fighting in the MexicanAmerican War in California.January 16 John C. Frmont is appointed Governor of the new California Territory.January 17 St. Anthony Hall fraternity is founded at Columbia University, New York City.January 30 Yerba Buena, California, is renamed San Francisco.February 5 A rescue effort, called the First Relief, leaves Johnson's Ranch to save the ill-fated Donner Party of California-bound migrants who became snowbound in the Sierra Nevada earlier this winter. Some have resorted to survival by cannibalism.February 22 MexicanAmerican War: Battle of Buena Vista 5,000 American troops under General Zachary Taylor use their superiority in artillery to drive off 15,000 Mexican troops under Antonio Lpez de Santa Anna, defeating the Mexicans the next day.February 25 State University of Iowa is founded in Iowa City, Iowa.March 1The state of Michigan formally abolishes the death penalty.Faustin Soulouque is elected President of Haiti.March 4 The 30th United States Congress is sworn into office.March 9 MexicanAmerican War: United States forces under General Winfield Scott invade Mexico near Veracruz.March 14 Verdi's opera Macbeth premieres at the Teatro della Pergola, in Florence, Italy.March 29 MexicanAmerican War: United States forces under General Winfield Scott take Veracruz after a siege.March The first known publication of the classic joke "Why did the chicken cross the road?" occurs in The Knickerbocker, or New-York Monthly Magazine.[1]April 5 The world's first municipally-funded civic public park, Birkenhead Park in Birkenhead on Merseyside, England, is opened.[2]April 15 The Lawrence School, Sanawar is established in India.April 16 New Zealand Wars: A minor Mori chief is accidentally shot by a junior British Army officer in Whanganui on New Zealand's North Island, triggering the Wanganui Campaign (which continues until July 23).April 25 The Exmouth, carrying Irish emigrants from Derry bound for Quebec, is wrecked off Islay, with only three survivors from more than 250 on board.[3]May 7 In Philadelphia, the American Medical Association (AMA) is founded.May 8The Nagano earthquake leaves more than 8,600 people dead in Japan.Bahrain's ruler, Shaikh Mohamed bin Khalifa Al Khalifa, signs a treaty with the British to prevent and combat the slave trade in the Arabian Gulf.May 31 Second Treaty of Erzurum: the Ottoman Empire cedes Abadan Island to the Persian Empire.May The Architectural Association School of Architecture is founded in London.June 1 The first congress of the Communist League is held in London.June 9 Radley College, an English public school, is founded near Oxford as a High Anglican institution.[4]June 26 The first passenger railway wholly within modern-day Denmark opens, from Copenhagen to Roskilde.[5]June E. H. Booth & Co. Ltd, which becomes the northern England supermarket chain Booths, is founded when tea dealer Edwin Henry Booth, 19, opens a shop called "The China House" in Blackpool.July 1 The United States issues its first postage stamps.July 24: Mormons expelled from Illinois arrive at the Great Salt Lake in what is now Utah.July 24 After 17 months of travel, Brigham Young leads 148 Mormon pioneers into Salt Lake Valley, resulting in the establishment of Salt Lake City.July 26 The nation of Liberia, founded as a haven for freed African-American slaves, becomes independent.July 29 The Cumberland School of Law is founded at Cumberland University, in Lebanon, Tennessee. At the end of this year, only 15 law schools exist in the United States.August 12 MexicanAmerican War: U.S. troops of General Winfield Scott begin to advance along the aqueduct around Lakes Chalco and Xochimilco in Mexico.August 20 MexicanAmerican War Battle of Churubusco: U.S. troops defeat Mexican forces.August Yale Corporation establishes the first graduate school in the United States, as Department of Philosophy and the Arts (renamed Graduate School of Arts and Sciences in 1892).September 14 MexicanAmerican War: U.S. general Winfield Scott enters Mexico City, marking the end of organized Mexican resistance.September 30 The Vegetarian Society is formed in the United Kingdom (it remains the oldest in the world).October 12 German inventors and industrialists Werner von Siemens and Johann Georg Halske found Siemens & Halske to develop the electrical telegraph.October 19 Charlotte Bront publishes Jane Eyre under the pen name of Currer Bell in England.October 31 Theta Delta Chi is founded as a social fraternity at Union College, Schenectady, New York.October The last volcanic eruption of Mount Guntur in West Java occurs.November 329 Sonderbund War: In Switzerland, General Guillaume-Henri Dufour's Federal Army defeats the Sonderbund (an alliance of seven Catholic cantons) in a civil war, with a total of only 86 deaths.November 48 James Young Simpson discovers the anesthetic properties of chloroform and first uses it, successfully, on a patient, in an obstetric case in Edinburgh.[6]November 10 The first brew of Carlsberg beer is finished in Copenhagen.November 17 The Battle of Um Swayya Spring takes place near a spring in Qatar, after a Bahraini force under Shaikh Ali bin Khalifa Deputy Ruler of Bahrain defeats the Al Binali tribe. The chief of the Al Binali, Isa bin Tureef, is slain in battle with over 70 fatalities from his side.December 14 Emily Bront and Anne Bront publish Wuthering Heights and Agnes Grey, respectively, in a 3-volume set under the pen names of Ellis Bell and Acton Bell in England.December 20 British Royal Navy steam frigate HMSAvenger(1845) is wrecked on the Sorelle Rocks in the Mediterranean Sea with the loss of 246 lives and only eight survivors.[7]December 21 Emir Abdelkader surrenders to the French in Algeria.[8]The Great Famine continues in Ireland.The North Carolina General Assembly incorporates the railroad town of Goldsborough, and the Wayne county seat is moved to the new town.Welfare in Sweden takes its first step with the introduction of the 1847 rs fattigvrdfrordning.Cartier, a luxury brand in France, is founded.January 5 Oku Yasukata, Japanese field marshal, leading figure in the early Imperial Japanese Army (d. 1930)January 7 Caspar F. Goodrich, American admiral (d. 1925)January 24 Radomir Putnik, Serbian field marshal (d. 1917)January 28 Dorus Rijkers, Dutch naval hero (d. 1928)February 3 Warington Baden-Powell, British admiralty lawyer (d. 1921)February 4 Remus von Woyrsch, German field marshal (d. 1920)February 5 Joo Maria Correia Ayres de Campos, 1st Count of Ameal, Portuguese politician and antiquarian (d. 1920)February 8 Hugh Price Hughes, Methodist social reformer, first Superintendent of the West London Mission (d. 1902)February 11 Thomas Alva Edison, American inventor (d. 1931)February 13 Sir Robert McAlpine, Scottish builder (d. 1930)February 15 Robert Fuchs, Austrian composer (d. 1927)February 16 Philipp Scharwenka, Polish-German composer (d. 1917)February 17 Otto Blehr, Norwegian attorney, Liberal Party politician, 7th Prime Minister of Norway (d. 1927)March 1 Sir Thomas Brock, English sculptor (d. 1922)March 2Isaac Barr, Anglican clergyman, promoter of British colonial settlement schemes (d. 1937)Cayetano Arellano, first Chief Justice of the Supreme Court of the Philippines under the American Civil Government (d. 1920)March 3 Alexander Graham Bell, Scottish-born Canadian inventor (d. 1922)March 4 Carl Josef Bayer, Austrian chemist (d. 1904)March 11 Sidney Sonnino, Prime Minister of Italy (d. 1922)[9]March 14 Castro Alves, Brazilian poet (d. 1871)March 18 William O'Connell Bradley, American politician from Kentucky (d. 1914)March 23 Edmund Gurney, British psychologist (d. 1888)March 27Otto Wallach, German chemist, Nobel Prize laureate (d. 1931)Garret Barry, Irish musician (d. 1899)April 2 Charles Frederic Moberly Bell, British journalist, editor (d. 1911)April 10 Joseph Pulitzer, Hungarian-born journalist, newspaper publisher (d. 1911)April 15 Yehudah Aryeh Leib Alter, Polish Hasidic rabbi (d. 1905)April 27 Emma Irene strm, Finnish teacher, Finland's first female university graduate (d. 1934)May 7 Archibald Primrose, 5th Earl of Rosebery, Prime Minister of the United Kingdom (d. 1929)May 14 Sir Frederick William Borden, Canadian politician (d. 1917)June 8Oleksander Barvinsky, Ukrainian politician (d. 1926)Ida Saxton McKinley, First Lady of the United States (d. 1907)June 10 Gina Krog, Norwegian suffragist (d. 1916)June 11 Dame Milicent Fawcett, British suffragist (d. 1929)June 16 Luella Dowd Smith, American educator, author, and reformer (d. 1941)Paul von HindenburgBram StokerJuly 2 Marcel Alexandre Bertrand, French geologist (d. 1907)July 9 Wong Fei-hung, Chinese healer, revolutionary (d. 1925)July 13 Damian Sawczak, Ukrainian judge (d. 1912)July 19 Alexander Meyrick Broadley, British historian (d. 1916)July 20Lord William Beresford, Irish army officer, Victoria Cross recipient (d. 1900)Max Liebermann, German painter, printmaker (d. 1935)July 25 Paul Langerhans, German pathologist, biologist (d. 1888)August 3 John Hamilton-Gordon, 1st Marquess of Aberdeen and Temair, Canadian politician, Governor General (d. 1934)August 5 Andrey Selivanov, Russian general and politician (d. 1917)August 21 Hale Johnson, American temperance movement leader (d. 1902)September 3 Charles Stillman Sperry, American admiral (d. 1911)September 5Jesse James, American outlaw (d. 1882)Joseph Bucklin Bishop, American journalist, publisher (d. 1928)September 17 John I. Beggs, American businessman (d. 1925)September 22 Enrique Almaraz y Santos, Spanish Catholic cardinal (d. 1922)September 23 Anandamohan Bose, Indian politician, academic and social reformer (d. 1906)September 30 Wilhelmina Drucker, Dutch feminist (d. 1925)Maria Pia of SavoyThomas F. PorterOctober 1 Annie Besant, English women's rights activist, writer and orator (d. 1933)[10]October 2 Paul von Hindenburg, German field marshal, President of Germany (d. 1934)October 13Sir Arthur Dyke Acland, 13th Baronet, British politician (d. 1926)Maurice Bailloud, French general (d. 1921)October 14 Wilgelm Vitgeft, Russian admiral (d. 1904)October 15 Ralph Albert Blakelock, American romanticist painter (d. 1919)October 16 Maria Pia of Savoy, Queen consort of Portugal (d. 1911)October 17 Chiquinha Gonzaga, Brazilian composer (d. 1935)October 19 Aurilla Furber, American author, editor, and activist (d. 1898)October 20 Mifflin E. Bell, American architect (d. 1904)October 22 Koos de la Rey, Boer general (d. 1914)October 30Charlie Bassett, American sheriff (d. 1896)Thomas F. Porter, American politician, 32nd Mayor of Lynn, Massachusetts (d. 1927)November 1 Dame Emma Albani, Canadian operatic soprano (d. 1930)November 2 Georges Sorel, French socialist philosopher (d. 1922)November 6 Ugo Balzani, Italian historian (d. 1916)November 7 Lotta Crabtree, American stage actress (d. 1924)November 8Jean Casimir-Perier, 6th President of France (d. 1907)Bram Stoker, Irish author of the Gothic novel Dracula (d. 1912)November 17 Carlo Mirabello, Italian admiral and politician (d. 1910)[11]November 26 Dagmar of Denmark, empress of Tsar Alexander III of Russia (d. 1928)November 30 Afonso Pena, Brazilian president (d. 1909)December 1 Agathe Backer-Grndahl, Norwegian pianist, composer (d. 1907)December 9 George Grossmith, English comic writer and performer (d. 1912)December 17mile Faguet, French writer, critic (d. 1916)Michel-Joseph Maunoury, French general during World War I (d. 1923)December 18 Augusta Holms, French composer (d. 1903)December 21 John Chard, British Officer (d. 1897)December 29 Alexis-Xyste Bernard, Canadian Catholic bishop (d. 1923)December 30 John Peter Altgeld, American politician, 20th Governor of Illinois (d. 1902)Fanny MendelssohnJanuary 19 Charles Bent, first Governor of New Mexico Territory (b. 1799) (assassinated)February 3 Marie Duplessis, French courtesan (b. 1824)February 5 Luis Jos de Orbegoso, Peruvian general and politician, 11th and 12th President of Peru (b. 1795)March 9 Mary Anning, British paleontologist (b. 1799)March 3 Charles Hatchett, English chemist (b. 1765)[12]April 21 Barbara Spooner Wilberforce, wife of British abolitionist William Wilberforce (b. 1777)April 30 Archduke Charles of Austria, Austrian general (b. 1771)May 14 Fanny Mendelssohn, German composer, pianist (b. 1805)May 15 Daniel O'Connell, Irish politician who promoted the Roman Catholic Relief Act 1829 (b. 1775)May 16 Vicente Rocafuerte, 2nd President of Ecuador (b. 1783)May 29 Emmanuel de Grouchy, Marquis de Grouchy, French marshal (b. 1766)June 11 Afonso, Prince Imperial of Brazil (b. 1845)June 11 Sir John Franklin, British explorer (b. 1786)Felix MendelssohnJuly 7 Thomas Carpenter, American glassmaker (b. 1752)July 16 Karl Friedrich Burdach, German physiologist (b. 1776)September 4 Frantiek Vladislav Hek, Czech patriot (b. 1769)September 13 Nicolas Oudinot, French marshal (b. 1767)October 2 Vasil Aprilov, Bulgarian educator, merchant and writer (b. 1789)[13]October 22Henriette Herz, German salonnire (b. 1764)Negus Sahle Selassie of Shewa (b. c. 1795)November 4 Felix Mendelssohn, German composer (b. 1809)November 18 Zebulon Crocker, American congregationalist pastor (b. 1802)December 14Dorothy Ann Thrupp, British psalmist (b. 1779)Manuel Jos Arce, Central American politician (b. 1787)Barbarita Nieves, Venezuelan mistress of Jos Antonio Pez (b. 1803)Unknown: Jeanne Genevive Labrosse, French balloonist and parachutist (b. 1775)^ The Knickerbocker, or The New York Monthly, March 1847, p. 283.^ "The History of Birkenhead Park". Archived from the original on June 26, 2008. Retrieved September 13, 2007.^ "The Exmouth - a terrible tragedy on Islay". Isle of Islay. 2011. Retrieved July 13, 2012.^ Boyd, A. K. (1948). The History of Radley College 1847-1947. Oxford: Blackwell. Retrieved November 14, 2020.^ Marshall, John (1989). The Guinness Railway Book. Enfield: Guinness Books. ISBN0-8511-2359-7. OCLC24175552.[pageneeded]^ First communicated to the Medico-Chirurgical Society of Edinburgh, November 10, and published in a pamphlet, Notice of a New Anesthetic Agent, in Edinburgh, November 12.^ Gilly, William Octavius Shakespeare (1850). Narratives of Shipwrecks of the Royal Navy between 1793 and 1849. London: John W. Parker.^ "Abdelkader | EBSCO Research Starters". www.ebsco.com. Retrieved July 17, 2025.^ (in Italian) Sidney Sonnino (18471922). Note biografiche, Centro Studi Sidney Sonnino^ Framke, Maria: Besant, Annie, in: 1914-1918-online. International Encyclopedia of the First World War^ Gemignani, Marco. "MIRABELLO, Carlo". treccani.it (in Italian). Dizionario Biografico degli Italiani. Retrieved February 4, 2024.^ "Charles Hatchett | British chemist | Britannica". www.britannica.com. Retrieved February 27, 2022.^ Raymond Detrez (2010). The A to Z of Bulgaria. Scarecrow Press. p.17. ISBN9780810872028.Historic Letters of 1847Turtle Bunbury, 1847 A Chronicle of Genius, Generosity & Savagery, Gill, 2016. ISBN9780717168347Retrieved from " 3One hundred years, from 1701 to 1800For other uses, see 18th century (disambiguation).Millennia2ndmillenniumCenturies17thcentury18thcentury19thcenturyTimelines17thcentury18thcentury19thcenturyState leaders17thcentury18thcentury19thcenturyDecades1700s1710s1720s1730s1740s1750s1760s1770s1780s1790sCategories:Births Deaths Establishments DisestablishmentsvtePolitical boundaries at the beginning of year 1700Storming of the Bastille, 14 July 1789, an iconic event of the French Revolution.Development of the Watt steam engine in the late 18th century was an important element in the Industrial Revolution in Europe.The American Revolutionary War took place in the late 18th century. The 18th century lasted from 1 January 1701 (represented by the Roman numerals MDCCI) to 31 December 1800 (MDCCC). During the 18th century, elements of Enlightenment thinking culminated in the Atlantic Revolutions. Revolutions began to challenge the legitimacy of monarchical and aristocratic power structures. The Industrial Revolution began mid-century, leading to radical changes in human society and the environment. The European colonization of the Americas and other parts of the world intensified and associated mass migrations of people grew in size as part of the Age of Sail. During the century, slave trading expanded across the shores of the Atlantic Ocean, while declining in Russia[1] and China.[2]Western historians have occasionally defined the 18th century otherwise for the purposes of their work. For example, the "short" 18th century may be defined as 17151789, denoting the period of time between the death of Louis XIV of France and the start of the French Revolution, with an emphasis on directly interconnected events.[3][4] To historians who expand the century to include larger historical movements, the "long" 18th century[5] may run from the Glorious Revolution of 1688 to the Battle of Waterloo in 1815[6] or even later.[7] France was the sole world superpower from 1659, after it defeated Spain, until 1815, when it was defeated by Britain and its coalitions following the Napoleonic Wars.In Europe, philosophers ushered in the Age of Enlightenment. This period coincided with the French Revolution of 1789, and was later compromised by the excesses of the Reign of Terror. At first, many monarchies of Europe embraced Enlightenment ideals, but in the wake of the French Revolution they feared loss of power and formed broad coalitions to oppose the French Republic in the French Revolutionary Wars. Various conflicts throughout the century, including the War of the Spanish Succession and the Seven Years' War, saw Great Britain triumph over its rivals to become the preeminent power in Europe. However, Britain's attempts to exert its authority over the Thirteen Colonies became a catalyst for the American Revolution. The 18th century also marked the end of the PolishLithuanian Commonwealth as an independent state. Its semi-democratic government system was not robust enough to prevent partition by the neighboring states of Austria, Prussia, and Russia.In West Asia, Nader Shah led Persia in successful military campaigns. The Ottoman Empire experienced a period of peace, taking no part in European wars from 1740 to 1768. As a result, the empire was not exposed to Europe's military improvements during the Seven Years' War. The Ottoman military consequently lagged behind and suffered several defeats against Russia in the second half of the century.In South Asia, the death of Mughal emperor Aurangzeb was followed by the expansion of the Maratha Confederacy and an increasing level of European influence and control in the region. In 1739, Persian emperor Nader Shah invaded and plundered Delhi, the capital of the Mughal Empire. Later, his general Ahmad Shah Durrani scored another victory against the Marathas, the then dominant power in India, in the Third Battle of Panipat in 1761.[8] By the middle of the century, the British East India Company began to conquer eastern India,[9][8] and by the end of the century, the Anglo-Mysore Wars against Tipu Sultan and his father Hyder Ali, led to Company rule over the south.[10][11]In East Asia, the century was marked by theHigh Qing era, a period characterized by significant cultural and territorial expansion. This period also experienced relative peace and prosperity, allowing for societal growth, increasing literacy rates, flourishing trade, and consolidating imperial power across the vast Qing dynasty's territories. Conversely, the continual seclusion policy of the Tokugawa shogunate also brought a peaceful era called Pax Tokugawa and experienced a flourishment of the arts as well as scientific knowledge and advancements, which were introduced to Japan through the Dutch port of Nagasaki. In Southeast Asia, the KonbaungAyutthaya Wars and the Ty Sn Wars broke out while the Dutch East India Company established increasing levels of control over the Mataram Sultanate.In Africa, the Ethiopian Empire underwent the Zemene Mesafint, a period when the country was ruled by a class of regional noblemen and the emperor was merely a figurehead. The Atlantic slave trade also saw the continued involvement of states such as the Oyo Empire. In Oceania, the European colonization of Australia and New Zealand began during the late half of the century. In the Americas, the United States declared its independence from Great Britain. In 1776, Thomas Jefferson wrote the Declaration of Independence. In 1789, George Washington was inaugurated as the first president. Benjamin Franklin traveled to Europe where he was hailed as an inventor. Examples of his inventions include the lightning rod and bifocal glasses. Tpac Amaru II led an uprising that sought to end Spanish colonial rule in Peru.For a chronological guide, see Timeline of the 18th century.See also: Georgian eraMain articles: 1700s, 1710s, 1720s, 1730s, and 1740sEurope at the beginning of the War of the Spanish Succession, 1700The Battle of Poltava in 1709 turned the Russian Empire into a European power.John Churchill, 1st Duke of Marlborough17001721: Great Northern War between the Russian and Swedish Empires.1701: Kingdom of Prussia declared under King Frederick I.1701: The Battle of Feyiase marks the rise of the Ashanti Empire.17011714: The War of the Spanish Succession is fought, involving most of continental Europe.[12]17021715: Camisard rebellion in France.1703: Saint Petersburg is founded by Peter the Great; it is the Russian capital until 1918.17031711: The Rkczi uprising against the Habsburg monarchy.1704: End of Japan's Genroku period.1704: First Javanese War of Succession.[13]17061713: The War of the Spanish Succession: French troops defeated at the Battle of Ramillies and the Siege of Turin.1707: Death of Mughal Emperor Aurangzeb leads to the fragmentation of the Mughal Empire.1707: The Act of Union is passed, merging the Scottish and English Parliaments, thus establishing the Kingdom of Great Britain.[14]1708: The Company of Merchants of London Trading into the East Indies and English Company Trading to the East Indies merge to form the United Company of Merchants of England Trading to the East Indies.17081709: Famine kills one-third of East Prussia's population.1709: Foundation of the Hotak Empire.1709: The Great Frost of 1709 marks the coldest winter in 500 years, contributing to the defeat of Sweden at Poltava.1710: The world's first copyright legislation, Britain's Statute of Anne, takes effect.17101711: Ottoman Empire fights Russia in the Russo-Turkish War and regains Azov.1711: Bukhara Khanate dissolves as local begs seize power.17111715: Tuscarora War between British, Dutch, and German settlers and the Tuscarora people of North Carolina.1713: The Kangxi Emperor acknowledges the full recovery of the Chinese economy since its apex during the Ming.1714: In Amsterdam, Daniel Gabriel Fahrenheit invents the mercury-in-glass thermometer, which remains the most reliable and accurate thermometer until the electronic era.1715: The first Jacobite rising breaks out; the British halt the Jacobite advance at the Battle of Sheriffmuir; Battle of Preston.1716: Establishment of the Sikh Confederacy along the present-day India-Pakistan border.17161718: Austro-Venetian-Turkish War.1718: The city of New Orleans is founded by the French in North America.17181720: War of the Quadruple Alliance with Spain versus France, Britain, Austria, and the Netherlands.17181730: Tulip period of the Ottoman Empire.1719: Second Javanese War of Succession.[15]1720: The South Sea Bubble.17201721: The Great Plague of Marseille.1720: Qing forces oust Dzungar invaders from Tibet.1721: The Treaty of Nystad is signed, ending the Great Northern War.1721: Sack of Shamakhi, massacre of its Shia population by Sunni Lezgins.1722: Siege of Isfahan results in the handover of Iran to the Hotaki Afghans.17221723: Russo-Persian War.17221725: Controversy over William Wood's halfpence leads to the Drapier's Letters and begins the Irish economic independence from England movement.Mughal emperor Muhammad Shah with the Persian invader Nader Shah.1723: Slavery is abolished in Russia; Peter the Great converts household slaves into house serfs.[16]17231730: The "Great Disaster", an invasion of Kazakh territories by the Dzungars.17231732: The Qing and the Dzungars fight a series of wars across Qinghai, Dzungaria, and Outer Mongolia, with inconclusive results.1724: Daniel Gabriel Fahrenheit proposes the Fahrenheit temperature scale.1725: Austro-Spanish alliance revived. Russia joins in 1726.17271729: Anglo-Spanish War ends inconclusively.1730: Mahmud I takes over Ottoman Empire after the Patrona Halil revolt, ending the Tulip period.17301760: The First Great Awakening takes place in Great Britain and North America.17321734: Crimean Tatar raids into Russia.[17]17331738: War of the Polish Succession.Qianlong Emperor17351739: Austro-Russo-Turkish War.17351799: The Qianlong Emperor of China oversees a huge expansion in territory.17381756: Famine across the Sahel; half the population of Timbuktu dies.[18]17371738: Hotak Empire ends after the siege of Kandahar by Nader Shah.1739: Great Britain and Spain fight the War of Jenkins' Ear in the Caribbean.1739: Nader Shah defeats a pan-Indian army of 300,000 at the Battle of Karnal. Taxation is stopped in Iran for three years.17391740: Nader Shah's Sindh expedition.1740: George Whitefield brings the First Great Awakening to New England17401741: Famine in Ireland kills 20 percent of the population.17411743: Iran invades Uzbekistan, Khwarazm, Dagestan, and Oman.17411751: Maratha invasions of Bengal.17401748: War of the Austrian Succession.1742: Marvel's Mill, the first water-powered cotton mill, begins operation in England.[19]1742: Anders Celsius proposes an inverted form of the centigrade temperature, which is later renamed Celsius in his honor.1742: Premiere of George Frideric Handel's Messiah.17431746: Another Ottoman-Persian War involves 375,000 men but ultimately ends in a stalemate.The extinction of the Scottish clan system came with the defeat of the clansmen at the Battle of Culloden in 1746.[20]1744: The First Saudi State is founded by Mohammed Ibn Saud.[21]1744: Battle of Toulon is fought off the coast of France.17441748: The First Carnatic War is fought between the British, the French, the Marathas, and Mysore in India.1745: Second Jacobite rising is begun by Charles Edward Stuart in Scotland.1747: The Durrani Empire is founded by Ahmad Shah Durrani.1748: The Treaty of Aix-La-Chapelle ends the War of the Austrian Succession and First Carnatic War.17481754: The Second Carnatic War is fought between the British, the French, the Marathas, and Mysore in India.1750: Peak of the Little Ice Age.Main articles: 1750s, 1760s, 1770s, 1780s, 1790s, and 1800s1752: The British Empire adopts the Gregorian Calendar, skipping 11 days from 3 September to 13 September. On the calendar, 2 September is followed directly by 14 September.1754: The Treaty of Pondicherry ends the Second Carnatic War and recognizes Muhammed Ali Khan Wallajah as Nawab of the Carnatic.1754: King's College is founded by a royal charter of George II of Great Britain.[22]17541763: The French and Indian War, the North American chapter of the Seven Years' War, is fought in colonial North America, mostly by the French and their allies against the English and their allies.1755: The great Lisbon earthquake destroys most of Portugal's capital and kills up to 100,000.1755: The Dzungar genocide depopulates much of northern Xinjiang, allowing for Han, Uyghur, Khalkha Mongol, and Manchu colonization.17551763: The Great Upheaval forces transfer of the French Acadian population from Nova Scotia and New Brunswick.17561763: The Seven Years' War is fought among European powers in various theaters around the world.17561763: The Third Carnatic War is fought between the British, the French, and Mysore in India.1757: British conquest of Bengal.Catherine the Great, Empress of Russia.1760: George III becomes King of Britain.1761: Maratha Empire defeated at Battle of Panipat.17621796: Reign of Catherine the Great of Russia.1763: The Treaty of Paris ends the Seven Years' War and Third Carnatic War.1764: Dahomey and the Oyo Empire defeat the Ashanti army at the Battle of Atakpam.1764: The Mughals are defeated at the Battle of Buxar.1765: The Stamp Act is introduced into the American colonies by the British Parliament.17651767: The Burmese invade Thailand and utterly destroy Attuthaya.17651769: Burma under Hsinbyushin repels four invasions from Qing China, securing hegemony over the Shan states.1766: Christian VII becomes king of Denmark. He was king of Denmark to 1808.17661799: Anglo-Mysore Wars.1767: Taksin expels Burmese invaders and reunites Thailand under an authoritarian regime.17681772: War of the Bar Confederation.17681774: Russo-Turkish War.1769: Spanish missionaries establish the first of 21 missions in California.17691770: James Cook explores and maps New Zealand and Australia.17691773: The Bengal famine of 1770 kills one-third of the Bengal population.1769: The French East India Company dissolves, only to be revived in 1785.1769: French expeditions capture clove plants in Ambon, ending the Dutch East India Company's (VOC) monopoly of the plant.[23]17701771: Famine in Czech lands kills hundreds of thousands.1771: The Plague Riot in Moscow.1771: The Kalmyk Khanate dissolves as the territory becomes colonized by Russians. More than a hundred thousand Kalmyks migrate back to Qing Dzungaria.1772: Gustav III of Sweden stages a coup d'tat, becoming almost an absolute monarch.Encyclopdie, ou dictionnaire raisonn des sciences, des arts et des mtiers17721779: Maratha Empire fights Britain and Raghunathrao's forces during the First Anglo-Maratha War.17721795: The Partitions of Poland end the PolishLithuanian Commonwealth and erase Poland from the map for 123 years.17731775: Pugachev's Rebellion, the largest peasant revolt in Russian history.1773: East India Company starts operations in Bengal to smuggle opium into China.1775: Russia imposes a reduction in autonomy on the Zaporizhian Cossacks of Ukraine.17751782: First Anglo-Maratha War.17751783: American Revolutionary War.1776: Several kongsi republics are founded by Chinese settlers in the island of Borneo. They are some of the first democracies in Asia.17761777: A Spanish-Portuguese War occurs over land in the South American frontiers.1776: Illuminati founded by Adam Weishaupt.1776: The United States Declaration of Independence is adopted by the Second Continental Congress in Philadelphia.1776: Adam Smith publishes The Wealth of Nations.1778: James Cook becomes the first European to land on the Hawaiian Islands.1778: Franco-American alliance signed.1778: Spain acquires its first permanent holding in Africa from the Portuguese, which is administered by the newly-established La Plata Viceroyalty.1778: Vietnam is reunified for the first time in 200 years by the Tay Son brothers. The Ty Sn dynasty has been established, terminating the L dynasty.17791879: Xhosa Wars between British and Boer settlers and the Xhosas in the South African Republic.17791783: Britain loses several islands and colonial outposts all over the world to the combined Franco-Spanish navy.1779: Iran enters yet another period of conflict and civil war after the prosperous reign of Karim Khan Zand.1780: Outbreak of the indigenous rebellion against Spanish colonization led by Tpac Amaru II in Peru.1781: The city of Los Angeles is founded by Spanish settlers.George Washington17811785: Serfdom is abolished in the Austrian monarchy (first step; second step in 1848).1782: The Thonburi Kingdom of Thailand is dissolved after a palace coup.1783: The Treaty of Paris formally ends the American Revolutionary War.1783: Russian annexation of Crimea.17851791: Imam Sheikh Mansur, a Chechen warrior and Muslim mystic, leads a coalition of Muslim Caucasian tribes from throughout the Caucasus in a holy war against Russian settlers and military bases in the Caucasus, as well as against local traditionalists, who followed the traditional customs and common law (Adat) rather than the theocratic Sharia.[24]17851795: The Northwest Indian War is fought between the United States and Native Americans.17851787: The MarathaMysore Wars concludes with an exchange of territories in the Deccan.17861787: Wolfgang Amadeus Mozart premieres The Marriage of Figaro and Don Giovanni.1787: The Tuareg occupy Timbuktu until the 19th century.17871792: Russo-Turkish War.1788: First Fleet arrives in Australia17881790: Russo-Swedish War (17881790).1788: Dutch Geert Adriaans Boomgaard (17881899) would become the first generally accepted validated case of a supercentenarian on record.[25][26]Declaration of the Rights of Man and of the Citizen17881789: A Qing attempt to reinstall an exiled Vietnamese king in northern Vietnam ends in disaster.1789: George Washington is elected the first President of the United States; he serves until 1797.1789: Quang Trung defeats the Qing army.17891799: French Revolution.1789: The Lige Revolution.1789: The Brabant Revolution.1789: The Inconfidncia Mineira, an unsuccessful separatist movement in central Brazil led by Tiradentes1791: Suppression of the Lige Revolution by Austrian forces and re-establishment of the Prince-Bishopric of Lige.17911795: George Vancouver explores the world during the Vancouver Expedition.17911804: The Haitian Revolution.1791: Mozart premieres The Magic Flute.17921802: The French Revolutionary Wars lead into the Napoleonic Wars, which last from 18031815.1792: The New York Stock & Exchange Board is founded.1792: PolishRussian War of 1792.1792: Margaret Ann Neve (17921903) would become the first recorded female supercentenarian to reach the age of 110.[27][28]1793: Upper Canada bans slavery.1793: The largest yellow fever epidemic in American history kills as many as 5,000 people in Philadelphia, roughly 10% of the population.[29]17931796: Revolt in the Vende against the French Republic at the time of the Revolution.17941816: The Hawkesbury and Nepean Wars, which were a series of incidents between settlers and New South Wales Corps and the Aboriginal Australian clans of the Hawkesbury river in Sydney, Australia.1795: The Marseillaise is officially adopted as the French national anthem.Napoleon at the Bridge of the Arcole1795: The Battle of Nuuanu in the final days of King Kamehameha I's wars to unify the Hawaiian Islands.17951796: Iran invades and devastates Georgia, prompting Russia to intervene and march on Tehran.1796: Edward Jenner administers the first smallpox vaccination; smallpox killed an estimated 400,000 Europeans each year during the 18th century, including five reigning monarchs.[30]1796: War of the First Coalition: The Battle of Montenotte marks Napoleon Bonaparte's first victory as an army commander.1796: The British eject the Dutch from Ceylon and South Africa.17961804: The White Lotus Rebellion against the Manchu dynasty in China.1797: John Adams is elected the second President of the United States; he serves until 1801.1798: The Irish Rebellion fails to overthrow British rule in Ireland.17981800: The Quasi-War is fought between the United States and France.1799: Dutch East India Company is dissolved.1799: Austro-Russian forces under Alexander Suvorov liberates much of Italy and Switzerland from French occupation.1799: Coup of 18 Brumaire - Napoleon's coup d'etat brings the end of the French Revolution.1799: Death of the Qianlong Emperor after 60 years of rule over China. His favorite official, Heshen, is ordered to commit suicide.1800: On 1 January, the bankrupt VOC is formally dissolved and the nationalized Dutch East Indies are established.[31]Main articles: Timeline of historic inventions 18th century, and Timeline of scientific discoveries 18th centuryThe spinning jenny1709: The first piano was built by Bartolomeo Cristofori1711: Tuning fork was invented by John Shore1712: Steam engine invented by Thomas Newcomen1714: Mercury thermometer by Daniel Gabriel Fahrenheit1717: Diving bell was successfully tested by Edmond Halley, sustainable to a depth of 55ftc. 1730: Octant navigational tool was developed by John Hadley in England, and Thomas Godfrey in America1733: Flying shuttle invented by John Kay1736: Europeans encountered rubber the discovery was made by Charles Marie de La Condamine while on expedition in South America. It was named in 1770 by Joseph Priestleyc. 1740: Modern steel was developed by Benjamin Huntsman1741: Vitus Bering discovers Alaska1745: Leyden jar invented by Ewald Georg von Kleist was the first electrical capacitor1751: Jacques de Vaucanson perfects the first precision lathe1752: Lightning rod invented by Benjamin Franklin1753: The first clock to be built in the New World (North America) was invented by Benjamin Banneker.1755: The tallest wooden Bodhisattva statue in the world is erected at Puning Temple, Chengde, China.1764: Spinning jenny created by James Hargreaves brought on the Industrial Revolution1765: James Watt enhances Newcomen's steam engine, allowing new steel technologies1761: The problem of longitude was finally resolved by the fourth chronometer of John Harrison1763: Thomas Bayes publishes first version of Bayes' theorem, paving the way for Bayesian probability17681779: James Cook mapped the boundaries of the Pacific Ocean and discovered many Pacific Islands1774: Joseph Priestley discovers "dephlogisticated air", oxygenThe Chinese Putuo Zongcheng Temple of Chengde, completed in 1771, during the reign of the Qianlong Emperor.1775: Joseph Priestley's first synthesis of "phlogisticated nitrous air", nitrous oxide, "laughing gas"1776: First improved steam engines installed by James Watt1776: Steamboat invented by Claude de Jouffroy1777: Circular saw invented by Samuel Miller1779: Photosynthesis was first discovered by Jan Ingenhousz1781: William Herschel announces discovery of Uranus1784: Bifocals invented by Benjamin Franklin1784: Argand lamp invented by Aim Argand[32]1785: Power loom invented by Edmund Cartwright1785: Automatic flour mill invented by Oliver Evans1786: Threshing machine invented by Andrew Meikle1787: Jacques Charles discovers Charles's law1789: Antoine Lavoisier discovers the law of conservation of mass, the basis for chemistry, and begins modern chemistry1798: Edward Jenner publishes a treatise about smallpox vaccination1798: The Lithographic printing process invented by Alois Senefelder[33]1799: Rosetta Stone discovered by Napoleon's troopsMain articles: 18th century in literature and 18th century in philosophy1703: The Love Suicides at Sonezaki by Chikamatsu first performed17041717: One Thousand and One Nights translated into French by Antoine Galland. The work becomes immensely popular throughout Europe.1704: A Tale of a Tub by Jonathan Swift first published1712: The Rape of the Lock by Alexander Pope (publication of first version)1719: Robinson Crusoe by Daniel Defoe1725: The New Science by Giambattista Vico1726: Gulliver's Travels by Jonathan Swift1728: The Dunciad by Alexander Pope (publication of first version)1744: A Little Pretty Pocket-Book becomes one of the first books marketed for children1748: Chushingura (The Treasury of Loyal Retainers), popular Japanese puppet play, composed1748: Clarissa; or, The History of a Young Lady by Samuel Richardson1749: The History of Tom Jones, a Foundling by Henry Fielding1751: Elegy Written in a Country Churchyard by Thomas Gray published17511785: The French Encyclopdie1755: A Dictionary of the English Language by Samuel Johnson1758: Arithmetika Horvatzka by Mihalj ilobod Boli1759: Candide by Voltaire1759: The Theory of Moral Sentiments by Adam Smith17591767: Tristram Shandy by Laurence Sterne1762: Emile: or, On Education by Jean-Jacques Rousseau1762: The Social Contract, Or Principles of Political Right by Jean-Jacques Rousseau1774: The Sorrows of Young Werther by Goethe first published1776: Ugetsu Monogatari (Tales of Moonlight and Rain) by Ueda Akinari1776: The Wealth of Nations, foundation of the modern theory of economy, was published by Adam Smith17761789: The History of the Decline and Fall of the Roman Empire was published by Edward Gibbon1779: Amazing Grace published by John Newton17791782: Lives of the Most Eminent English Poets by Samuel Johnson1781: Critique of Pure Reason by Immanuel Kant (publication of first edition)1781: The Robbers by Friedrich Schiller first published1782: Les Liaisons dangereuses by Pierre Choderlos de Laclos1786: Poems, Chiefly in the Scottish Dialect by Robert Burns17871788: The Federalist Papers by Alexander Hamilton, James Madison, and John Jay1788: Critique of Practical Reason by Immanuel Kant1789: Songs of Innocence by William Blake1789: The Interesting Narrative of the Life of Olaudah Equiano by Olaudah Equiano1790: Journey from St. Petersburg to Moscow by Alexander Radishchev1790: Reflections on the Revolution in France by Edmund Burke1791: Rights of Man by Thomas Paine1792: A Vindication of the Rights of Woman by Mary Wollstonecraft1794: Songs of Experience by William Blake1798: Lyrical Ballads by William Wordsworth and Samuel Taylor Coleridge1798: An Essay on the Principle of Population published by Thomas Malthus(mid18th century): The Dream of the Red Chamber (authorship attributed to Cao Xueqin), one of the most famous Chinese novels1711: Rinaldo, Handel's first opera for the London stage, premiered1721: Brandenburg Concertos by J.S. Bach1723: The Four Seasons, violin concertos by Antonio Vivaldi, composed1724: St John Passion by J.S. Bach1727: St Matthew Passion composed by J.S. Bach1727: Zadok the Priest is composed by Handel for the coronation of George II of Great Britain. It has been performed at every subsequent British coronation.1733: Hippolyte et Aricie, first opera by Jean-Philippe Rameau1741: Goldberg Variations for harpsichord published by Bach1742: Messiah, oratorio by Handel premiered in Dublin1749: Mass in B minor by J.S. Bach assembled in current form1751: The Art of Fugue by J.S. Bach1762: Orfeo ed Euridice, first "reform opera" by Gluck, performed in Vienna1786: The Marriage of Figaro, opera by Mozart1787: Don Giovanni, opera by Mozart1788: Jupiter Symphony (Symphony No. 41) composed by Mozart1791: The Magic Flute, opera by Mozart17911795: London symphonies by Haydn1798: The Pathtique, piano sonata by Beethoven1798: The Creation, oratorio by Haydn first performed^ Volkov, Sergey. Concise History of Imperial Russia.^ Rowe, William T. China's Last Empire.^ Anderson, M. S. (1979). Historians and Eighteenth-Century Europe, 17151789. Oxford University Press. ISBN978-0-19-822548-5. OCLC185538307.^ Ribeiro, Aileen (2002). Dress in Eighteenth-Century Europe 17151789 (reviseded.). Yale University Press. ISBN978-0-300-09151-9. OCLC186413657.^ Baines, Paul (2004). The Long 18th Century. London: Arnold. ISBN978-0-340-81372-0.^ Marshall, P. J., ed. (2001). The Oxford History of the British Empire: Volume II: The Eighteenth Century (Oxford History of the British Empire). Oxford University Press, USA. ISBN978-0-19-924677-9. OCLC174866045., "Introduction" by P. J. Marshall, page 1^ O'Gorman, Frank (1997). The Long Eighteenth Century: British Political and Social History 16881832 (The Arnold History of Britain Series). A Hodder Arnold Publication. ISBN978-0-340-56751-7. OCLC243883533.^ a b Chandra, Bipin. Modern India. India.^ Campbell, John; Watts, William (1760). Memoirs of the Revolution in Bengal, anno Dom. 1757. A. Millar, London.^ Parthasarathi, Prasannan (2011), Why Europe Grew Rich and Asia Did Not: Global Economic Divergence, 16001850, Cambridge University Press, p.207, ISBN978-1-139-49889-0^ Allana, Gulam (1988). Muslim political thought through the ages: 15621947 (2ed.). Pennsylvania State University, Pennsylvania: Royal Book Company. p.78. ISBN9789694070919. Retrieved 18 January 2013.^ "War of the Spanish Succession, 17011714". Historyofwar.org. Retrieved 25 April 2009.^ Ricklefs (1991), page 82^ Historic uk heritage of britain accommodation guide (3 May 2007). "The history of Scotland The Act of Union 1707". Historic-uk.com. Archived from the original on 8 April 2009. Retrieved 25 April 2009.^ Ricklefs (1991), page 84^ "Welcome to Encyclopdia Britannica's Guide to History". Britannica.com. 31 January 1910. Archived from the original on 16 April 2009. Retrieved 25 April 2009.^ "List of Wars of the Crimean Tatars". Zum.de. Archived from the original on 12 March 2009. Retrieved 25 April 2009.^ "Len Milich: Anthropogenic Desertification vs 'Natural' Climate Trends". Ag.arizona.edu. 10 August 1997. Archived from the original on 11 February 2012. Retrieved 25 April 2009.^ Wadsworth, Alfred P.; Mann, Julia De Lacy (1931). The Cotton Trade and Industrial Lancashire, 16001780. Manchester University Press. p.433. OCLC2859370.^ "A guide to Scottish clans". Unique-cottages.co.uk. Archived from the original on 11 May 2008. Retrieved 25 April 2009.^ "Saudi Arabia The Saud Family and Wahhabi Islam". Countrystudies.us. Retrieved 25 April 2009.^ "History". Columbia University.^ Ricklefs (1991), page 102^ "Sufism in the Caucasus". Islamicsupremecouncil.org. Archived from the original on 23 February 2009. Retrieved 25 April 2009.^ "Table A Verified Supercentenarians (Listed Chronologically By Birth Date)". Archived from the original on 12 July 2016. Retrieved 9 November 2016.^ Photo Gallery for Supercentenarians born before 1850, as of May 17, 2019^ Balfour-Pau, Glen (20 December 2005). Bagpipes in Babylon: A Lifetime in the Arab World and Beyond. I.B.Tauris, 2006. ISBN9781845111519.^ "The Harvey Family". Priaulx Library. 2005. Archived from the original on 22 October 2013.^ "Yellow Fever Attacks Philadelphia, 1793". EyeWitness to History. Archived from the original on 7 June 2007. Retrieved 22 June 2007.^ Riedel S (2005). "Edward Jenner and the history of smallpox and vaccination". Proc (Bayl Univ Med Cent). 18 (1): 215. doi:10.1080/08998280.2005.11928028. PMC1200696. PMID16200144.^ Ricklefs (1991), page 106^ Encyclopdia Britannica's Great Inventions, Encyclopdia Britannica Archived August 7, 2008, at the Wayback Machine^ Meggs, Philip B. A History of Graphic Design. (1998) John Wiley & Sons, Inc. p 146 ISBN978-0-471-29198-5Black, Jeremy and Roy Porter, eds. A Dictionary of Eighteenth-Century World History (1994) 890ppKlekar, Cynthia. "Fictions of the Gift: Generosity and Obligation in Eighteenth-Century English Literature." Innovative Course Design Winner. American Society for Eighteenth-Century Studies: Wake Forest University, 2004. . Refereed.Langer, William. An Encyclopedia of World History (5th ed. 1973); highly detailed outline of events online freeMorris, Richard B. and Graham W. Irwin, eds. Harper Encyclopedia of the Modern World: A Concise Reference History from 1760 to the Present (1970) onlineMilward, Alan S, and S. B. Saul, eds. The economic development of continental Europe: 17801870 (1973) online; note there are two different books with identical authors and slightly different titles. Their coverfage does not overlap.Milward, Alan S, and S. B. Saul, eds. The development of the economies of continental Europe, 18501914 (1977) onlineThe Wallace Collection, London, houses one of the finest collections of 18th-century decorative arts from France, England and Italy, including paintings, furniture, porcelain and gold boxes. 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