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## What is a ten frame in math

If you teach math to early childhood students, it's important to understand what a ten frame is. Ten frames and provide printable resources that you can use in your classroom or home right away. Ten frames help with developing number sense. Number sense is having good intuition about numbers and their relationships. This develops gradually as children explore numbers and have experiences with them. Number sense is something that can't necessarily be taught, but it can be caught or learned over time. A fancy math term educators use is subitizing. Subitizing is being able to instantly tell you 'how many' something is without counting. For example, a child who can subitize can roll a dice and tell you what they rolled without counting every dot. This skill is developed over time, but practicing it through games or using ten frames is key and will help develop better number sense. What is a Ten Frame? Let's start with the basics. What is a ten frame? A ten frame is a rectangle with ten equal spaces. It has five spaces on top and five on the frame. Why are Ten Frames Important? Ten frames help kids develop number sense. It teaches them to subitize and is a precursor to addition. They provide kids with a visual of numbers and give children experiences working with numbers. They aren't simply just memorizing numbers and decomposing numbers and give children experiences working with numbers. They aren't simply just memorizing numbers are for teaching addition. and subtraction. How Can I Use Ten Frames? There are MANY ways to use ten frame and practice counting and identifying the number of objects. There are also a ton of free printables that use ten frames. At the bottom of this post, I'm sharing a PDF with games and activities all using ten frame. How to Teach with Ten Frames To use a ten frame, begin with showing your child a blank ten frame. Add one counters and then count together. Add two counters and then count together. Add two counters and then count together. showing your student a ten frame with any amount of counters in it from 0-10 and have him identify the number. Then have your student add counters to the frame and identify the number without counting. Some teachers choose to arrange counters in order (called 5-wise or pair-wise) and others like using random placement. I recommend doing is asking your student questions. After they answer, ask them "why" they answered with that number. It gives you insight into how they are learning and how their number sense is developing. I put together a packet of ten frame activities for you. There are blank ten frames into which objects like counters can be placed to show numbers less than or equal to ten. Ten frame is a rectangle with ten equal spaces. There are five spaces on the bottom. Below is a representation of what a ten frame looks like - The following steps should be followed to make ten frames - First, make a frame of ten equal spaces. These spaces should be placed in the form of a rectangle having five spaces at the bottom. Always fill the top row first, starting from the left. The ten frames are also read in the same manner. When the top row is full, then process with placed filling counters at the bottom. Again it is important to note here that the bottom row is also to be filled from the left. In this way, a standard manner - They are often used as learning tools for numbers up to 10. Ten frames help with developing number sense. Ten frames are useful in understanding the relationships of numbers, especially for the numbers from 1 to 10. Ten frames help the children visualise the numbers which make it easier for them to understand about working with numbers. Ten frames find their use in understanding the addition and subtraction of numbers up to 10. So, the following are the areas where we can extensively use ten frames as a learning tool - Counting of numbers Let us learn more about them. Ten frames can be used effectively to help a child in learning of counting of numbers from 1 to 10. Let us first list down the numbers from 1 to 10. We have, Number Name 1 One 2 Two 3 Three 4 Four 5 Five 6 Six 7 Seven 8 Eight 9 Nine 10 Ten Now, let us understand the representation of these numbers using ten frames. 1 (One) 2 (Two) 3 (Three) 4 (Four) 5 (Five) 6 (Six) 7 (Seven) 8 (Eight) 9 (Nine) 10 (Ten) Let us first understand composition of numbers from 1 to 100. Starting from 1 and by incrementing each number by 1, we can form the numbers from 1 10 100 as below - 110 + 1 = 2130 + 1 = 3140 + 1 = 4150 + 1 = 3140 + 1 = 4251 + 1 = 3241 + 1 =6271 + 1 = 7281 + 1 = 8291 + 1 = 922 + 1 = 312 + 1 = 932 + 1 = 3342 + 1 = 3= 6574 + 1 = 7584 + 1 = 8594 + 1 = 8594 + 1 = 8594 + 1 = 8594 + 1 = 8796 +1 = 6877 + 1 = 7887 + 1 = 8897 + 1 = 988 + 1 = 918 + 1 = 1928 + 1 = 2938 + 1 = 3948 + 1 = 3948 + 1 = 5968 +from 1 to 20. The above chart clearly demonstrates the following - The number 12 can be written as 10 + 0 = 1 0 The number 13 can be written as 10 + 2 = 1 2 The number 13 can be written as 10 + 4 = 1 4 The number 15 can be written as 10 + 4 = 1 5 The number 16 can be written as 10 + 6 = 16 The number 17 can be written as 10 + 7 = 1 The number 18 can be written as 10 + 8 = 1 The number 19 can be wr of combining two or more numbers together to make a new total or sum. We know that the single digit numbers are 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. This is the order in which we count the numbers are 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. This is the order in which we count the numbers are 1, 3 comes after 1, 3 comes after 2 and so on. A single - digit has the place value of a unit in the place value system of the numbers. There can be different methods to help children understand how to add numbers. Let us discuss of these methods - Addition by Forward counting Addition using ten frames Let us consider a situation where you have 3 chocolates. Your brother gives you 4 more chocolates. How many chocolates do you have now? In order to add 4 chocolates to the 3 chocolates that you already have, starting from 3, you will move 4 places to the right of the counting of numbers. So, 4 points after 3, in the numbers using ten frames. Let us different single digit numbers and check the representation of their addition using ten frames - 1 (One) + 2 ( two) = 3 (Three) 2 (Two) + 3 (Three) = 5 (Five) 3 (Three) + 5 (Five) = 8 (Eight) In the counting of numbers, two digit number "ab" can be written in the form 10 x a + b, where a has the ten's place value and b has the unit value in the number system. There can be different methods to help children understand how to add a single digit number, the digit at the one's place value of first number will be added to the digit at the one's place of the second number. Let us understand it using an example. Suppose we want to add 5 and 13. 5 - 5 is at the unit's place in the number as shown below - Here we can see that 5 + 3 = 8 < 10, so the result obtained was a single digit number at the unit's place. But if we were to add the numbers 5 + 16, we would have got 5 + 6 = 11, then how would we have written 11 in the answer. This is where the concept of carrying forward comes into force. Let us consider two numbers 5 and 16. How will we add these two numbers? Let us find out, 5 = 0 tens + 5 ones 16 = 1 tens + 6 ones. Therefore, 5 + 16 = 0 tens + 5 ones. + 1 tens + 6 ones1 tens + 11 ones Now, 11 ones = 1 tens + 1 ones Therefore, we have 5 + 16 = 1 tens + 1 ones = 2 tens + 1 ones. Hence, 5 + 16 = 21 We can add a single digit number to a two digit number using ten frames. Let us consider a single and two digit numbers and check the representation of their addition using ten frames - 5 (Five) + 12 (Twelve) = 17 (Seventeen) The process of finding the difference between two numbers is known as subtraction. In other words, it is the process of taking away a number from another. The number that is subtracted is called the subtrahend while the number from which the subtracted is called minuend. The result of this subtracted is called minuend to help children understand how to subtract a single digit number. Let us discuss some of these methods - Subtraction by backward counting Subtraction using ten frames Let us compare the two methods Suppose we have two numbers, 3 and 9. We wish to subtract 3 from 9. The difference we get upon the subtract 9 from 3. Is that possible? Can we subtract a larger number from a smaller number? Remember the number from a smaller number from a smaller number from a smaller number a sign of minus (-) against the difference. This means that we subtract 9 from 3, we actually subtract 3 from 9, where we get the answer as 6 and place the minus sign before it, making the net answer as -6. Hence, 3 - 9 = -6 We can subtract one single digit number from another using ten frames - 3 (Three) = 2 (Two) - 1 (One) We know that place value is the basis of our entire number system. This is the system in which the position of a digit in a number determines its value. The place value of a digit in a number f5,471 is different from 17,645 because the digits are in different positions. We also know that "ten "is the building the first ten building ten building the first ten building ten bu block of our Base 10 numeration system. Ten frames help in the understanding of two digit numbers as they represent each ddigit in a difference between 27 and seventy two (72) In this way, ten frames are apt for understanding the ones place and the tens place and the tens place of the place value system. Example 1 Peter has 10 ten frames filled with counters. There are 100 counters in total, What number do the place value system. Example 1 Peter has We need to find the blue counters are 10 and pink counters are 90. Example 2 What number 0. There is the sign of "+" between the counters which means we need to add them. Hence, we have 10 + 0 = 10 Thus, the given arrangement of counters represents the number 10 Ten-Frames are two-by-five rectangular frames into which objects like counters can be placed to show numbers less than or equal to ten. Ten frames are often used as learning tools for numbers up to 10. Ten frames help with developing number sense. Ten frames are useful in understanding the relationships of numbers, especially for the numbers from 1 to 10. Ten frames are useful in making the children understand the composing and decomposing of numbers. Addition, in mathematics, can be defined as the process of combining two or more numbers together to make a new total or sum. The process of finding the difference between two numbers is known as subtraction. Ten Frames (Martin Luther King Day Themed) Math Worksheets Place Value: Ten Thousand and Hundred Thousand (Chinese New Year Themed) Math Worksheets We spend a lot of time research, please use the tool below to properly link to or reference Helping with Math as the source. We appreciate your support! Share on Pinterest Share on Facebook If you're a parent of a small child who is learning math at preschool or kindergarten, you may have come across ten frames. For many parents this may be a new term that you've not heard of before. If so, worry not. This post will explain what ten frames are and why they're so valuable when it comes to young children learning and making sense of numbers. Plus, this post will also give you ideas and resources for using ten frame divided into ten individual boxes. The boxes are arranged in 2 rows of 5. Numbers to 10 can be shown in a ten frame by putting one dot or counter in each box. For example, this ten frame shows the number 5: There are just some: Ours is a base ten number system - it all revolves around the number 10. Ten frames (as the name suggests) help children see numbers within the context of ten Being confident with and being able to work flexibly with the numbers to 10, so often they begin by learning to recite the numbers in order and say their names. One of the reasons ten frames are so useful is that they provide a visual representation of a number and show its value. They help children to develop a much deeper understanding of numbers than just memorizing their names and order. By working with numbers in ten frames, children can see the amount of dots that a number stands for. They can also investigate patterns and groupings within the dots. All these things help to build number sense. Ten frames are great for helping children understand and learn their number bonds to 10. When we talk about number bonds to 10, we are looking at how 10 can be broken down into pairs of numbers that total 10, such as 3 and 7, or 9 and 1. (You can read more about number bonds here). This idea is particularly well demonstrated by a ten frame. For example, let's show 7 in a ten frame, we can see that 7 + 3 = 10 (a full ten frame). For many children, 'seeing' the number bond rather than just memorising pairs of numbers in an abstract way helps the number bonds make more sense (and for many children it also makes them much easier to remember). Plus, ten frames make a nice introduction to addition and subtraction fact families. From the ten frame above we can see that not only does 7 + 3 = 10, but also: 3 + 7 = 10 10 - 3 = 7, and 10 - 7 = 3. Being able to see how numbers are arranged in terms of tens leads on really well to place value work and is great for introducing the teen number is made up of one group of ten (i.e. one complete ten frame) and 6 additional ones. "What on earth is 'subitizing'?", I hear you ask. Subitizing means that you can tell how many objects there are without having to count each individual one. So for example when you roll a dice, you can tell what number you have rolled without having to count each individual object. As they develop, they begin to be able to 'see' a group of 2 or of 3 without having to count each object. By working with ten frames a child gets a chance to develop their subitizing skills. So there you go! Who knew the little old ten frame could have so much going for it?! And now you know why they're so important, we will turn our attention to how to practise them. If you're working on numbers to 10 with your child, be sure to include some ten frames. Here are some things you can try: If your child is new to ten frames, a fun way to start is by exploring ten them in a hands-on way. Draw out a ten frame on a big piece of paper or whiteboard. Next grab some items you can place inside the ten frame. If you don't have counters or any math manipulatives, you could use something from around the house: toy cars, blocks, stuffies or something along those lines. As an example, we've used our menagerie of small plastic animals! Have your child choose a number and then show it in the frame by placing one counter/object per square, filling the top row first. For example, let's show the number 4: Next (and if your child is itching to get their hands on the plastic toys) you could challenge your child to put those 4 objects in a different pattern within the ten frame. How many more objects you would we need to add to make 10? Help your child if they see any empty squares in the ten frame. How many more objects you would we need to add to make 10? Help your child if they see any empty squares in the ten frame. animals would be needed to make a full ten frame. See if you're right by filling in the spaces with more animals until the ten frame and then have the other person say what number they see. This gives your child practice at both constructing numbers in the ten frame and also recognising them. Although these activities are quick and simple things to try, hands-on math like this is really important. It's a way for young children who don't like to play the odd game or two. To help my own child with ten frames, I put together this fun ten frame and to download your own printable copy of the this game, click over to this post HERE. Finally, matching activities/puzzles make great number sense activities, numbers being represented in different ways, such as ten frames, numerals, words or tally marks. They also make for a really fun way for young children to learn math and they don't require any writing. You can find ten frame puzzles in the Math, Kids and Chaos store, including this butterfly numbers activity for numbers activity for spring and summer. As well as ten frames, this activity also gets children practising numbers names, tally marks and counting skills. And that's it for ten frames today. Hope this post has been helpful. If you liked this post, why not pin it? Thanks for your help! 5 reasons number puzzles are GREAT for young children Butterfly numbers 1 to 10 Number hunt for numbers 1 to 10 Number hunt for numbers 1 to 20 The best math manipulatives for preschool, kindergarten and beyond Share on Facebook Ten frames are becoming a popular teaching tool for use in the classroom. Often used in early grades to consolidate understanding of numbers to ten, they can also be utilized in higher grades, especially when introducing concepts related to tenths. In this blog, we will look at what a ten frame is and think about some activities that can be used for in elementary schools. A ten frame consists of a rectangular frame is and think about some activities that can be used for in elementary schools. divided into two rows of five boxes each, creating a total of ten boxes. Each box in the ten frame represents one unit. Children can place counters or any other manipulative used for counting on it. A blank ten frame They are usually introduced for place value activities and number bonds to ten in the early grades of elementary school. They can also be used to help children understand the concept of a tenth in both fractions and decimals. Our number system is a base-10 number system is a base-10 number system is a base-10 number system which means that we have 10 different numerals (0-9) which can be placed into any place value column and that each position has a value in powers of ten. For this reason, we often break numbers into groups of ten (think the metric systems of measurement). Number and Operations in Base Ten Exit Tickets for Grade 2 Check your grade 2 students' understanding of number and operations in base ten with these exit tickets. Download, print, and display in class! Download Free Now! A ten frame is used to represent numbers within and up to ten. Children can compose and decompose each number in a variety of ways which helps them develop number sense and to understand different visual representations of numbers. Usually, ten frames are used with manipulative resources but they can also be used visually on a worksheet or using a laminated frame and dry erase marker or even in a lesson presentation slide. Read more: Concrete Representational Abstract Meet Skye, the voice-based AI tutor making math success possible for every student. Built by math experts, Skye uses the same pedagogy, curriculum and lesson structure as our traditional tutoring. But, with more flexibility and a low cost, schools can scale AI math tutoring to support every student who needs it. Watch Skye in action Ten frames are a useful tool for teaching numeracy concepts in the classroom. Here are some ideas for incorporating that children have a strong understanding of numbers up to 10. The ten frame can help children to understand both one-to-one correspondence and subitizing. A ten frame is an excellent interactive concrete math resource for the youngest learners as they can manipulate it in a number of ways using a counting tool of their choice to prove their understanding. For instance, let's consider the number three. Children can start by counting three counters with one-to-one correspondence and placing them next to each other on the grid: This is an opportunity to model counting to three using one-to-one correspondence visually too. You can then ask the children to make three in different ways. This will show you the understanding they have of numbers. More confident children are likely to be more creative with how they can create three, knowing that as long as there are three counters in the frame, they will always have the correct answer. The ten frame can also be used to teach subitizing. Instead of asking children to show a given number, show them a number instead and ask how many are there. By knowing whether they count the answer or not, you can tell if the child is able to subitize that numbers before they understand how numbers to 20 (and beyond visually) are made. From their previous work, children will already know that one full ten frame is equal to 10. Therefore, when presented with a full ten frame plus a partial one, they can count on from 10 to see what number is there. This is particularly useful as our numbers 10-20 are 'teens' rather than 'tens' so it helps the children understand that 16 is a ten and a six. In Third Space Learning's online one-on-one math instruction lessons, visual images are used to support students as they begin to add and subtract within 20. In 2nd grade, additional complete ten frames can be used to represent larger numbers, although using these with concrete materials requires a lot of resources. Since our whole number system is base-10, you could also use a ten frame to represent larger numbers using place value counters. The ten frame above represents 100 because there are ten 10s. This can be repeated no matter how far up the number system you go, the same is possible as our system always works in groups of ten. For addition within ten, a ten frame and two different counting manipulatives are all children need to work out their answer. For the example, 5+2: Here, the child has used red counters to represent the 2. When they have placed them into the ten frame, the subitizing that they have placed them into the ten frame that they have placed them into the ten frame that the subitizing that they have placed them into the ten frame the subitizing that they have placed them into the ten frame that they have placed them into the ten frame the subitizing that they have placed them into the ten frame the subitizing that they have placed them into the ten frame the subitizing that the subitizing that the subitizing that the subitizing the subitizing the subitizing that the subitizing the subitizing the subitizing the subitizing that the subitizing the subitizing the subiti one colored counter, but this allows children to see their two original numbers and how they form the answer. Tens frame as shown above. However, as mentioned, with larger numbers it would be more effective to use visual ten frames as opposed to many manipulative resources. Using a ten frame for subtraction is similar to addition but requires only one set of counting tools and a ten frame. By the time they begin subtraction, it is imital number and then physically remove the objects to find their answer. For example, 9-3: First, the child has made 9 using their counters in the ten frame. By the time they begin subtraction, it is imital number and then physically remove the objects to find their answer. is likely that this is something that they are well practiced in and can do with some level of automaticity. They have then physically taken three out of the ten frame, leaving their answer of 6. Most children will be able to answer six using subitizing, however, if they need to count every counter using one-to-one correspondence it is all good practice for them to be able to visualize numbers independently. Having ten sections, the ten frame is a perfect teaching resource for number bonds. By choosing two different counting tools, they can work out all of the different combinations to completely fill the frame. This is an excellent investigation that children can do to independently find out all of the number bonds to 10. This is a very interesting activity for formative assessment. Asking children to write their outcomes on a whiteboard while working can help identify those who are methodical and confident in their understanding of numbers, as well as those who jump around without much reasoning. When introducing tenths in 4th grade, ten frame activities can help children to understand the relationship of tenths to a whole. Initially, you may begin by filling a number of the sections of the ten frame and simply asking children to represent how much is filled as a fraction: There are ten equal parts altogether. Seven of the parts are filled. The fraction of the ten frame that is filled is 7/10. You could then ask how many are unfilled: There are ten equal parts altogether. Three of the parts are unfilled. The fraction of the ten frame that is unfilled is 3/10. When children are confident with both, they will recognize that 7/10+3/10=10/10 and that 10/10 is the whole ten frame. They will be able to relate this to their earlier work on fractions to know that 7/10+3/10=1. A ten frame can also be used to help children to understand improper and mixed number fractions. By using a filled ten frame can also be used to help children to understand this, the children can then think about this in terms of whole numbers. There is one whole ten frame filled and one extra tenth. The fraction is 1 1/10 (image on the right). Ten frames can be used in a similar way to the above to help teachers introduce decimals in 5th grade too. If they have been familiar with using the frame to represent tenths in fractions, then it is a small step for them to also be able to understand tenths as decimals too. The children already know from the decimal point is the tenths column, they will be able to understand that by putting a seven in the tenths column, they will arrive at the decimal equivalent. 0.7. A five frame or a ten frame is most likely to be used by young children in Kindergarten and 1st grade as they are mostly useful to represent numbers below 20. However, they can also be useful when revisiting simple place value once again but with fractions and decimals rather than whole numbers. There are many printable blank ten-frame worksheets online or you can create your own which makes them a really cost-effective manipulative resource when coupled with any counting tool you already have. However, they can be more appealing for children if they are made with items that the children if they are made with items that the children if they are made with any counting tool you already have. carton with ten holes and toy eggs. Draw a large ten frame outside with playground chalk. You could even use the children as your counters. Use any small objects like pasta. Use small toys that you already have available in the classroom or even stickers. Ten frames are a great visual aid for teaching fundamental numeracy concepts in the classroom. They can help children comprehend number relationships, counting, and place value. If you're new to using them in your teaching, here are some helpful tips to get you started and make the most of this versatile and effective resource: Introduce them early in the children's school life. Children will be able to use them more confidently if they are familiar with them. Choose an inexpensive way to create them in the classroom - such as printable - so they can begin to be used immediately rather than having to wait for a delivery. Make math fun by going outside to work with your ten frames. Ten frames are a useful visual aid for teaching numeracy concepts, enabling children to gain a thorough understanding of number 5 in three different ways on your ten frame. The child has shown three different representations of 5. There are many different ways that this could be shown. Ali has 6 candies, he gave 2 to his friend. How many candies does he have left? The child has begun with six counters on their ten frame is filled? What fraction is unfilled? How do you know? 3/10 of the ten frame is filled because there are 10 equal parts and three of those are filled. 7/10 are unfilled because 1 whole - 3/10 = 7/10. These questions are designed to challenge students at different ways on the ten frame. Answer: any combination that leaves one square on the ten frame empty. Liam has 4 pencils and Jo has 3 pencils. How many pencils do they have altogether? Answer: 8+2=10, 2+8=10 children might also be able to explain how it shows 10-8=2 and 10-2=8. What improper fraction and mixed number is shown here? Answer: 15/10 (or 3/2) which is equal to 1 5/10 (or 1/2) Express how much of the ten frame is filled as a decimal: Answer: 0.2 What does a ten frame because there are ten sections. Why are ten frame good? They help the youngest learners to develop a secure number sense as well as supporting understanding simple addition and subtraction, fractions and decimals. Is a ten frame horizontally. Wondering about how to explain other key math vocabulary to your children? Check out our Math Dictionary For Kids, or try these: Do you have students who need extra support in math? Give your students more opportunities to consolidate learning and practice skills through personalized math tutoring with their own dedicated online math tutoring with the math tutoring with tutoring with the math tutoring with the math tutoring with tutoring with the math tutoring with tutoring with tutoring with tutoring with tutor learning gaps, and scaffolded learning ensures every student learns at the right pace. Lessons are aligned with your state's standards and assessments, plus you'll receive regular reports every student learns at the right pace. Lessons are aligned tutoring programs are available for:- 2nd grade tutoring- 3rd grade tutoring- 5th grade tutoring- 6th grade tutoring- 7th grade tutoring- 7th grade tutoring expertise, Skye uses the same proven pedagogy and curriculum as our traditional tutoring to close learning gaps and accelerate progress. Watch a clip of Skye's AI math tutoring in action. The content in this article was originally written by primary school teacher Lauren Marlow and has since been revised and adapted for US schools by elementary math teacher Christi Kulesza.