Grade 3—Home Math Activities

Below are math activities that you can do at home with your child. Please note that this document is organized into 3 sections.

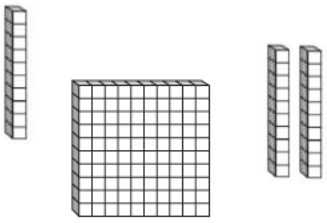
- Section 1—Child activities: Number including Number Lines, Fractions, Multiplication & Division, Addition & Addition Strategies.
- Section 2—Parent Information: Subtraction Strategies & Drawings (This section is to provide information regarding the variety of strategies we hope Grade 3 students use and understand), pp 21-31.
- Section 3—Child activities: Subtraction, Money, Time, Measurement, and Geometry, pp 32-40.

Section 1—Child Activities

Number Activities using *Base 10 Concentration—Grade 3* Cards

Prep: Print, cut, and shuffle the cards well.

Activity 1—Name that number



- Shuffle the cards well.
- Flash a card quickly.
- Have your child name the number they see.
- For cards showing pictures of quantities, ask your child to describe how the pieces are arranged. (For the picture on the right your child may say, "There is a hundred with 1 ten on the left and 2 tens on the right" as they point in the air. He or she may say, "A ten, a hundred, and 2 tens".)
- Flash the card again quickly.
- Ask your child if he or she changed his or her mind.
- Show the card so your child can check.
- Repeat for the remaining cards.

Activity 2—Write that numeral

- Remove the numeral cards from the deck (e.g., 105, 307, 130, 113).
- Shuffle the remaining cards well.
- Flash a card quickly.
- Have your child write the numeral that goes with the quantity they see (For example, 45, 147, 240, etc.).
- Flash the card again quickly.
- Ask your child if he or she changed his or her mind.
- Show the card so your child can check.
- Repeat for the remaining cards.

Activity 3—Write the number word

- Remove the number word cards from the deck (e.g., forty-five, two hundred forty, etc.)
- Shuffle the remaining cards well.
- Flash a card quickly.
- Have your child write the number word that goes with the image on the card (For example, one hundred five, one hundred thirteen, etc. Note: We save the word "and" for the decimal point. That is why we would write two hundred one instead of two hundred and one).
- Flash the card again quickly.
- Ask your child if he or she changed his or her mind.
- Show the card so your child can check.
- Repeat for the remaining cards.

Activity 4—Who has more?

- Shuffle the cards well.
- Deal the cards so that each player has the same number of cards.
- Each player places their cards in a stack, face down.
- Each player turns over the top card on the stack.
- The player with the greater number states how they know it is greater. If the explanation makes sense, he or she then takes the cards and places on the bottom of the stack.
- See who can capture all of the cards.

Activity 5—Who has fewer? Who has less?

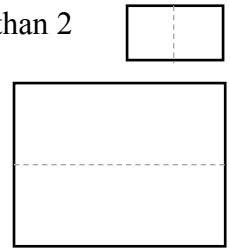
- Shuffle the cards well.
- Deal the cards so that each player has the same number of cards.
- Each player places their cards in a stack (face-down).
- Each player turns over the top card on the stack.
- The player with the smaller number states how they know it is smaller. If the explanation makes sense, he or she then takes the cards and places on the bottom of the stack.
- See who can capture all of the cards.

Other Number Activities

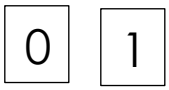
Activity 6—Biggest, Smallest, Closest

Materials:

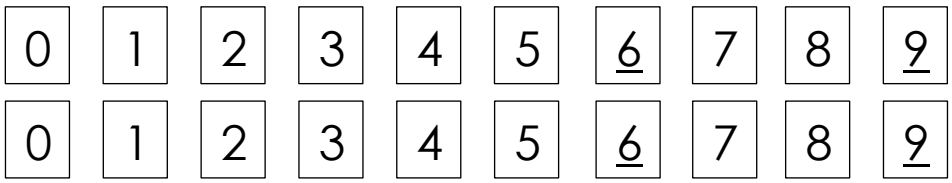
- 10, 3" by 5" index cards cut in half (game pieces). Note: If there are more than 2 players you will need 5 additional index cards for each player
- A sheet of plain paper cut in half (gameboards). Note: If there are more than 2 players you will need an additional sheet of paper for every 2 players.



- Prepare the materials:
  - Cut the 10 index cards as shown above.
  - Turn each index card to look like a tall rectangle.
  - On the first card write a large "0".
  - On the second card write a large "1".

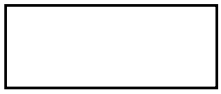


  - Continue until you have 2 sets of cards for 0 to 9.

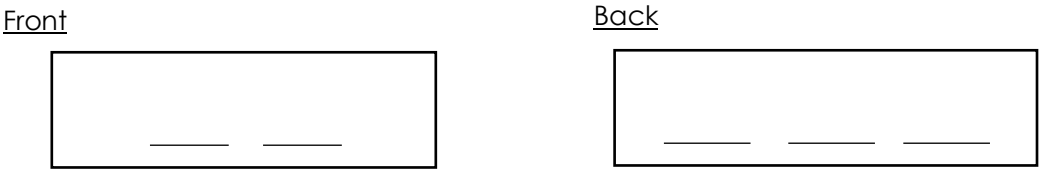


Note: For 3 players you will need 3 sets of cards. For 4 players you will need 4 sets of cards, etc.

  - Cut a plain sheet of paper into 2 pieces as shown above. Each half will be a gameboard. You'll need one gameboard per person.



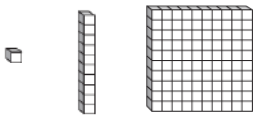
  - On the front of the gameboard place 2 lines across the bottom that are the width of the numeral cards. On the back of the gameboard place 3 lines across the bottom.



- To play the game:
  - Shuffle all of the cards together and place face down in the center of the playing area.
  - Begin with the side with 2 lines (2-digit numbers).
  - Players take turns choosing the top card off of the deck and placing in one of the spots on their gameboard. Once a piece is placed it may not be moved.
  - Goal: Make the largest number possible.
- Variations:
  - Make the smallest number possible.
  - The number closest to 50 (or another 2-digit number such as 30, 65, 72, etc.).
  - Use the 3-digit gameboard (on the back) and make the largest number possible, the smallest number possible, or the number closest to 500 (or another 3-dgit number such as 300, 425, 700, etc.)

Base 10 Materials

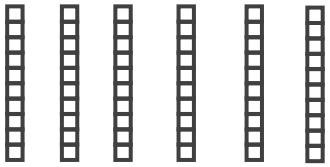
Note: In grades 2-5 we use Base 10 materials as models for 1s, 10s, and 100s. Your child can easily make a set for home use by cutting 10 by 10, 1 by 10, and 1 by 1 pieces from centimeter grid paper. A sheet with and without suggested cutting lines is included. For Grade 3 cut materials from at least 2 pages. For a greater challenge have your child cut the pieces from an unmarked copy without looking at the marked version. Have an extra copy or 2 available in case your child makes a mistake or if additional pieces are needed for later activities.



Activity 7—10 more, 10 fewer; 100 more, 100 fewer

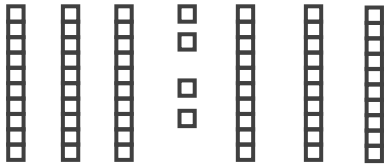
Prep: 2 or 3 pages of base 10 pieces (cut apart).

- Have your child count by 10s as you place a group of tens in front of him or her. For the following,



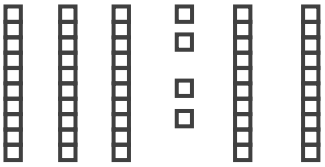
your child would count 10, 20, 30, 40, 50, and 60. If they seem to be skipping a piece or skipping a number, have your child point to each piece as he or she counts.

- Place 64 in front of your child (6 tens and 4 ones). The tens and the ones do not have to be grouped together. For example, the beginning arrangement could be as shown on the right.



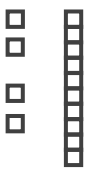
Note: It is important that your child understands that the location of the 10s does not change its value. A 10 will be a 10 no matter its location. A 1 will be a 1 no matter its location.

- Have your child count the pieces.
- Remove a 10 and ask your child to name the number that is 10 fewer (for our example it would be 54).

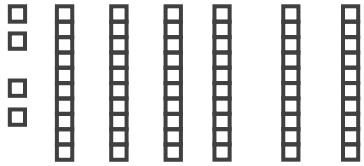


- Repeat by removing another 10 and ask your child to name the number that is 10 fewer.
- Repeat until you only have the "extras." (In our example it would be 4).

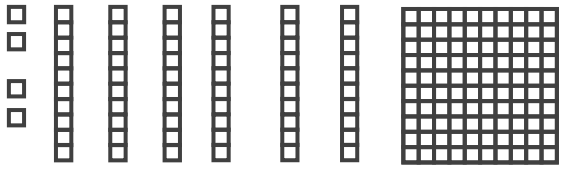
- Go the opposite direction by adding a 10. Ask your child to name the number that is 10 more (For our example it would be 14).



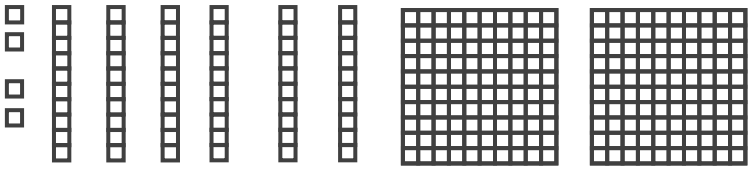
- Continue until you are back to the starting number (in our example it would be 64).



- Add a 100 piece and ask your child to name the number that is 100 more. (164)



- Repeat by adding additional 100s until you reach 964.



- Remove a 100 and ask your child to name the number that is 100 fewer.
- Continue until you are back at 64.

Repeat this activity on a different day for a different starting number.

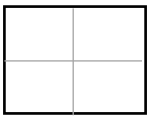
Activity 8—All of the ways to make a number

It is important for your child to understand that there are many different ways to make a number using 100s, 10s, and 1s. For example, 64 can be made with 6 tens and 4 ones, 4 tens and 24 ones, 64 ones, 3 tens and 34 ones, etc.

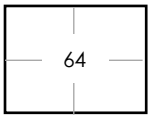
Note: Please allow your child to develop their own strategies for making sure they have found all of the ways. Tricks can prevent him or her from having this valuable problem-solving experience. This understanding and flexibility in playing with numbers will help them become more efficient and fluent when adding, subtracting, multiplying, and dividing. We will also use this technique to help your child become fluent in working with money.

Prep: 2 or 3 pages of base 10 pieces (cut apart), blank paper, pencil or crayon

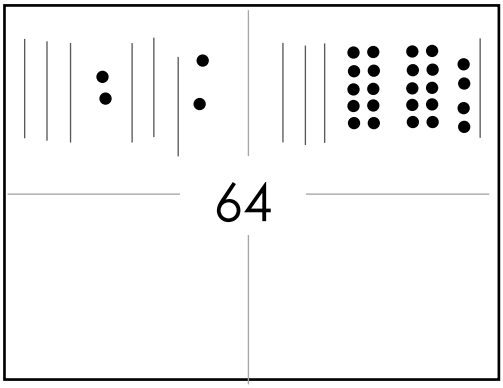
- Have your child fold a sheet of paper into 4 equal sections.



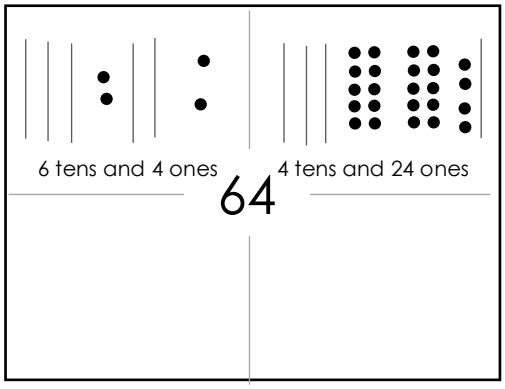
- Pick a 2-digit number (e.g., 64, 72, 53, 49).
- Have your child write the number in the center of the paper.



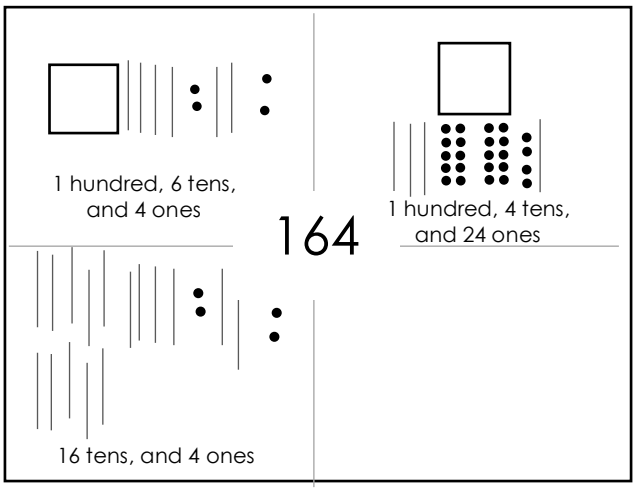
- To simplify the drawings of 2-digit numbers, have your child draw a | for 10 and a • for 1.
- Have your child draw as many different pictures as he or she can (one per section) for the given number. For example,



- After your child has drawn all of the possible pictures, have him or her label each drawing using, "____ tens and ____ ones." For example,

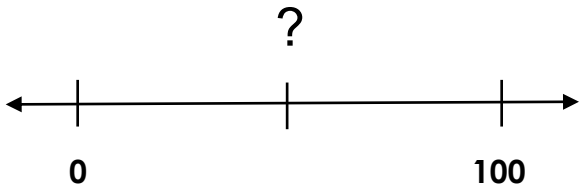


- If additional practice with 2-digit numbers is needed, repeat for other 2-digit numbers on other days.
- When comfortable with 2-digit numbers, have your child do the same for 3-digit numbers (e.g., 146, 267, 623). To simplify the drawings of 3-digit numbers, have your child draw a □ for 100, a | for 10, and a • for 1. Your child should draw at least 8 different pictures (4 on the front of the paper and 4 on the back) for each 3-digit number.
- After your child has drawn 8 different pictures using 100s, 10s, and 1s, have them label each drawing using "____ hundreds, ____ tens, and ____ ones."

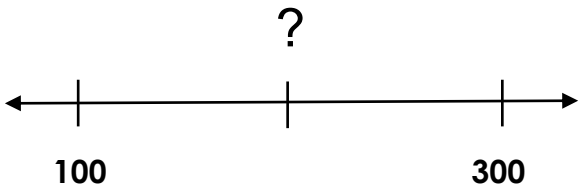


Open Number Lines—*Number Line Concentration* Cards

Your child is expected to be able to identify points on an "open" number line. An open number line is a number line on which only some of the hash marks are given. We use benchmarks such as halfway points to find the values on the number line. For example, in the number line below, the endpoint 0 and 100 are given. Your child is asked to find the halfway point, 50.



Your child may be asked to solve problems with "0" as one of the endpoints. He or she may also be asked to find the missing values when the starting number is a number other than 0. For example, in the problem below, your child is asked to find the value that is halfway between 100 and 300. (200)



Prep: Print, cut, and shuffle the *Number Line Concentration* cards well.

Activity 9—Quantity Match

- Shuffle the cards well.
- Place cards face up in 4 rows with 6 cards in each row.
- Take turns finding matches.
- Each player must share how he or she knows it is a match before taking the cards.

Activity 10—Quantity Concentration

- Shuffle the cards well.
- Place cards face down in 4 rows with 6 cards in each row.
- Take turns turning over 2 cards and placing face up in the exact same spaces.
- If the cards match, the player must share how he or she knows it is a match before taking the cards. (The defense must make sense.)
- If the cards do not match, the player must share how he or she knows the cards do not match before turning them back over. (The defense must make sense.)
- See who can find the most matches.

Activity 11—Who has more?

- Shuffle the cards well.
- Deal the cards so that each player has the same number of cards.
- Each player places their cards in a stack, face down.
- Each player turns over the top card on the stack.
- The player with the greater number states how they know it is greater. He or she then takes the cards and places on the bottom of the stack.
- See who can capture all of the cards.

Activity 12—Who has fewer?

- Shuffle the cards well.
- Deal the cards so that each player has the same number of cards.
- Each player places their cards in a stack (face down).
- Each player turns over the top card on the stack.
- The player with the smaller number states how they know it is smaller. He or she then takes the cards and places on the bottom of the stack.
- See who can capture all of the cards.

Fractions

In grade 1, children begin work with fractions as they cut a whole into 2 or 4 equal pieces. In grade 2, children are asked to cut wholes into 2, 4, or 3 equal pieces and name the pieces. Your grade 3 student is asked to cut a whole into 2, 4, 8, 3, or 6 equal pieces and name the pieces.

Activity 1—Fair and square

- Have your child help you bake cupcakes or brownies.
- Have your child cut the brownie (or cupcake) to share with you so that it is a fair share.
- Have your child see if they can cut the brownie (or cupcake) into 2 equal pieces in more than one way.
- Have your child cut the brownie (or cupcake) so that 4 people would each get a fair share.
- Have your child see if they can cut the brownie (or cupcake) into 4 equal pieces in more than one way.
- Have your child cut the brownie (or cupcake) so that 8 people would each get a fair share.
- Have your child see if they can cut the brownie (or cupcake) into 8 equal pieces in more than one way.
- Have your child cut the brownie (or cupcake) so that 3 people would each get a fair share.
- Have your child see if they can cut the brownie (or cupcake) into 3 equal pieces in more than one way.
- Have your child cut the brownie (or cupcake) so that 6 people would each get a fair share.
- Have your child see if they can cut the brownie (or cupcake) into 6 equal pieces in more than one way.

Activity 2—Fair and square with play-dough

- Have your child mold the play-dough into a "brownie".
- Have your child cut the "brownie" into 2 equal pieces and draw a picture to match.
- Have your child see if he or she can cut their "brownie" into 2 different equal pieces in more than one way.

- Have him or her draw a picture to show each way that he or she cut the "brownie".
- Repeat for a circular play-dough "cookie." (He or she can use the play-dough container to cut out the "cookie.")
- Have him or her draw a picture to show each way that he or she cut the "cookie." It may be difficult to be "creative" in cutting a circular disc into 2 sections. One possibility is shown on the right.

  Note: Your child should be able to prove that the sections are the same size.
- Have your child roll the play-dough into a long tube or "snake." The drawing for the snake will look like a long rectangle.

  This drawing will be very useful in grades 4 and 5 as the children learn to add, subtract, multiply, and divide fractions.

  Note: The above activities can span several days.

Repeat the above activity for 4 equal pieces on a different day.
Repeat the above activity for 8 equal pieces on a different day.
Repeat the above activity for 3 equal pieces on a different day.
Repeat the above activity for 6 equal pieces on a different day.

Fraction Activities using *Fraction 1 Concentration* Cards

Many of us learned to name a fraction such as ¾ as three-fourths or 3 out of 4. It is important for your child learn to name fractions in 3 ways: three-fourths, 3 out of 4, and 3 one-fourth pieces. In this last way of naming the fraction, your child learns that the numerator, 3, gives us the number of unit fraction pieces (in this case one-fourth). A unit fraction is a fraction with the numerator or 1. This way of reading the fraction will help your child compare fractions. In Grade 3 your child should be able to compare fractions with the same denominator. For example,

$\frac{3}{8}$ $\frac{5}{8}$

We can ask your child, "Which is bigger 3, one-eighth pieces or 5, one-eighth pieces?" Understanding that you have more one-eighth pieces if you have 5 one-eighth pieces so five-eighths is greater than three-eighths.

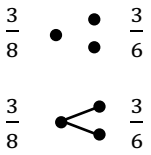
Your child should be able to compare fractions with the same numerator. For example,

$\frac{3}{8}$ $\frac{3}{6}$

We can ask your child, "Which is bigger 3, one-eighth pieces or 3, one-sixth pieces?" Understanding that since a one-sixth piece is bigger than a one-eighth piece, then 3, one-sixth pieces would be greater.

Your child is also expected to use the symbols >, <, and = correctly. To help with this, have your child put 2 dots next to the larger value and 1 dot next to the smaller number.

Your child then connects the dots.



Prep: Print, cut, and shuffle the *Fraction 1 Concentration* cards well.

Activity 1—Name that fraction

- Shuffle the cards well.
- Flash a card quickly.
- Have your child name the fraction they see.
- For cards showing fraction symbols (e.g., ½, ¼, ¾), have your child read in more than one way. For ¾, be sure to have your child read as three-fourths and 3, one-fourth pieces.
- Flash the card again quickly.
- Ask your child if he or she changed his or her mind.
- Show the card so your child can check.
- Repeat for the remaining cards.

Activity 2—Write that fraction

- Remove the fraction symbol cards from the deck (e.g., ½, ¼, ¾, etc.).
- Shuffle the remaining cards well.
- Flash a card quickly.
- Have your child write the fraction that goes with the what they see (For example, ½, ¼, ¾, etc.)
- Flash the card again quickly.
- Ask your child if he or she changed his or her mind.
- Show the card so your child can check.
- Repeat for the remaining cards.

Activity 3—Write the number word

- Shuffle the cards well.
- Flash a card quickly.
- Have your child write the number word that goes with the image on the card (For example, one-third, three-eighths, etc.).
- Flash the card again quickly.
- Ask your child if he or she changed his or her mind.
- Show the card so your child can check.
- Repeat for the remaining cards.

Activity 4—Quantity Match

- Shuffle the cards well.
- Place cards face up in 4 rows with 6 cards in each row.
- Take turns finding matches.
- Each player must share how he or she knows it is a match before taking the cards.

Activity 5—Quantity Concentration

- Shuffle the cards well.
- Place cards face down in 4 rows with 6 cards in each row.
- Take turns turning over 2 cards and placing face up in the exact same spaces.
- If the cards match, the player must share how he or she knows it is a match before taking the cards. (The defense must make sense.)
- If the cards do not match, the player must share how he or she knows the cards do not match before turning them back over. (The defense must make sense.)
- See who can find the most matches.

Fraction Activities using *Fraction Number Line Concentration* Cards

Prep: Print, cut, and shuffle the cards well.

Activity 1—Name that fraction

- Shuffle the cards well.
- Flash a card quickly.
- Have your child name the fraction they see.
- For cards showing fraction symbols (e.g., ½, ¼, ¾), have your child read in more than one way. For ¾, be sure to have your child read as three-fourths and 3, one-fourth pieces.
- Flash the card again quickly.
- Ask your child if he or she changed his or her mind.
- Show the card so your child can check.
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- Flash the card again quickly.
- Ask your child if he or she changed his or her mind.
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Activity 3—Write the number word

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- Flash a card quickly.
- Have your child write the number word that goes with the image on the card (For example, one-third, three-eighths, etc.).
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- Each player turns over the top card on the stack.
- The player with the greater number states how they know it is greater. If the explanation makes sense, he or she then takes the cards and places on the bottom of the stack.
- See who can capture all of the cards.

Activity 7—Who has fewer? Who has less?

- Shuffle the cards well.
- Deal the cards so that each player has the same number of cards.
- Each player places their cards in a stack (face-down).
- Each player turns over the top card on the stack.
- The player with the smaller number states how they know it is smaller. If the explanation makes sense, he or she then takes the cards and places on the bottom of the stack.
- See who can capture all of the cards.

Multiplication and Division

For many of us, learning multiplication involved memorizing the multiplication facts. Although fact fluency is important, your child is expected to understand all of the ways that we represent multiplication: equal groups, equal rows (array), equal jumps, and area. These models are the models your child will see in multiplication story problems. Therefore, we want to make sure that he or she has strong visual images and the language needed to describe multiplication. Language includes: equal groups of, equal rows of, equal jumps of, or "by" (when working with area). For a problem such as 4 x 9, we could read as:

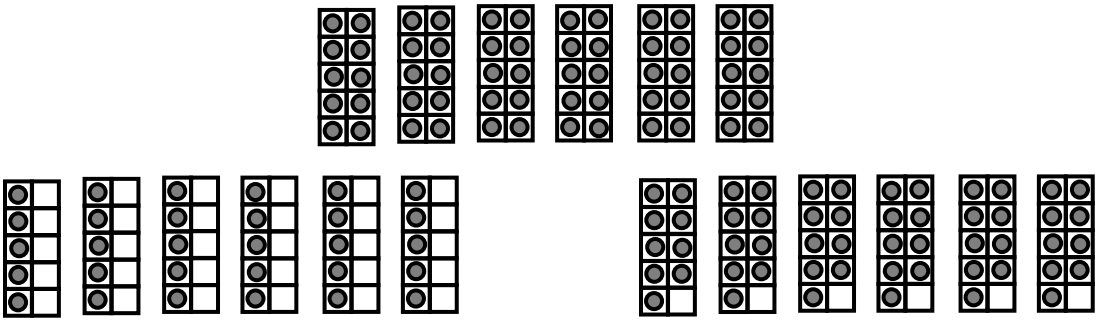
- 4 groups of 9,
- 4 rows of 9,
- 4 jumps of 9, or
- 4 by 9.

Multiplication Fact Sequence

When many of us learned the multiplication facts we began with the 1s and worked our way up to the 12s. We have found that changing the order a bit may help children learn their facts and more importantly learn strategies for working with larger numbers. Begin with the 0s, 1s, and 10s. The 0s are easy. Your child should know that anything multiplied by 0 will be 0. For fun have your child draw 7 groups of 0, 3 groups of 0, 3 rows of zero. While they are still giggling or looking at you with that look of disbelief, ask them to draw zero groups of 7, zero rows of 5, zero jumps of 9. You get the idea. The 0s are easy. Do a similar activity with 1s. Have your child draw 1 group of 7 and 7 groups of 1. Although the totals are the same, it is important for your child to know that the pictures will be different.

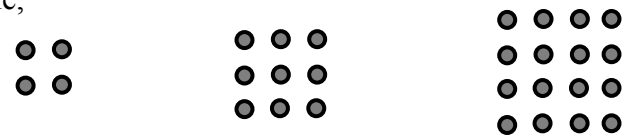
The 10s are one of the next easiest. Your child can picture filled 10 frames or base 10 rods. 5 tens is 50, 8 tens is 80.

Once your child is comfortable with the 10s facts either do the 5s or the 9s. The 5s are half of the 10s facts. For example, if 6 tens is 60, 6 fives is half of that or 30. The 9s are 1 fewer in each group. For example, if 6 tens is 60, 6 nines would be 60 minus 6 or 54.



Once your child is fluent with the 0s, 1, 10s, 5, and 9s he or she can practice the doubles. This would have them learn the 2s (doubles—he or she began doubling in grade 1), followed by the 4s (double doubles), followed by the 8s (double, double, double). Repeated doubling is a powerful strategy for mentally multiplying larger numbers by 2, 4, or 8. Repeated halving is used to divide by 2, 4, or 8.

The next multiplication cluster are the square numbers (2 x 2, 3 x 3, 4 x 4, etc.). These are the numbers that make squares. For example,



If your child knows these facts and knows that you can "flip" the known facts to get the same product (Commutative Property: if you know 2 x 3 = 6 then you know 3 x 2 = 6), then your child knows all but 3 facts. We have not listed learning the 3s, 6s, or 7s in this sequence. The only 3 facts that we are missing are 3 x 6 and 3 x 7. 3 x 6 is double 3 x 3. We are missing 6 x 3 and 6 x 7. If your child knows 3 x 6 is 18 then he or she knows 6 x 3 is 18. 6 x 7 is double 3 x 7. If your child knows 3 x 7 is 21 then 6 x 7 is double that or 42. We are missing 7 x 3 and 7 x 6 but we've already addressed those facts. Technically the one fact to memorize is 3 x 7.

Division

Division is the inverse of multiplication. If multiplication is combining equal groups, division is separating into equal groups or pulling off equal groups of a given number. If multiplication is combining equal rows, then division is separating into equal rows or pulling off equal rows of a given number. In grade 3, your child is expected to understand the different representations and language for division. He or she is also expected to use his or her knowledge of multiplication to divide. That is, to find 24 ÷ 6 your child can think, "What times 6 is 24?" (missing factor).

Multiplication and Division Games

There are 3 sets of concentration game cards that your child can use to develop their understanding and fluency with multiplication and division:

- *Equal Grouping* Cards
- *Division as Separating Concentration* Cards
- *Multiplication 8s, 9s, 10s Facts Concentration* Cards

Activity 1—Quantity Match

- Shuffle the cards well.
- Place cards face up in 4 rows with 6 cards in each row.
- Take turns finding matches.
- Each player must share how he or she knows it is a match before taking the cards.

Activity 2—Quantity Concentration

- Shuffle the cards well.
- Place cards face down in 4 rows with 6 cards in each row.
- Take turns turning over 2 cards and placing face up in the exact same spaces.
- If the cards match, the player must share how he or she knows it is a match before taking the cards. (The defense must make sense.)
- If the cards do not match, the player must share how he or she knows the cards do not match before turning them back over. (The defense must make sense.)
- See who can find the most matches.

Activity 3—Who has more?

- Shuffle the cards well.
- Deal the cards so that each player has the same number of cards.
- Each player places their cards in a stack, face down.
- Each player turns over the top card on the stack.
- The player with the greater number states how they know it is greater. If the explanation makes sense, he or she then takes the cards and places on the bottom of the stack.
- See who can capture all of the cards.

Activity 4—Who has fewer? Who has less?

- Shuffle the cards well.
- Deal the cards so that each player has the same number of cards.
- Each player places their cards in a stack (face-down).
- Each player turns over the top card on the stack.
- The player with the smaller number states how they know it is smaller. If the explanation makes sense, he or she then takes the cards and places on the bottom of the stack.
- See who can capture all of the cards.

Activity 5—Multiplication and Division Stories—*Equal Grouping* Cards & *Division as Separating* Cards

Sample stories are included within these 2 card decks. Use one of the decks at a time. Have your child remove the story cards from one of the decks.

- Shuffle the remaining cards well.
- Place the cards in a stack (face-down).
- Have your child select the top card and tell a story problem to go with the fact or the drawing.
- Complete 4 to 6 stories.

Repeat for the same deck on a different day or do the same activity for the other deck.

Addition Strategy Games (For additional strategy practice)

Bridge to 10 or 100 strategy using the *Bridge to 10 or 100 Concentration Cards*

The bridge to 10 strategy is a powerful addition strategy for your child to know. In grade 1 your child learned that another way to think of 9 + 4 is as 10 + 3 or 8 + 6 as 10 + 4. In grade 2 we used this strategy to solve problems such as 38 + 16 knowing that it is the same as 40 + 14. In grade 3 we use this strategy to solve problems such as 538 + 197, linking it to 535 + 200. When your child reaches grade 5 they will use the strategy to solve problems such as 3.8 + 1.6 linking the problem to 4.0 + 1.4. We call it the Bridge to 10 strategy in grades 1 and 2. In grade 3 your child will learn it is the Associative Property. For example, to solve 538 + 197 we thought of 538 as 535 + 3. Instead of associating the 3 with the 535 we associate it with 197, 538 + 197 = (535 + 3) + 197 = 535 + (3 + 197). So,

538 + 197 = 535 + 200 = 735

This becomes a powerful mental strategy.

Prep: Print, cut, and shuffle the *Bridge to 10 or 100 Concentration* cards well.

Activity 1—Quantity Match

- Shuffle the cards well.
- Place cards face up in 4 rows with 6 cards in each row.
- Take turns finding matches.
- Each player must share how he or she knows it is a match before taking the cards. (The defense must make sense.)

Activity 2—Quantity Concentration

- Shuffle the cards well.
- Place cards face down in 4 rows with 6 cards in each row.
- Take turns turning over 2 cards and placing face up in the exact same spaces.
- If the cards match, the player must share how he or she knows it is a match before taking the cards. (The defense must make sense.)
- If the cards do not match, the player must share how he or she knows the cards do not match before turning them back over. (The defense must make sense.)
- See who can find the most matches.

Activity 3—Who has more?

- Shuffle the cards well.
- Deal the cards so that each player has the same number of cards.
- Each player places their cards in a stack, face down.
- Each player turns over the top card on the stack.
- The player with the greater number states how they know it is greater. He or she then takes the cards and places on the bottom of the stack.
- See who can capture all of the cards.

Activity 4—Who has fewer?

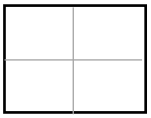
- Shuffle the cards well.
- Deal the cards so that each player has the same number of cards.
- Each player places their cards in a stack (face down).
- Each player turns over the top card on the stack.
- The player with the smaller number states how they know it is smaller. He or she then takes the cards and places on the bottom of the stack.
- See who can capture all of the cards.

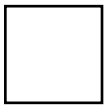
Doubling strategies *Base 10 Concentration—Grade 3* Cards

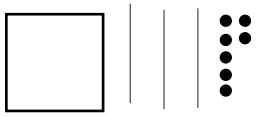
Doubles and near doubles (doubles plus 1, doubles minus 1, doubles plus 2, doubles minus 2) are also important addition strategies for your child to know. In grade 1, your child learned to double the numbers 1 to 9 (e.g., double 8 is 16, double 6 is 12). He or she may also double multiples of 10 (e.g., double 40 is 80, double 30 is 60). It is also important for your child to name the double (For example, when shown 7 + 7 your child can name it as double 7). A near double is a problem such as 7 + 8. It is important for your child to know that this is double 7 and 1 more or 1 fewer than double 8. In grade 2 we used these strategies for doubling 2-digit numbers. In grade 3 we use these strategies to quickly solve problems such as 199 + 199. Your child can think of this problem as double 200 minus 2, 56 + 56 as double 50 plus double 6 or 112. In grade 4 we use this same strategy to solve 2 x 199 or 2 x 56.

Prep: Print and cut the *Base 10 Concentration—Grade 3* Cards

Activity 1—Draw the double

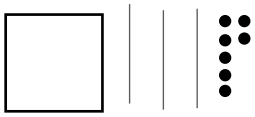


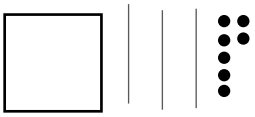
- Have your child fold a sheet of paper into 4 equal sections.
- Shuffle the cards well. Place them in a stack face down.
- Have your child choose the top card off of the deck.
- To simplify the drawings, have your child draw a  for 100, a for 10, and a • for 1.
- In the first section of the paper, have your child draw a picture of the number on the card. If the card contains a picture of Base 10 materials, have your child draw a picture to match. For example,



Note: It is helpful to have your child draw the ones using a 5-frame, 10-frame, or domino pattern instead of a random pattern. The pattern shown above is similar to the 5-frame pattern that is learned in grade 1 and that we use for other strategies. Drawing 7 as 5 and 2 will make it easier to "see" the double.

- Have your child draw the same image again to show the double.



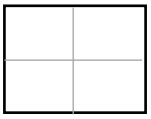


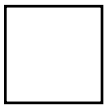
- Have your child select the next card and draw the related double in the next section.
- Repeat by having your child choose a card and draw the related double in the next section on his or her paper.
- Have your child draw a total of 4 doubles.
- After your child has finished drawing 4 different doubles, have him or her go back and label the drawings. For example,

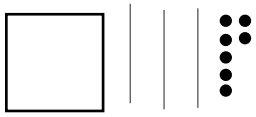
double 100, double 30, and double 7
137 + 137 = 200 + 60 + 14 = 274

Note: We do not need to "carry" a one to find the answer. We will teach that strategy (regrouping) in a later grade. In Grade 3 it is very important that your child understands the combining of like places for later work with fractions and algebra. It is important for your 3rd grader to think about how he or she can make the number using the fewest number of Base 10 pieces. In our example, 14 ones can be thought of as one 10 and 4 ones. Thinking of equivalent ways to make the same number, instead of "carrying" 1s will help students be more successful when learning to add and subtract fractions and mixed numbers.

Activity 2—Draw the double + 1



- Have your child fold a sheet of paper into 4 equal sections.
- Shuffle the cards well. Place them in a stack face down.
- Have your child choose the top card off of the deck.
- To simplify the drawings, have your child draw a  for 100, a for 10, and a • for 1.
- In the first section of the paper, have your child draw a picture of the number on the card. If the card contains a picture of Base 10 materials, have your child draw a picture to match. For example,



Note: It is helpful to have your child draw the ones using a 5-frame, 10-frame, or domino patterns instead of a random pattern. The pattern shown above is similar to the 5-frame pattern that is learned in grade 1 and that we use for other strategies. Drawing 7 as 5 and 2 will make it easier to "see" the double.

- Have your child draw the same image again and 1 more to show the double + 1.

- Have your child select the next card and draw the related double + 1 in the next section.
- Repeat by having your child choose a card and draw the related double + 1 in the next section on his or her paper.
- Have your child draw a total of 4 doubles + 1 problems.

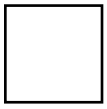
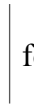
- After your child has finished drawing 4 different doubles + 1 problems, have him or her go back and label the drawings. For example,

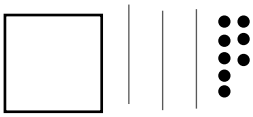
double 100, double 30, and double 7
and 1 more
137 + 138 = 200 + 60 + 15 = 275

This same activity can be done for doubles – 1, doubles + 2, and doubles – 2 problems.

Activity 3—Combining like places

It is important for your child to understand that when you add 2-digit or 3-digit numbers you add like places. That is, the hundreds go with hundreds, the tens with tens, and the ones with ones. It doesn't matter where the numbers are written (It is not required that they are aligned. This is why you often see problems written horizontally, not just vertically). What is required, is that like places are combined. At times there will be simpler ways to make the same quantity using fewer base 10 pieces. This understanding will help your child when they have to combine like sized pieces (denominators) when adding fractions and like terms when they get to algebra.

- Have your child fold a sheet of paper into 4 equal sections.
- Shuffle the cards well. Place them in a stack face down.
- Have your child choose the top card off of the deck.
- To simplify the drawings, have your child draw a  for 100, a  for 10, and a • for 1.
- In the first section of the paper, have your child draw what is on the card.



- Have your child select the next card from the top of the deck. Have your child also draw the second image in the first section of the paper.

- Have your child select the next 2 cards to create a second problem and draw the related pictures in the next section.
- Repeat until your child has drawn a total of 4 problems.

- After your child has finished drawing 4 different problems, have him or her go back and label the drawings. For example,

100 + 200 = 300
30 + 0 = 30
8 + 4 = 12
300 + 30 + 12 = 342

Note: We do not need to "carry" a one to find the answer. I can think about how I can make the number using the fewest number of Base 10 pieces. Thinking of equivalent ways to make the same number, instead of "carrying" 1s will help students be more successful when learning to add and subtract fractions and mixed numbers.

Section 2—Parent Information
Subtraction Strategies and Drawings

Our goals for your child are for her or him to be:

- playful with numbers,
- flexible in the way she or he adds or subtracts numbers,
- efficient and accurate when she or he adds or subtracts.

Many of us learned a single strategy for adding numbers and a related strategy for subtracting numbers. We often heard the words "carry" and "borrow". These strategies always work but they aren't always the most efficient. Your child will learn these strategies in later grades. In grade 2, your child is introduced to other strategies including those shown below. In grade 3, your child should be fluent with each of these strategies. We also want them to understand why a chosen strategy works, including the ones that we learned. I will include terms you may see in other resources. I hope this will help you make sense of these strategies and terms.

We'll begin with strategies using the Base 10 manipulatives. Whenever possible, it is important for your child to represent the problem with the actual materials, draw a picture to match, then write the related equations.

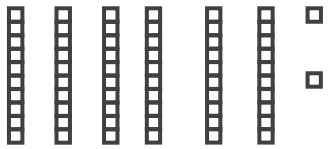
Round and Adjust

This strategy is one of the most efficient strategies for solving problems such as 62–29, 33–18, 184–57.

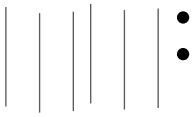
Example 1: 62 – 29

Begin with showing 62 using Base 10 materials (with materials and as a drawing).

Materials

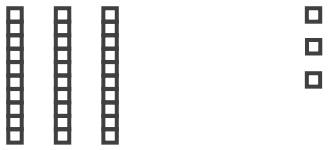


Drawings

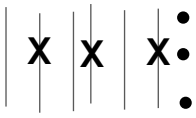


To remove 29, we remove 30 and then give back 1. We rounded the 29 to 30 and then needed to adjust (give 1 back) because we took away one too many. Another way to think about this is with money. Suppose you have 6 dimes and 2 pennies. You buy something that costs 29¢. You don't trade a dime for 10 pennies. You give the cashier 3 dimes. They give you back 1 penny. That is what we just did with the tens and ones. This strategy models what we do when we pay for items with cash. The illustrations below show the changes in our materials and drawing after using this strategy.

Materials



Drawings



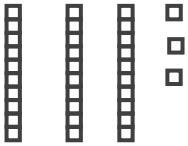
I removed 3 tens, or 30, and gave back 1. (Note: It doesn't matter which of the 10s are removed or crossed out.)

$$62 - 29 = 62 - 30 + 1 \text{ or } 33$$

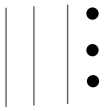
Example 2: 33 – 18

Begin with showing 33 using Base 10 materials (with materials and as a drawing).

Materials

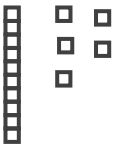


Drawings

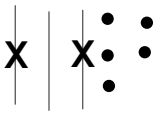


To remove 18, we can just remove 20 and then give back 2. We rounded the 18 to 20 and then needed to adjust (give 2 back) because we took away 2 too many. We can again think about this problem using money. Suppose you have 3 dimes and 3 pennies. You buy something that costs 18¢. You don't trade a dime for 10 pennies. You give the cashier 2 dimes. They give you back 2 pennies. The illustrations below show the changes in our materials and drawing after using this strategy.

Materials



Drawings



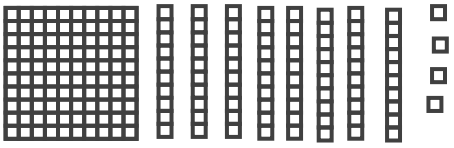
I removed 2 tens, or 20, and gave back 2. (Note: It doesn't matter which of the 10s are removed or crossed out.)

$$33 - 18 = 33 - 20 + 2 \text{ or } 15$$

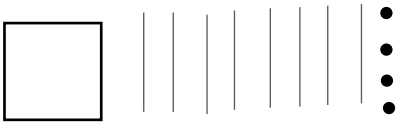
Example 3: 184 - 57

Begin with showing 184 using Base 10 materials (with materials and as a drawing).

Materials

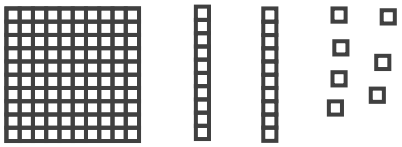


Drawings

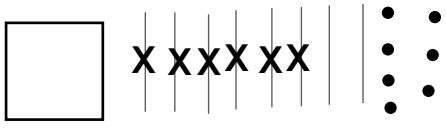


To remove 57, we can remove 60 and then give back 3. We rounded 57 to 60 and then needed to adjust (give 3 back) because we took away 3 too many.

Materials



Drawings



I removed 6 tens, or 60, and gave back 3. (Note: It doesn't matter which of the 10s are removed or crossed out.)

$$184 - 57 = 184 - 60 + 3 \text{ or } 127$$

Use Place Value and Decompose a 10

This strategy uses 2 different understandings.

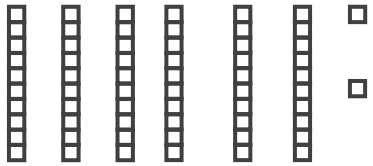
- One understanding is that we can represent numbers using place value. For example, 29 is 20 and 9, 18 is 10 and 8, 57 is 50 and 7. When written as 29 = 20 + 9, 18 = 10 + 8, 57 = 50 + 7 it is called expanded form of a number. 3rd graders are expected to be able to write numbers in expanded form.
- The other understanding is that we can split a 10 into 2 parts in many different ways.

Let's use this strategy for 62 – 29 and 33 – 18. This strategy can also be used for 184 – 57.

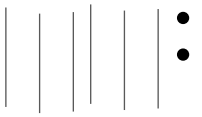
Example 1: 62 – 29

Begin with showing 62 using Base 10 materials (with materials and as a drawing).

Materials

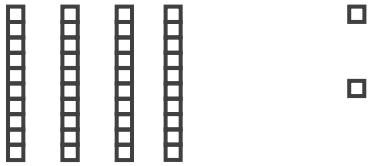


Drawings

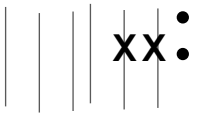


We think of 29 as 20 and 9. First remove 20.

Materials

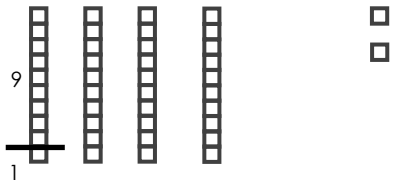


Drawings

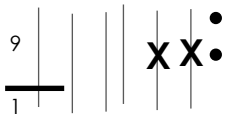


We don't have 9 ones to remove so we "cut" a 10 into 9 and 1 (Note: It doesn't matter which 10 we cut into 2 pieces).

Materials

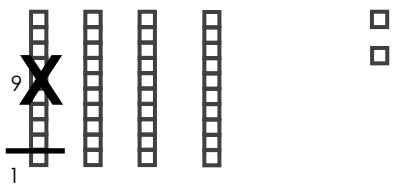


Drawings

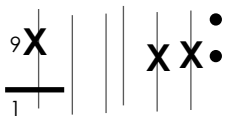


We "remove" the 9 and we are left with the answer.

Materials



Drawings

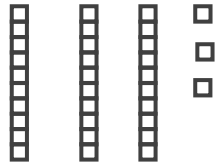


62 – 29 = 62 – 20 – 9 or 33

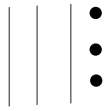
Example 2: 33 – 18

Begin with showing 33 using Base 10 materials (with materials and as a drawing).

Materials

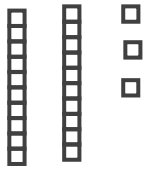


Drawings

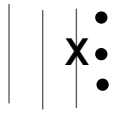


We think of 18 as 10 and 8. First remove 10.

Materials

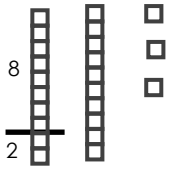


Drawings

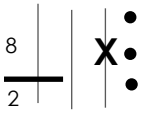


We don't have 8 ones to remove so we "cut" a 10 into 8 and 2 (Note: It doesn't matter which 10 we cut into 2 pieces).

Materials

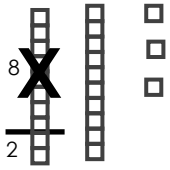


Drawings

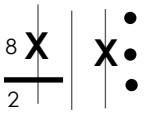


We "remove" the 8 and we are left with the answer.

Materials



Drawings



33 – 18 = 33 – 10 – 8 or 15

Use Place Value, Part-Part-Total, and Decompose a 10

This strategy uses 3 different understandings.

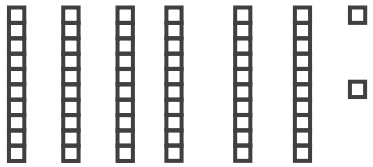
- One understanding is that we can represent numbers using place value. For example, 29 is 20 and 9, 18 is 10 and 8, 57 is 50 and 7. When written as 29 = 20 + 9, 18 = 10 + 8, 57 = 50 + 7 it is called expanded form of a number.
- Some children like to first remove the ones that they have. For 62 – 29, they understand that 62 is made up of 6 tens and 2 ones. They understand that 9 is the same as 2 and 7, 9 = 2 + 7. If they first remove the 2 from the 62, they will still need to remove 7 more.
- They also understand that a 10 can be split into 2 parts. For our example, 62 – 29, they still need to remove 7 ones. They split a10 into 7 and 3 to get the rest of the ones that still need to be removed.

Let's use this strategy for 62 – 29 and 33 – 18. This strategy can also be used for 184 – 57.

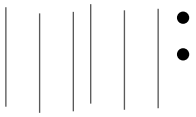
Example 1: 62 – 29

Begin with showing 62 using Base 10 materials (with materials and as a drawing).

Materials

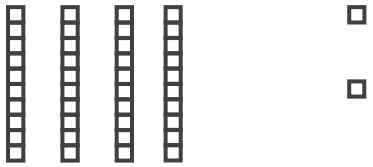


Drawings

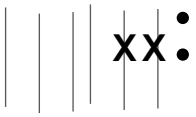


We think of 29 as 20 and 9. First remove 20.

Materials

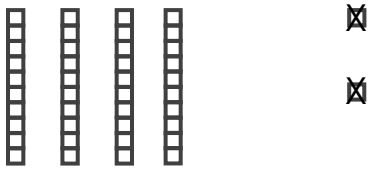


Drawings

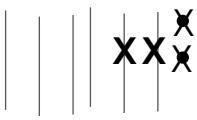


We don't have 9 ones to remove but we do have 2 ones. Remove the 2 ones.

Materials

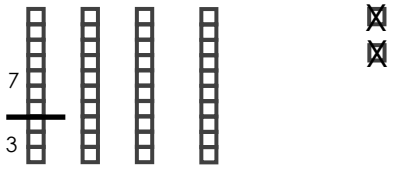


Drawings

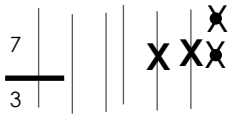


We still need to remove 7. At this point we've thought of 9 as 2 + 7 (Part-part-total; part 1 is 2, part 2 is 7, total is 9). So we "cut" a 10 into 7 and 3 (Note: It doesn't matter which 10 we cut into 2 pieces).

Materials

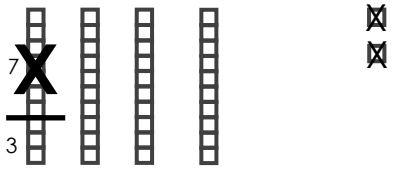


Drawings

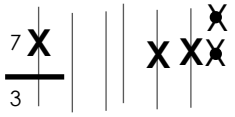


We "remove" 7 more and we are left with the answer.

Materials



Drawings

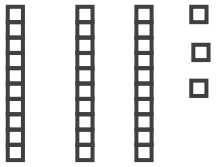


62 – 29 = 62 – 20 – 2 – 7 or 33

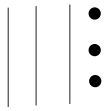
Example 2: 33 – 18

Begin with showing 33 using Base 10 materials (with materials and as a drawing).

Materials

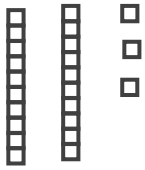


Drawings

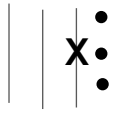


We think of 18 as 10 and 8. First remove 10.

Materials

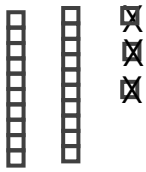


Drawings

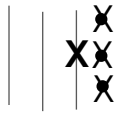


We don't have 8 ones to remove but we do have 3 ones. Think of 8 as 3 and 5. Remove the 3 ones.

Materials

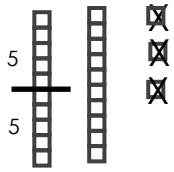


Drawings

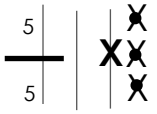


We still need to remove 5. At this point we've thought of 8 as 3 + 5 (Part-part-total; part 1 is 3, part 2 is 5, total is 8). So we "cut" a 10 into 5 and 5 (Note: It doesn't matter which 10 we decompose into 2 pieces).

Materials

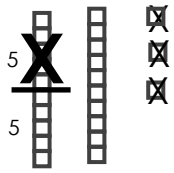


Drawings

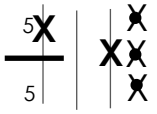


We "remove" 5 more and we are left with the answer.

Materials



Drawings



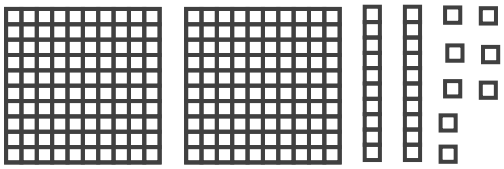
33 – 18 = 33 – 10 – 3 – 5 or 15

Use Place Value and Decompose a 10 or 100

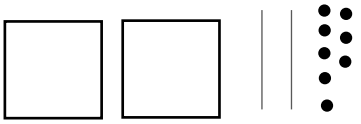
The strategies used above can also be used to solve problems such as 228 – 83. For this problem we will think of 83 as 80 and 3.

Begin with showing 228 using Base 10 materials (with materials and as a drawing).

Materials

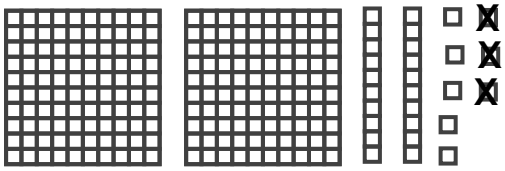


Drawings

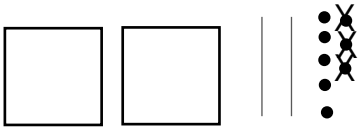


We think of 83 as 80 and 3. We can first remove either 80 or 3. Since we have 8 ones let's remove the 3 ones first.

Materials

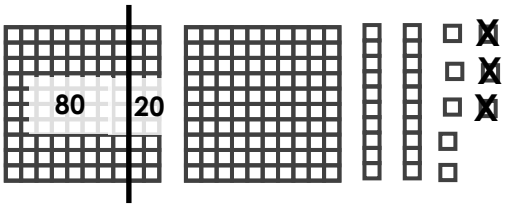


Drawings

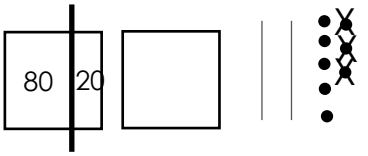


We don't have 8 tens to remove so we "cut" a 100 into 80 and 20 (Note: It doesn't matter which 100 we cut into 2 pieces).

Materials

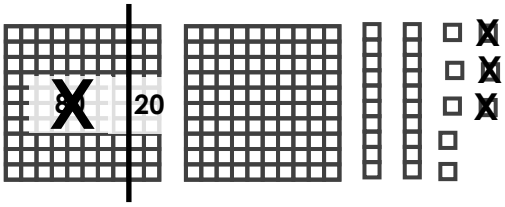


Drawings

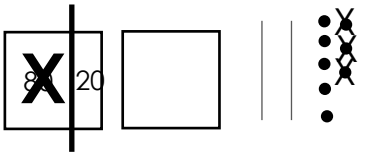


We "remove" 80 and we are left with the answer.

Materials



Drawings



228 – 83 = 228 – 3 – 80 or 145

Think of Subtraction as How Many More—Missing Addend

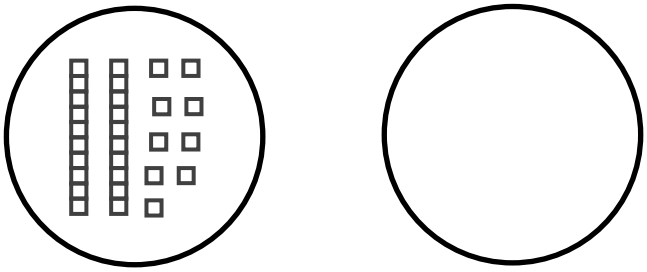
This strategy is very important for solving fraction subtraction problems in later grades. Using this strategy we think of problems such as 62 – 29 as how many more than 29 is 62 or how many do we need to add to 29 to get to 62.

29 + ___ = 62.

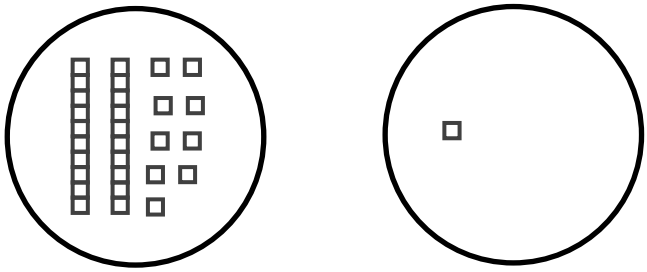
In Part 1 I'll show a missing part strategy for finding the answer using our Base 10 pieces. In Part 2 I'll show a counting on strategy using a number line.

Think of Subtraction as How Many More—Missing Addend—Part 1-Finding the Missing Part

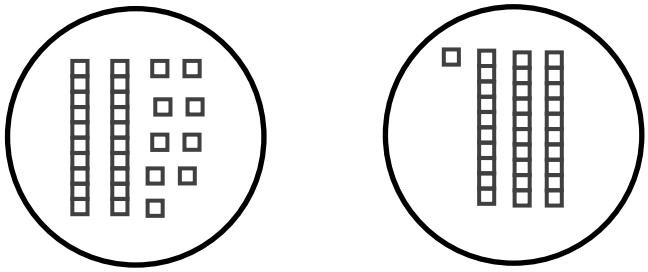
To solve 29 + ___ = 62 (or 62 – 29) using a missing part strategy, use 2 plates or sheets of paper and the Base 10 materials. Begin with representing the part you know (29) on one plate or sheet of paper. (In our example I placed what we know on the left "plate". We will put the pieces for the missing part on the empty "plate" (on the right).



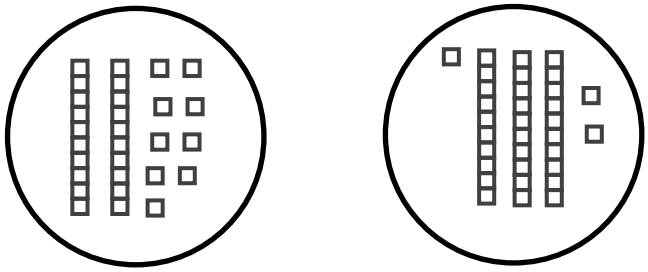
On the second plate we add 10s and 1s until we reach the total (62). For example, if we add a 1, we have a total of 30. (**Note:** I don't have to begin by adding ones. I could put tens on the plate first until I get close to the goal number.)



We add 10s until we reach a total of 60.



We then add 1s until we reach a total of 62.

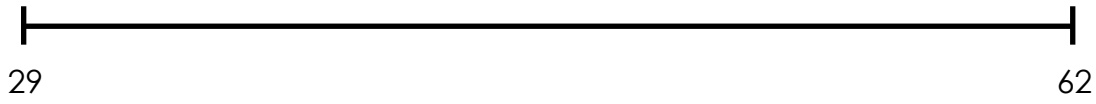


The missing part is 33.

29 + **33** = 62 so 62 – 29 = **33**

Think of Subtraction as How Many More—Missing Addend—Part 2-Counting Up

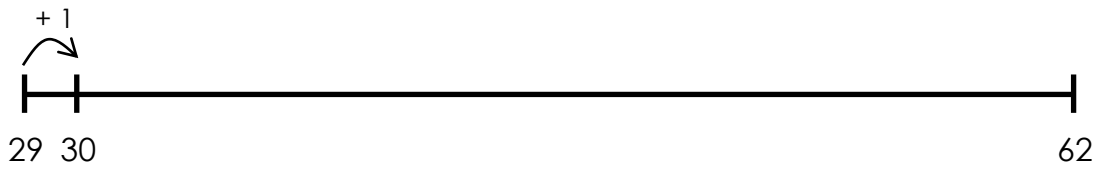
To solve 29 + ___ = 62 (or 62 – 29) using a counting on strategy, we begin with an open number line with the start number on the left and the goal number on the right.



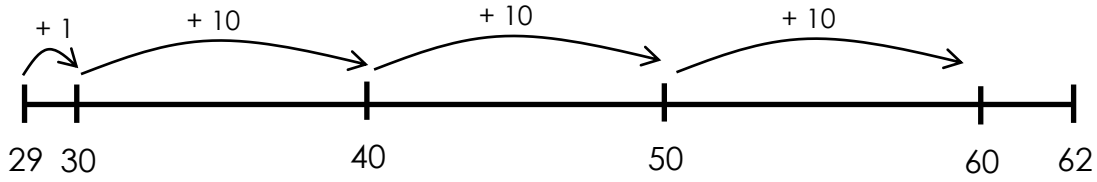
The goal is to find the distance between 29 and 62 by making jumps. Note: There are many different ways to "jump" from 29 to 62.

Example 1

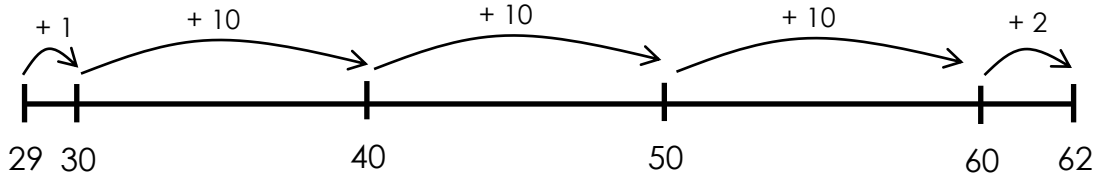
We can make a jump of 1 to get to 30 (Count up 1).



We can make jumps of 10 to get to 60 (Count up 10, 20, 30).



We make a jump of 2 to get to 62 (Count up 2).



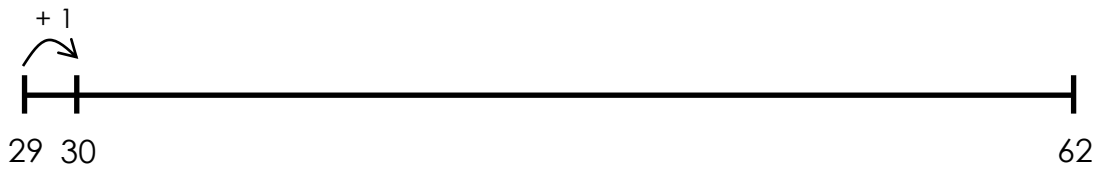
We combine the jumps to get the missing addend.

$$29 + \underline{\mathbf{1 + 10 + 10 + 10 + 2}} = 62$$
$$29 + \underline{\mathbf{33}} = 62 \quad \text{so} \quad 62 - 29 = \underline{\mathbf{33}}$$

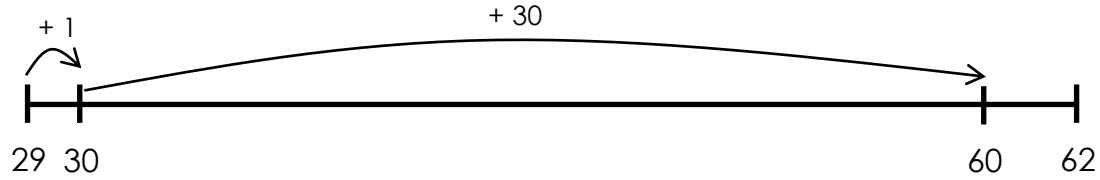
Example 2

There are many ways that we can jump from 1 to 62. We hope that your child will find more efficient ways to jump than by 1s.

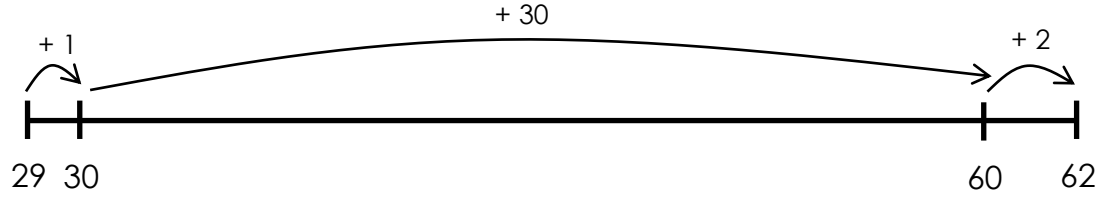
We can make a jump of 1 to get to 30 (Count up 1).



We can make a jump of 30 to get to 60 (Count up 30).



We make a jump of 2 to get to 62 (Count up 2).



We combine the jumps to get the missing addend.

$$29 + \underline{\mathbf{1 + 30 + 2}} = 62$$
$$29 + \underline{\mathbf{33}} = 62 \quad \text{so} \quad 62 - 29 = \underline{\mathbf{33}}$$

Example 3

Some children will first jump 30 from 29 to get to 59. They then make jumps of 1 or a 1 and a 2 to get to 62.

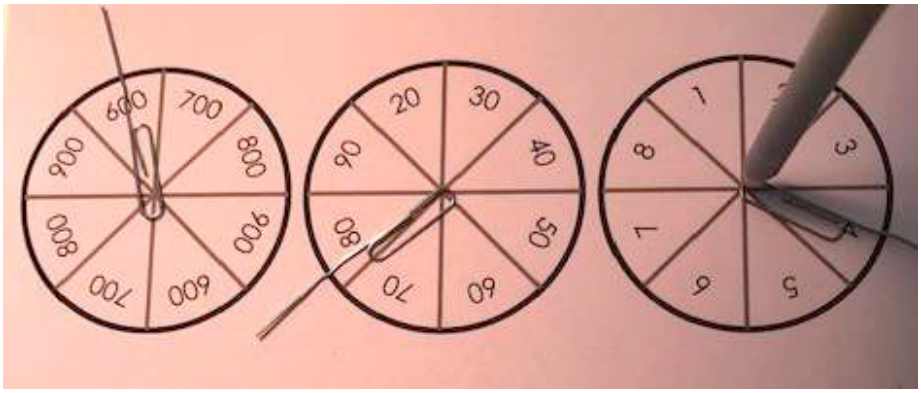
Section 3—Child Activities

Subtraction Activities

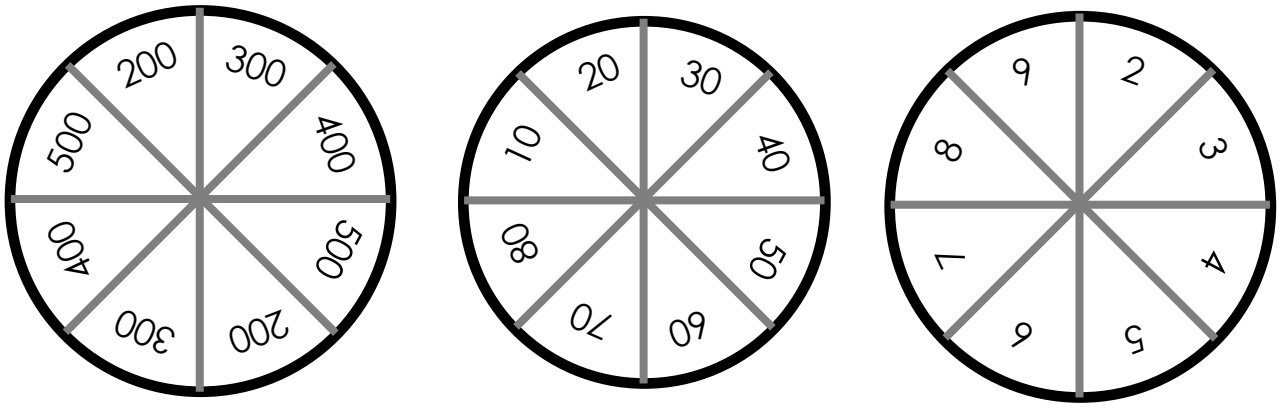
Activity 1—Using multiple strategies to subtract

Materials: Base 10 materials (optional), Grade 3 Subtraction Spinners page, paper clips, something to draw with and draw on.

- Have your child spin the spinners on the top of the Subtraction Spinners page to get the starting 2-digit number.



- Have your child draw a picture to show the starting number.
- Spin the spinners on the bottom of the page to get the amount to remove.



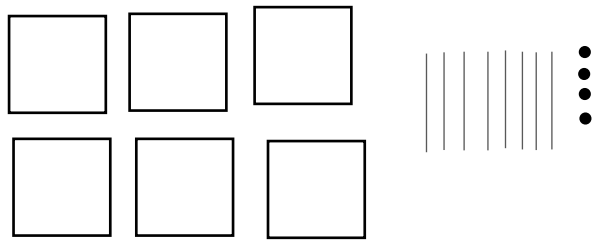
- Have your child draw pictures to show multiple ways to remove the number.

For specific subtraction strategy examples, see ***Subtraction Strategies and Drawings, Section 2—Parent Information.

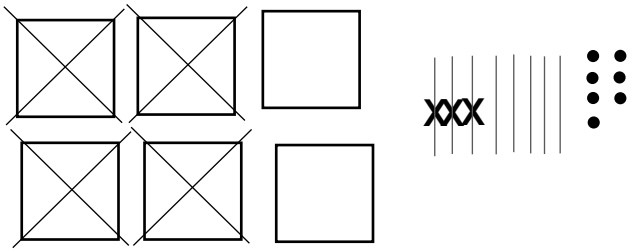
Suppose the starting number is 684 and the amount to remove is 427.

Example 1—Using a Round and Adjust Strategy***

- Begin by drawing the starting number.

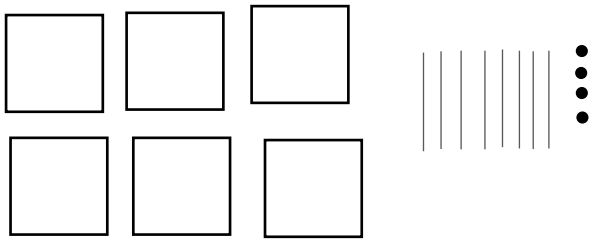


- Remove 400.
- Remove 30 and give back 3.
- So 684 – 427 = 684 – 400 – 30 + 3 or 257

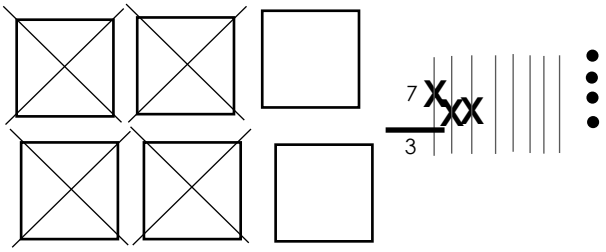


Example 2—Using Place Value and Decomposing a 10 Strategy***

- Begin by drawing the starting number.

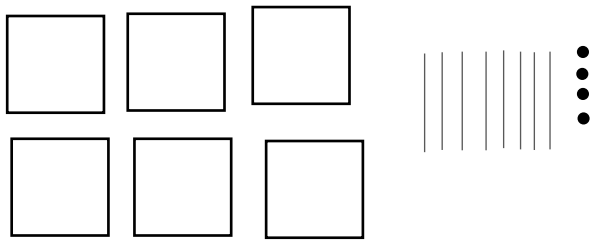


- Remove 400.
- Think of 27 as 20 and 7.
- Remove 20. Cut a 10 into 7 and 3.
- Remove 7
- So 684 – 427 = 684 – 400 – 20 – 7 or 257

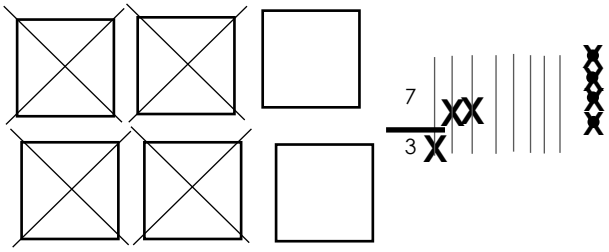


Example 3—Using Place Value, Part-Part-Total, and Decomposing a 10 Strategy***

- Begin by drawing the starting number.

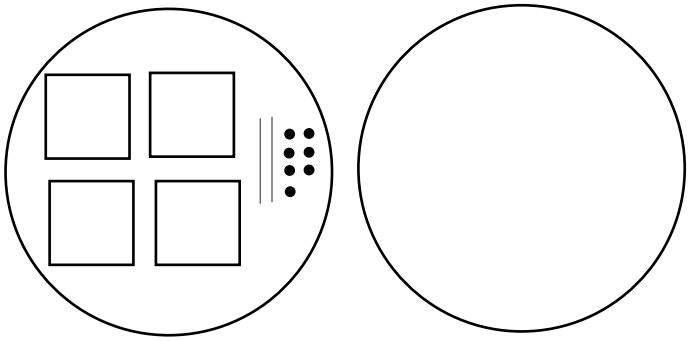


- Remove 400.
- Think of 27 as 20 and 7.
- Think of 7 as 4 + 3 so that you can first remove 4.
- Remove 20. Remove 4.
- Cut a 10 into 7 and 3.
- Remove 3.
- So 684 – 427 = 684 – 400 – 20 – 4 – 3 or 257

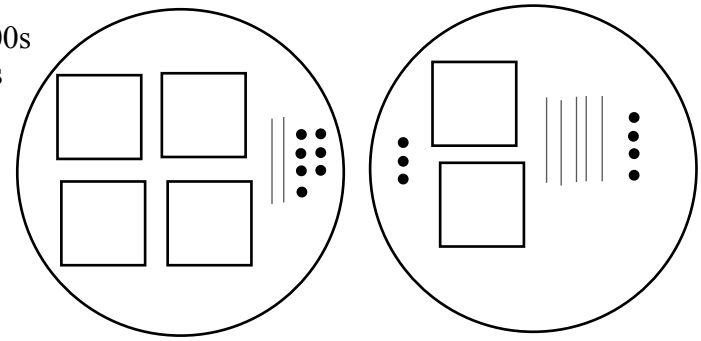


Example 4—Find the missing part (addend) ***

- Think of 684 – 427 as 427 + ___ = 684.
- Begin by drawing 427 in one circle.



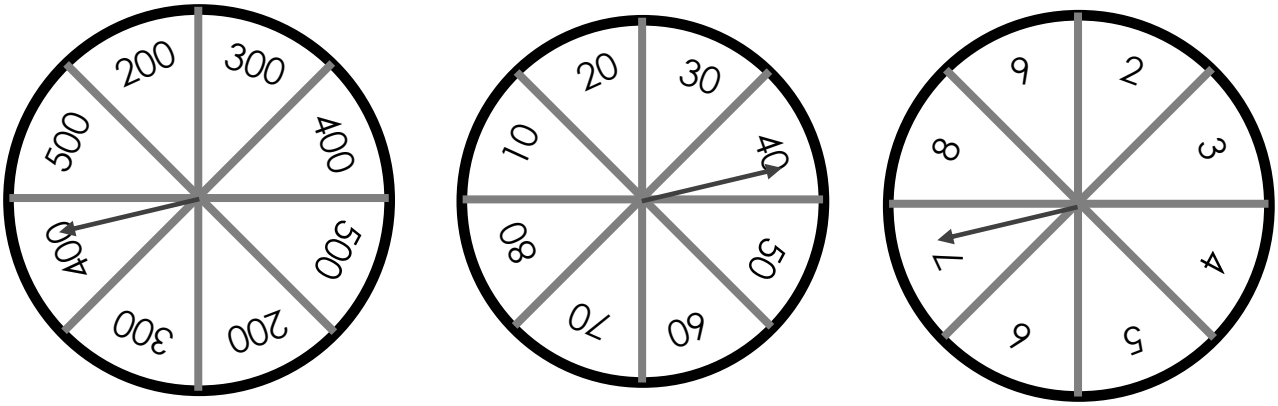
- Count on from 427 by adding 1s, 10s, and 100s in the other circle until you reach 684. 3 ones gets us to 430. 2 hundreds gets us to 630. 5 tens gets us to 680. 4 ones gets us to 684.
- The amount in the 2nd circle is the missing addend.
- 427 + 3 + 200 + 50 + 4 = 684
  or 427 + 257 = 684
  so 684 – 427 = 257



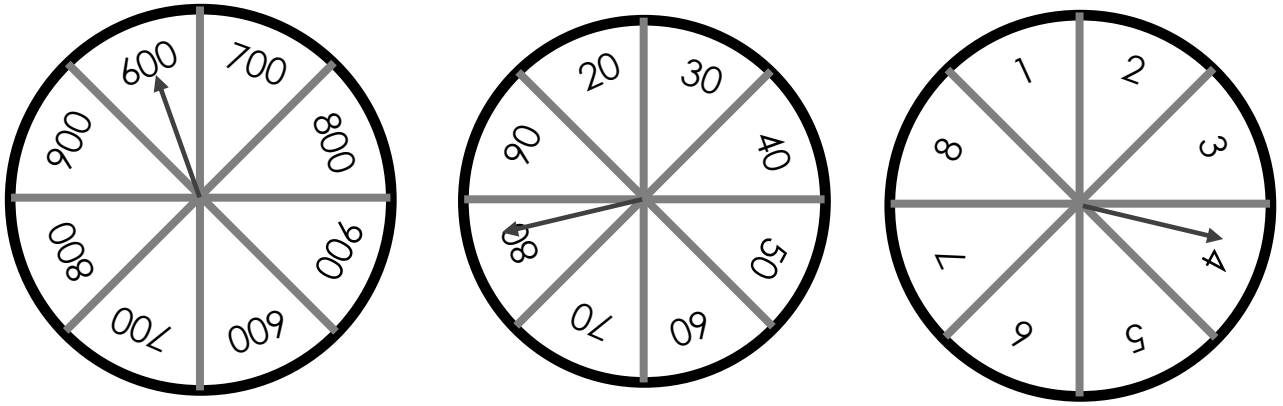
Activity 3—How many jumps? How far apart? (Building subtraction as difference or comparison.)

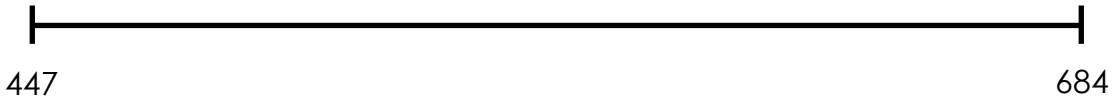
Materials: Grade 3 Subtraction Spinners page, paper clips for spinners.

- Have your child draw a number line.
- Have your child spin the spinners on the bottom of the Subtraction Spinners page to get a 3-digit starting number. Write the number on the left endpoint of the number line.



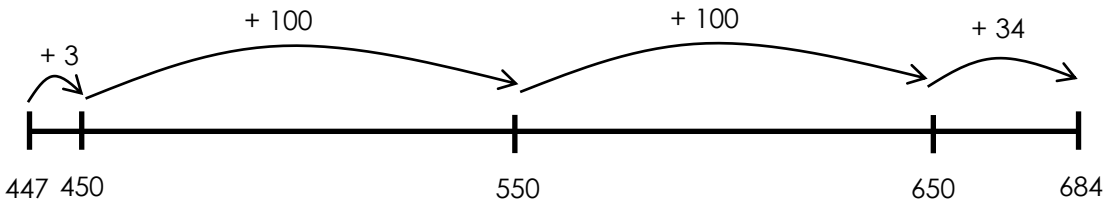
- Have your child spin the spinners on the top of the Subtraction Spinners page to get a 3-digit goal number. Write the number on the right endpoint of the number line.





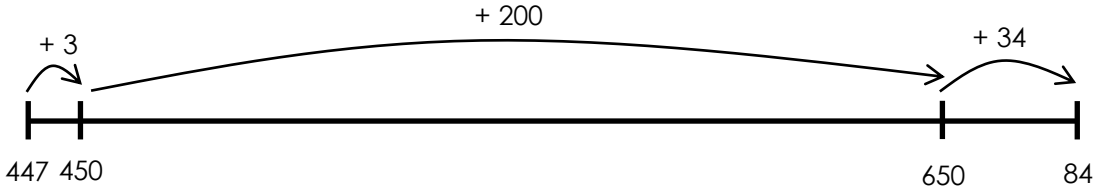
- Your child is to find how far apart the 2 numbers are by making jumps. He or she is finding how many more than 447 is 684. 447 + ____ = 684
- Have your child draw a picture to show the jumps and write the related missing addend equation.
- Have your child see if they can find the answer in more than one way.

Example 1



- Have your child fill in the blank with the jumps? (e.g., 447 + _3 + 100 + 100 + 34_ = 684 or 447 + _237_ = 684.

Example 2



- Have your child fill in the blank with the jumps? (e.g., 447 + _3 + 200 + 34_ = 684 or 447 + _237_ = 684.

Repeat the above activity for other start and goal numbers on a different day.

Money Activities

In 3rd grade your child is expected to be able to:

- name each of the coins regardless on the image on the head or tail,
- name the value of each coin,
- find and name other information available on the coins (date, United States of American, In God We Trust, value, etc.),
- name the total when given a collection of mixed coins,
- show multiple ways to make the same value using coins, and
- solve money story problems.

Activity 1--All of the ways to make ____ cents

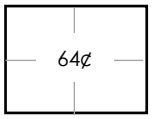
It is important for your child to understand that there are many different ways to make a given coin value. For example, 64¢ can be made with 6 dimes and 4 pennies, 4 dimes and 24 pennies, 2 quarters, a dime, and 4 pennies, etc. This understanding and flexibility in showing coin values in a variety of ways will help them when purchasing items and when solving money story problems.

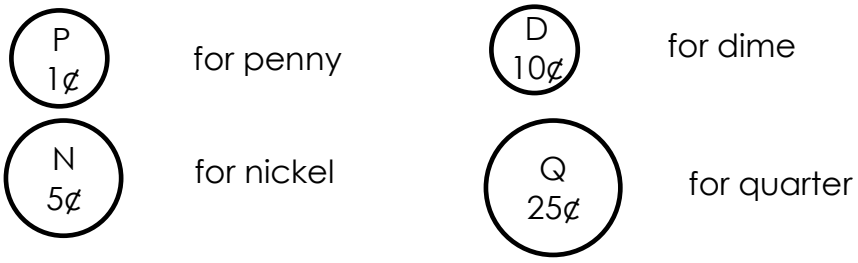
Materials: Mixed coins (not necessary), *Grade 3 Subtraction Spinners*, paper clip, blank paper, pencil or crayon

- Have your child fold a sheet of paper into 4 equal sections.

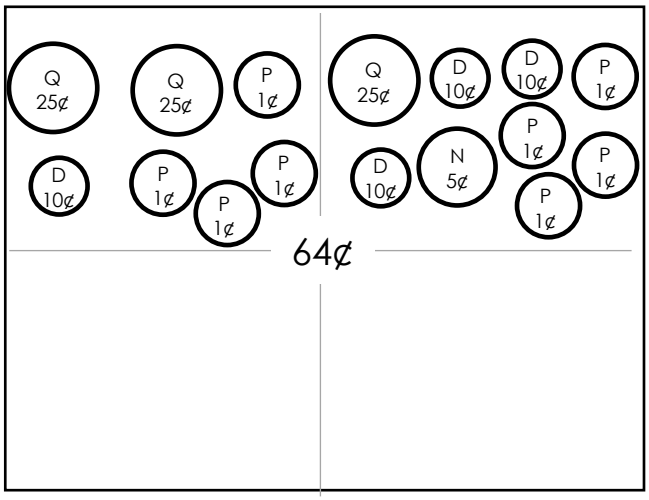
- For this activity we will only use the spinners labeled 10 to 80 and 2 to 9.

- Spin each spinner once to get a 2-digit number. That number will represent the number of cents the child is to make.
- Have your child write the number in the center of the paper.
- To simplify the drawings of coins, have your child draw,





- Have your child draw as many different pictures as they can (one per section) for the given value.



Repeat for other values on other days.

Measurement Activities

Time: It is important for your child to accurately tell time to 5 minutes on an analog clock. An analog clock is the clock that is divided into 12 equal sections. Sometimes the sections are numbered 1 to 12, with 12 at the top of the clock. Sometimes only some of the sections are labeled (e.g., 3, 6, 9, and 12). The numbers on the clock represent 2 different time measures. First, the numbers represent the number of hours that have passed since midnight or since noon. It takes 1 hour for the hour hand to move from one number to the next. The numbers also represent multiples of 5 minutes.

Some important things for your child to notice.

1. At half past the hour, the hour hand is halfway between 2 numbers on the clock.
2. At a quarter past the hour, the hour hand is a quarter of the way between 2 numbers on the clock.

The more your child practices telling time, the better they will get.

Periodically throughout the day, ask your child to tell you what time it is using an analog clock.

Activity 1—Planning Your Day

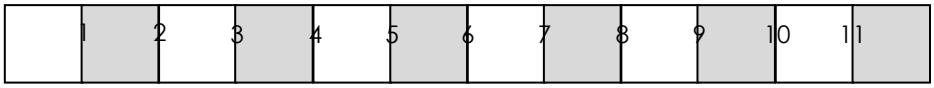
- Have your child help you plan his or her day. Include times for lunch, outdoor activities, reading, math, play, etc. (Note: Of course you do not need to follow this schedule precisely). Encourage your child to include start and end times for the different events. For example, suppose he or she is going to read for 20 minutes starting at 10:30. Have your child determine the ending time. If she or he is going to do an outdoor activity for 40 minutes starting at 10:50, have your child determine the end times. Another option is to give the start and end times for an activity and have your child determine how long the activity will take.

Activity 2—Make a Ruler

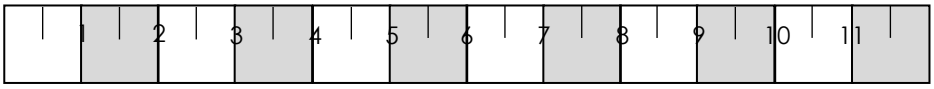
Materials: Simple ruler—Grade 3 with only inches (print and cut)

- Have your child practice fractions on a number line model by making their own ruler.
- Begin with the inch only ruler.

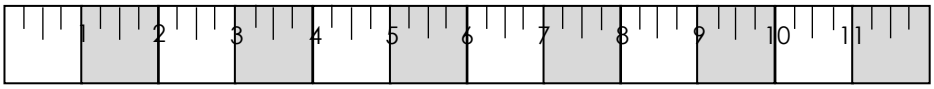
- Have your child label the lines 1, 2, 3, 4, 5, etc.



- Have your child draw a halfway line within each of the inches as shown below.



- Have your child draw lines halfway between each of the half inches to form quarter inch marks as shown below.



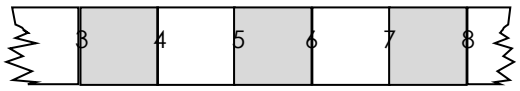
Print and cut out 3 of the simple rulers and tape together to make a yard stick. Have your child label the inch lines and make the half inch and quarter inch markings on the "yardstick".

Activity 3—Find the Length

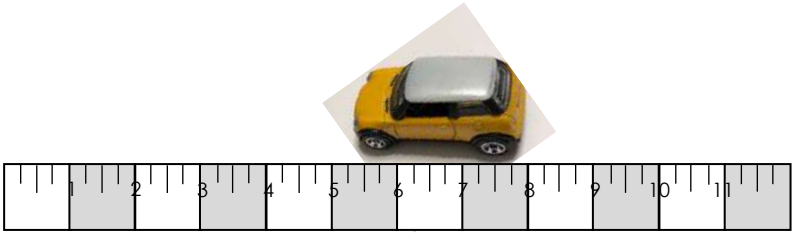
It is important for your child to recognize an inch, a foot, a yard, a centimeter, and a meter. In grade 2 we used very simple measurement devices that help your child get a sense of those unit sizes before giving them a typical ruler, yard stick, meter stick, etc. In grade 3, your child should be able to measure items to the quarter inch. The most important thing to remember is that the more your child measures items (helping you cook, sew, build things), the more proficient they become.

Materials: Ruler made in Activity 2

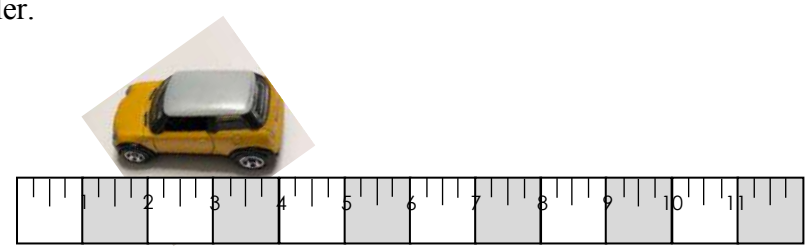
It is important for children to understand that you do not need to line up an object at zero to be able to measure the object. The object can be placed anywhere on the ruler. We can measure the object by counting the units (inches). A favorite test question is for children to state the measurement of an object using a "broken" ruler (The ruler is broken off at each end).

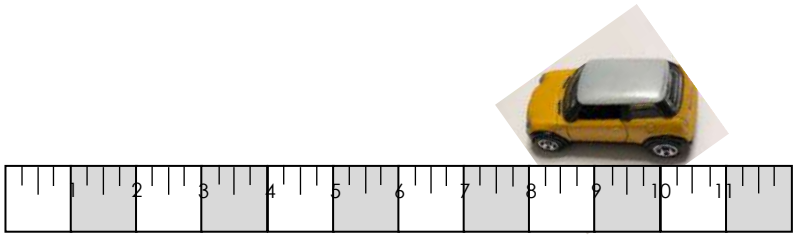


- Have your child gather 3 different objects they find in your home, yard, or neighborhood.
- Have your child find the length of each object to the nearest quarter inch using their ruler.



- Have your child measure the same object more than once by placing it at different locations on the ruler.





- Ask, "Does the length change if you move it on the ruler?" (No)
- Have them draw a picture to show the length.
- Point to 2 different objects. Ask, "Which is shorter?"
- Ask, "How much shorter?"

On another day, have your child repeat this activity for longer objects. Have them measure the objects with the yardstick he or she made.

Activity 4—Small units, big units

It is important for your child to understand that the bigger the unit you use to measure, the fewer you need. For example, it will take fewer giant steps to measure a distance than heel-to-toe steps.

- Have your child predict how many giant steps it will take to cross the room.
- Have your child walk across the room in giant steps counting the steps as they go.
- Have your child predict how many heel-to-toe steps it will take to cross the room.
- Have your child walk across the room using heel-to-toe steps counting the steps as they go.
- Ask, "What did you notice?" (For example, it took more heel-to-toe steps to walk across the room).
- Repeat for other distances (e.g., length of other rooms, across the yard, across a playground, down the block, etc.).
- Have your child draw a picture to show the items they measured and the number of steps needed.

Geometry Activities

Activity 1—Shape Hunt

- Have your child look for shapes in your home and in the neighborhood.
- Have your child draw pictures of what he or she finds. (**Note:** The shapes your child will find are all 3D shapes.)
- If possible, have your child name the shapes that she or he finds. For example, some common shapes include:

  Rectangular Prisms (Box shapes)
  Cylinders (Can shapes)
  Spheres (Ball shapes)
  Cones
  Pyramids

- Have your child name the 3D shape and then any 2D shapes within the 3D shape. Have your child think of all of the correct names he or she give a shape.

  For example, in the photo on the right, your child may see the chain linked fence, the shadow on the ground, a safety cone. The 3D shapes within the safety cone are a cone and rectangular prisms. If you look at the top of the cone (bird's eye view) you see a circle. If you look at the base of the cone (worm's eye view) or the "footprint" it would make, you see a rectangle. In this case it is a special rectangle, a square. The "footprint" would correctly be named: rectangle, square, rhombus (a rhombus has equal sides and opposite angles are the same measure—congruent).

  In the fence your child may notice there are square shapes. He or she would again label the shape as square, rectangle, rhombus. At first look, the shadows on the ground look as though they are a rhombus shape. With a closer look the shapes seem to be hexagons.

  As your child walks through your neighborhood, help them notice that their world is full of shapes. Help them also understand that a shape could have multiple correct names.

Activity 2—Tangram Explorations

Prep: Print and cut out the tangram pieces.

- Have your child make designs using some or all of the tangram pieces.
- Have them outline the outside of the design.
- On a different day, your child can try to complete the puzzle or trade with friends and have them try to complete the puzzles.