HMH | into Math®

Teacher Tabletop Flipchart Sampler

Grades K–5

AVAILABLE FOR EVERY LESSON


Revise vs. Edit
Develop Fluency with Addition Facts
54

Into Math® supports students as they develop their conceptual understanding and grow into procedurally fluent mathematicians.

What's Inside

What is the Flipchart?

Ready-Made Mini-Lessons for Differentiation

The Teacher Tabletop Flipchart

- Pulled teacher-led, small-group instruction
- Small-group lessons are available for every lesson within the program
- Perfect for both mixed- and like-ability grouping for differentiation
- Encourages math discourse and perseverance in problem solving

Using the Flipchart with Students

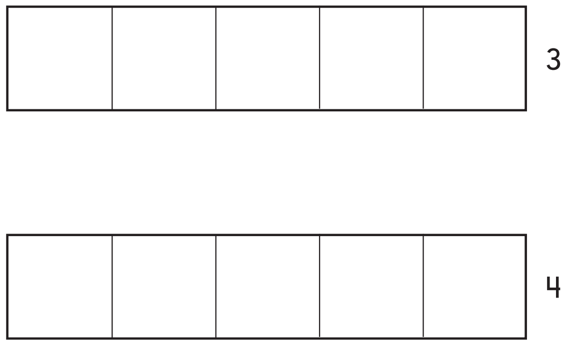
Teachers can easily lead pulled, small-group instruction with the TEACHER side, which includes:

- A complete Mini-Lesson connected to daily class lessons
- Guiding questions to help facilitate math discourse and problem solving
- English Language Proficiency level supports for multilingual learners

Students engage during this pulled, small-group learning opportunity with:

- Models and hints available to support problem solving
- PDF downloads for each student to write on, if desired
- Bilingual MathBoards and manipulatives to support problem solving

Represent 3 and 4



Lesson 1.2

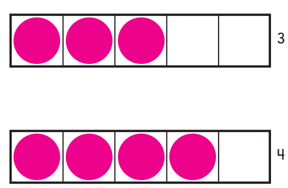
Represent 3 and 4

Materials: counters, five frames, blocks

Point to the numbers 3 and 4 on the flipchart. Explain to the children that they will be representing 3 and 4.

Give the following sequence of instruction:

- Distribute counters and five frames to children. Draw three counters in the top frame on the flipchart.
- Provide children with five frames and counters. Point to the number 3 on the flipchart. **Ask:** *How can you represent this number?* Children should place three counters in their five frames. Have them count aloud as they place each one; count with them if need be.
- Have a child come up to the flipchart and draw four counters in the bottom frame for the number 4. Have children count aloud. Explain that this is a way to represent 4.
- Have children clear their five frames of counters. Point to the number 4 on the flipchart. **Ask:** *How can you represent this number?* Children should place four counters in the five frame. Have them count aloud as they place each one; count with them if need be.
- Once children feel more comfortable, remove the flipchart. Say the number 3 or 4 and ask children to represent the number using small objects or by drawing. Repeat for the other number.



Proficiency Level

Beginning
Have children represent each number with blocks as you point to the number on the flipchart. Point to 3 and say its name. Have children model with blocks. **Ask:** *What number did you represent with the blocks?* Repeat for the number 4.

Intermediate
Have children make riddles about sets of three objects in the classroom, such as, *I see three of these near the far window. What are they?* Other children then try to solve the riddle by naming the objects seen. Repeat for the number 4.

Advanced
Have children explain if a number is correctly represented or not. Say "three" and draw four squares. Direct children to explain if the number 3 is correctly represented with complete sentences. Repeat the activity with a correct representation of the number 3 or 4.

Ways to Make 10

$$10 = \_\_\_\_\_\_ + \_\_\_\_\_\_$$

K.13.4 Ways to Make 10

Math

Lesson 13.4

Ways to Make 10

Materials: crayons, colored paper circles

Explain to children that they will show ways to make 10.

Give the following sequence of instruction:

- **Say:** *Listen to the word problem. There are ten cars. Some are green and some are blue. How many cars of each kind might there be?*
- **Say:** *Draw pictures to show the problem. How many green cars?* Children should give numbers between 1 and 9. **Say:** *The number of green cars could be two.* Have children draw two green circles while you draw two circles and fill them in on the flipchart.
- **Ask:** *How many blue cars?* 8 *How do you know?* 2 and 8 make 10. Have children draw eight blue circles while you draw eight circles on the flipchart without filling in the circles.
- Direct children to the blank equation. **Ask:** *What are the two numbers that you put in the equation?* 2 and 8 Write 2 and 8 in the equation. **Ask:** *What do two and eight add to?* 10 Read the equation and have children repeat.
- Repeat the activity for another word problem, such as: There are ten birds. Some are on the ground, and some are in a tree. How many birds of each kind might there be? Children may draw pictures or use objects to show the word problem.

$$10 = \underline{\ 2\ } + \underline{\ 8\ }$$

Proficiency Level

Beginning
Have children identify the correct model for a word problem. Prepare three word problems and a possible drawing for the addends of each problem. Read each word problem. Have children identify the drawing that matches the word problem.

Intermediate
Have children model word problems with paper circles. Hand out paper in two different colors. Give a word problem and have children cut out circles to show the problem. Have children tell how they chose the number or each colored circle.

Advanced
Have children explain the steps they took to find the addends for a word problem. Then ask them to explain how they wrote the equation that models the word problem.

K.13.4 Ways to Make 10

Math

Addition Equations Within 10

___ + ___ = ___

Lesson 11.5

Addition Equations Within 10

Materials: counters, connecting cubes

Show children the jar on the flipchart. Explain that they will be writing addition problems.

Have children add amounts up to five using counters.

Give the following sequence of instruction:

- Draw 5 pennies in the jar. **Say:** *There are 5 pennies in the jar.* Draw 2 more pennies in the jar. **Ask:** *How many pennies are in the jar now?* 7 Write the equation 5 + 2 = 7, and explain that the first number in the equation is 5, because that is the number you started with.
- Have children erase their drawing and draw 5 new pennies in the jar.
- **Say:** *Draw 3 more pennies in the jar.* **Ask:** *How many pennies are there in all?* 8 Have children write the equation.
- Give children other amounts and have them work in pairs to add the correct amount of pennies and make the equations.

___ + ___ = ___

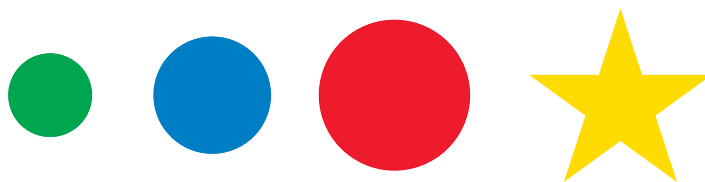
Proficiency Level

Beginning
Give children two connecting cubes. Write a 2 on the board, followed by the addition symbol. Give children one connecting cube. Write a 1 after the addition symbol. Then write the equal sign. Have children count their cubes and call out how many they have in all. Write 3 after the equal sign. Have children repeat "two plus one equals three" after you. Repeat for another equation, then have children write the equation with you.

Intermediate
Write an addition sentence such as 2 + 1 = 3 on the board. Give children connecting cubes and ask them to act out the problem they see with a partner. Then have children act out a new addition problem for each other to write.

Advanced
Say: *I bought two books last week. This week I bought three more. Now I have five books.* Have children write an addition equation from the oral word problem. Then have them create a new word problem and equation that follows the pattern of the example you gave aloud. Children can work with a partner to write each other's problems.

Circles



K.16.1 Circles

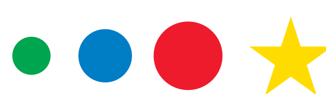
Lesson 16.1

Circles

Materials: plane shapes

Give the following sequence of instruction:

- Direct children's attention to the circles on the page. Point to each circle. **Ask:** *What type of shape is this?*
- Next point out ways that the circles are different. Mention that although the circle shapes might be a different color or size, they are still circles.
- Ask children to describe how the circles are similar. Explain that all the circles are flat and round. Point to the star. Ask children to explain why that is not a circle. They should recognize that since the shape is not curved, it is not a circle.
- Distribute shapes to each child, including at least two circles. Ask children to identify the circles. Then have them hold up the circles.
- **Ask:** *How are these shapes alike?* They are curved. They are flat. Ask students to trace one of the circles.
- Repeat this activity as needed using different groups of the plane shapes.



Proficiency Level

Beginning
Have children identify a circle from a group of plane shapes provided. For each shape that you hold up, **ask:** *Is this a circle?* Have children answer *yes* or *no*.

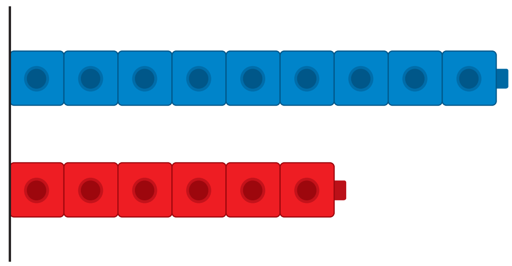
Intermediate
Have children tell if a shape is a circle or not a circle when presented with plane shapes. Show one shape at a time. Have children fill in the sentence frame with "is a circle" or "is not a circle": *The shape* _______.

Advanced
Have children explain how they know if a shape is a circle or not. Point to circle shapes around the classroom and **ask:** *How do you know this shape is a circle?* They should use the words such as *curved* and *flat*.

K.16.1 Circles

Compare Lengths

SMALL GROUPS



Lesson 19.2

Compare Lengths

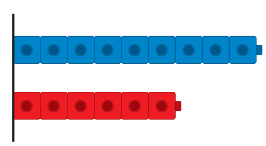
SMALL GROUPS

Materials: red and blue cubes, construction paper, glue

Show children the model on the flipchart. Explain that they will learn about length.

Give the following sequence of instruction:

- Call children's attention to the illustrated cube trains. Ask them to identify the shorter and longer trains. Remind them that length can be identified without counting cubes by noting that the trains are lined up on the left and one goes farther to the right.
- Have children count the cubes and note that nine is greater than six. **Say:** *The train with nine cubes is longer than the the train with six cubes. The train with six cubes is shorter than the train with nine cubes.*
- Have children make a cube train of four red cubes. Then have them make a blue cube train that is longer than the red train. Have each child put his or her blue train on the desk next to the red train. **Ask:** *How can you tell that your blue train is longer?* Guide children to state that they can line them up at one end or count the cubes. Have each child speak comparison sentences about his or her train.
- Repeat each step with a red cube train of eight cubes and tell children to make a shorter blue train.



Proficiency Level

Beginning
Have the class stand in one long line and have children describe the line's length. Then divide the class into two lines, identifying the lines as shorter. **Ask:** *How can we make the lines even shorter?* By making three (or four) lines. To conclude, ask the class to once again form one longer line.

Intermediate
In groups of four, have two group members stand to make a short line. Ask groups to form a longer line by adding one more group member, and finally making another longer line by adding the final group member. Then challenge children to think of ways they can make their line longer again (by combining with another group).

Advanced
Have children cut construction paper into strips and glue them together in loops to make paper chains. Each child should construct three chains, each in a different color, and compose sentences using *shorter than* and *longer than* to describe them ("my red chain is longer than my blue chain").

Classify, Count, and Sort

___	___	___

Lesson 4.4

Classify, Count, and Sort

Materials: connecting cubes with colors red, green, blue, yellow

Make a connecting train of seven cubes with two red cubes, three blue cubes and two green cubes. The colors should be mixed up. Direct children's attention to the flipchart.

Use the following sequence of instruction:

- **Say:** *Mary has seven colored cubes in three colors to classify. She wants to know how many are in each category. Then she wants to sort the categories by count.*
- **Ask:** *What are the colors?* red, blue, green Write Red at the top of the first column of the chart, Blue at the top of the second column, and Green at the top of the third column. **Say:** These are the categories: red, blue, green.
- Remove the first cube. **Ask:** *What color is this?* Have children identify the color. Draw one square in the corresponding column for that color. Repeat with each cube until all cubes have been categorized by color.
- **Say:** *Sort each category by count. How many red cubes are there?* Have children count the squares in the Red column. They should say *two.* In that column, write 2 on the line and the word *cubes* next to it. Repeat for the other two colors. **Say:** *There are two red cubes, three blue cubes, and two green cubes.*
- Repeat the activity with another combination of colors and a different number of cubes.

Red	Blue	Green
□ □	□ □ □	□ □
2 cubes	3 cubes	2 cubes

Proficiency Level

Beginning
Have children understand the word *classify*. Explain that it means *to sort*. **Say:** *We can classify objects by color. It means that they can be sorted by color.* Show a group of green cubes and blue cubes. Have children sort the group by placing the green cubes in one pile and the blue cubes in another. **Say:** *You classified the cubes into green and blue.* Repeat the activity with a group of cubes in two other colors.

Intermediate
Have children tell how to classify a group of cubes in two colors. Show a group of orange cubes and blue cubes. **Ask:** *What is the first step to classifying by color?* Name the colors. **Ask:** *What is the second step?* Say the color of each cube and put it in the correct group. Have children classify the group of cubes.

Advanced
Have children work in pairs to classify a group of green cubes and red cubes by color. Have them explain how to do the classification as they sort the cubes by color. Then have children count up each group.

Understand Greater Than

_____ is greater than _____. | _____ is greater than _____.

Lesson 11.1

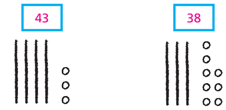
Understand Greater Than

Materials: base-ten blocks

Give the following sequence of instructions:

- **Say:** *Two new players joined the soccer club. The coach gave each player a shirt with a number on it. The first player's shirt has number 43 on it and the second player's shirt has number 38 on it. Which number is greater?*
- Have children fill in the numbers 43 and 38 on the flipchart. Ask children to draw quick pictures to show each number.
- **Ask:** *How do the drawings of tens and ones help you determine the greater number?* You compare tens to see which number has more tens. The number with more tens is greater. Have children use the quick pictures to verify that 4 tens is more 3 tens, so 43 is greater than 38. Write the numbers on the flipchart and have everyone read the inequality statement.
- Then **ask:** *How do you compare two numbers that have the same number of tens? Let's compare 42 and 48. Which number is greater?* If the tens are the same, compare the number of ones. The number that has more ones is the greater number.
- Change the 38 on the flipchart to 48. Have children adjust the second quick picture to show 48 by drawing one more ten. Children should then identify 48 as the greater number and complete the inequality statement.
- Call out pairs of numbers to compare. Have children use the flipchart to draw quick pictures for each number, and then write the numbers in the inequality statement.

43 38



43 is greater than 38.

Proficiency Level

Beginning
Help children discern the meaning of *is greater than.* Write those words and have children read them with you. **Ask:** *Which number do you think is greater, the number on the first player's shirt or the number on the second player's shirt?* Use their answers to write a number before and after *is greater than.* Give children the numbers 25 and 32. Have them show each number using tens blocks and ones blocks. For each number, **ask:** *How many tens?* Then guide children to agree and repeat *3 tens is more than 2 tens; 32 is greater than 25.* Repeat for the numbers 22 and 27. Guide children to see and say that the tens are the same. Prompt them to tell you that they compare the ones next. Have them say a comparison statement.

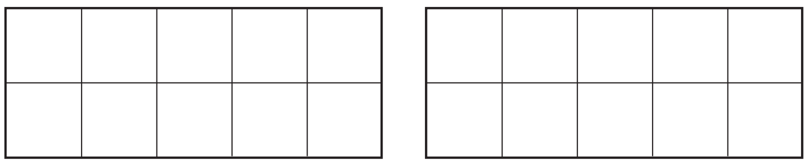
Intermediate
Write pairs of numbers for children to compare. Have them write the numbers, and draw quick pictures for each number. Ask partners to take turns describing how they use the quick pictures to tell which number is greater.

Advanced
Write on the board one incorrect and two correct *is greater than* statements. Have children work together to determine which statements are correct. Have children explain their thinking.

Use 10 to Subtract

SMALL GROUPS

_____ − _____ = _____



1.2.5 Use 10 to Subtract

HMH Math

Lesson 2.5

Use 10 to Subtract

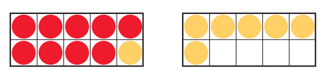
SMALL GROUPS

Materials: two-color counters, Ten Frames (Teacher Resource Masters)

Provide each child with counters and 2 ten frames. Give the following sequence of instructions:

- Write 16 − 9 on the board. Tell children they will *make a ten to subtract.* Children start with 9 because 9 is close to 10. Have children place counters to show the 9 they need to subtract in the first ten frame.
- **Ask:** *How many more counters do you need to make a 10?* 1 more Have children add 1 counter to fill the first ten frame. Tell children to add more counters to have 16 counters in all in the two ten frames. **Ask:** *How many more counters do you need?* 6 more **Ask:** *How many counters do you use in all to get to 16?* 7 counters
- Have children draw counters in the ten frames on the flipchart to show how they use 10 to subtract. Then have children write the equation 16 − 9 = 7.
- Give children other subtraction problems that involve subtracting 8 or 9 from a number 12 to 17. Have children continue to make a ten to subtract. Have children draw to show their work and write the equation.

16 − 9 = 7



Proficiency Level

Beginning
Help children understand what is meant by *close to 10* when using this strategy. Write 13 − 9 = _____. Point to the number to be subtracted. **Ask:** *Is 9 close to 10? How many do you add to reach 10?* Children answer orally, *yes* and *1*. Do the same for other subtraction equations where 7, 8, or 9 is subtracted from a number 16 to 18. Show examples where the number to be subtracted is not close to 10 such as 12 − 4 = _____, for which children answer *no.*

Intermediate
Have children use sentence starters to describe how to make a ten to help solve a subtraction problem. Give children a subtraction problem to use in their description, for example, To show 14 − 8, I start with _____ counters and add counters to reach _____. Then I _____.

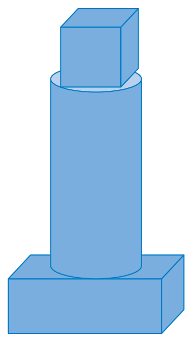
Advanced
Have children use full sentences to explain how they can make a ten to subtract. Have children include how many they add to make a ten and the final equation.

1.2.5 Use 10 to Subtract

HMH Math

Compose Three-Dimensional Shapes

SMALL GROUPS



______________________ ______________________

Lesson 14.2

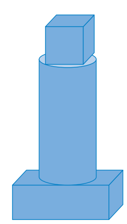
Compose Three-Dimensional Shapes

SMALL GROUPS

Materials: three-dimensional shapes

Give the following sequence of instructions:

- Have multiple sets of cubes, rectangular prisms, cones, and cylinders available. Have pairs of children choose two shapes to combine to make a composite shape. They may choose two of the same shape or two different shapes.
- Ask other pairs to describe the new shape by naming the three-dimensional shapes used and describing how they were put together.
- Continue until all pairs have had a turn to construct and describe composite shapes.
- Call attention to the composite shape on the flipchart. **Ask:** *Which shapes are combined to make this shape?* a rectangular prism on the bottom, a cylinder on top of it with its flat side down, and a cube on the top Have children fill in the blank on the flipchart to describe the shapes used.
- Have children work in pairs to build larger shapes by combining two or three of the same or different three-dimensional shapes (cubes, rectangular prisms, cones, and cylinders). Have children draw the shapes they used on the flipchart and write which shapes they used. To add interest, each partner can draw a combined shape and have the other partner write its description.



cube, cylinder, rectangular prism

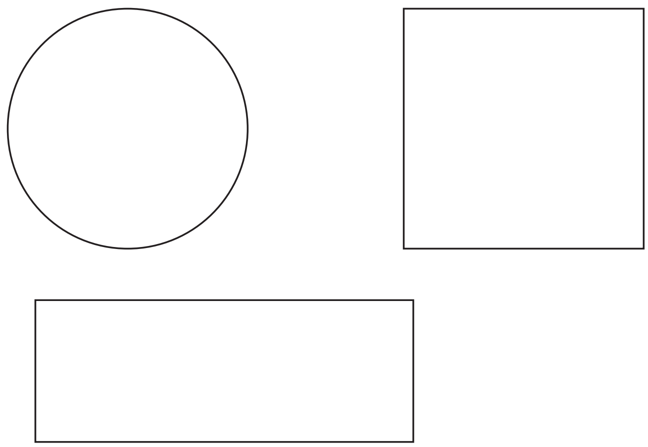
Proficiency Level

Beginning
As you point to each shape in the three-piece construction on the flipchart, have children say the word. Demonstrate how to *put together* or *combine* shapes. Give oral directions and have children build what you say and repeat the name of the each shape in the construction. Ask each child to name the shapes used.

Intermediate
Have children combine 3 three-dimensional shapes and describe the new shape.

Advanced
Have children explain how they can make a larger cube from small cubes and how they can make a larger rectangular prism from smaller rectangular prisms.

Partition Shapes into Fourths



1.16.4 Partition Shapes into Fourths

Math

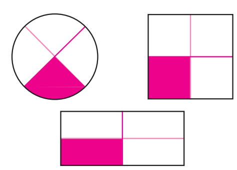
Lesson 16.4

Partition Shapes into Fourths

Materials: construction paper, Equal and Unequal Shares Cards (Teacher Resource Masters), poster board

Give the following sequence of instructions:

- **Say:** *There are 4 friends who want to share equally. Look at the shapes on the flipchart.* **Ask:** *What could the 4 friends be sharing?*
- **Ask:** *How can you show 4 equal shares?* Accept suggestions from children. Draw lines to show fourths on each shape. **Ask:** *Are the 4 shares equal? How do you know?* They are the same size and shape.
- **Say:** *Four equal parts show fourths.* Tell children that each of the 4 equal parts is *one fourth*. Have children shade one fourth of the rectangle, one fourth of the circle, and one fourth of the square.
- Inform children that there is another word for *fourths*. **Say:** *Fourths are also called quarters.* Discuss this new vocabulary with children. Some children may know that some coins are quarters and there are 4 of them in one dollar. (You need not bring this up unless a child does.)
- **Ask:** *So, what does one quarter of mean?* One quarter is the same as one fourth, so a quarter of is the same as a fourth of. Point to the shapes and have children use *quarter of* to describe each shaded part.
- Emphasize that there are 4 fourths (or 4 quarters) in 1 whole.
- Have children suggest another way to show fourths or quarters in each shape. Then, have children use the flipchart to draw lines to show fourths and shade a fourth of each shape. Children can work together in groups to find as many different ways as possible.



Proficiency Level

Beginning
Show a sheet of construction paper and remind children that the shape is a rectangle. Have them draw lines to show 4 equal shares. Point to each of the equal parts and have them repeat *one fourth*. Point to the whole and prompt them to say *4 fourths make one whole*. Point to each fourth of the rectangle and have children repeat *a fourth of a rectangle*. Repeat several times. Introduce the terms *quarters* and *a quarter of*. Tell them they are different words for fourths and fourths of, just as someone can have a name and a nickname. Then use the flipchart to show shapes partitioned into fourths in different ways. Ask children to say *fourths* or *quarters* or a *fourth of* or *a quarter of* as you point to various shapes or parts of shapes.

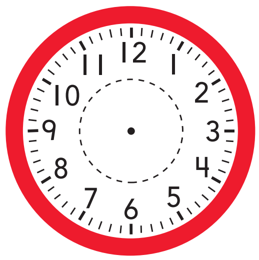
Intermediate
Have children use the Equal and Unequal Shares Cards to identify all the cards that show fourths. Have children tell the criteria they use.

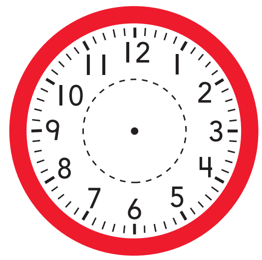
Advanced
Have children make a poster with pictures of fourths of rectangles, squares, and circles. Have them label each shape with a complete sentence. For example: **This circle shows 4 fourths. One part of 4 equal parts is a fourth of the whole.**

1.16.4 Partition Shapes into Fourths

Math

Time to the Hour





___ o'clock

___ : ___

___ o'clock

___ : ___

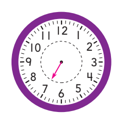
Lesson 18.1

Time to the Hour

Materials: Analog Clock Faces (Teacher Resource Masters), Analog Clock Model (Teacher Resource Masters), number cube (1–6), number cube (7–12), paste

Give the following sequence of instructions:

- Provide examples of both analog clocks and digital clocks such as an analog wall clock and a wristwatch showing digital time.
- Draw the outline of an analog clock without the numbers on the board. Have children recite the numbers 1 to 12 as you write the numbers on the clock. Tell children that each number represents a time to the hour. **Ask:** *What is the clock missing? Children will say hand or hands.*
- **Say:** *Let's talk about the shorter hand on the clock, the hour hand. The number that the hour hand points to on the clock is the time to the hour.* Draw an hour hand to point to the 8. **Ask:** *What time is it?* 8 o'clock
- Hand out the analog clock faces. Have children draw the hour hand pointing to the 8 as you did. Watch that children use the dotted circle inside the clock face as a guide for the length of the hour hand.
- Have children notice the lines with the two dots (colon) under the clock face on the their sheet. Draw the same thing on the board. **Say:** *On a digital clock, you show time to the hour by writing the hour to the left and two zeros in to the right of the two dots.* Have them fill in 8:00 on their sheets. Give two other times to the hour and have children show the time on the sheet.
- Call attention to the analog clock on the flipchart. Present a real-world scenario **Say:** *You eat breakfast at 7 o'clock.* Ask children to draw the hour hand and write the time in two ways on the flipchart.
- Repeat for one more scenario. Then have children work in pairs to make up scenarios about time to the hour for each other, draw the hour hand, and fill in the time in two ways on the flipchart.



7 o'clock

7 : 00

Proficiency Level

Beginning
Prepare copies of the analog clock model ahead of time. Cut apart the numbers, the hour hand, and the minute hand. Give pairs of children the clock face, the numbers, and the hour hand. Have children tell you where each number belongs on the clock, and then paste the numbers in the correct place. Make sure children can identify the meaning of and say *hour hand*. Demonstrate how to place the hour hand to point to each number, and have children repeat *one o'clock, two o'clock,* and so on after you. Call out a time and have children place the hour hand to show the time.

Intermediate
Draw an hour hand on the clock on the flipchart. Have children tell the time using the word *o'clock.* Ask children when they do certain activities such as eat lunch or watch TV. Use their responses to draw the hour hand. Have children fill in the blanks on the flipchart and say a complete sentence aloud, such as, *Sam eats lunch at ___ o'clock.*

Advanced
Have pairs of children use one of the two numbers cubes. One child tosses the cube to determine the hour. The second child draws the hour hand and writes the time in two ways. Have children explain in full sentences how the two ways to show the time are the same and how they are different. Partners switch roles and repeat with the second number cube.

Interpret Picture Graphs

Picture Graph							
● red							
● yellow							

Lesson 8.1

Interpret Picture Graphs

Materials: plastic spoon and fork

A blank picture graph is provided on the flipchart. Prepare the graph ahead of time to show an example of 7 yellow counters and 3 red counters. Give the following sequence of instructions:

- Explain that picture graphs are a way to show how many there are of each kind of item. Discuss the data shown by the graph on the flipchart.
- **Say:** *The picture graph shows the number of red and yellow counters in an organized way. Each picture in the graph stands for one counter.*
- **Ask:** *How many yellow counters are in the graph?* 7 **Ask:** *How many red counters are in the graph?* 3
- **Say:** *You can find other information from the picture graph.* **Ask:** *How many counters are there in the graph?* 10
- **Ask:** *Are there more red counters or yellow counters in the graph?* There are more yellow counters than red counters.
- **Ask:** *Are there fewer red counters or yellow counters in the graph?* There are fewer red counters than yellow counters.
- Remove the red and yellow counters. Draw different numbers of up to 7 counters on the graph. Ask children questions to interpret the new picture graph. Repeat as time allows.

Picture Graph							
● red	●	●	●				
● yellow	●	●	●	●	●	●	●

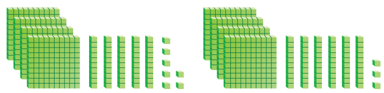
Proficiency Level

Beginning
Draw a picture graph of 6 happy faces and 2 sad faces on the flipchart. Have children read the title and labels aloud with you. Have children study the graph and answer orally to questions such as: *How many happy faces are there? How many sad faces are there? Which face is there more of? How many faces are in the picture graph?* Repeat with different numbers of happy and sad faces.

Intermediate
Prepare a picture graph ahead of time using pictures of spoons and forks. Show children a plastic spoon and fork, and have them say the words. Tell children that you had a party and the picture graph shows information about the number of spoons and forks you used. Have children use complete sentences to describe what the picture graph tells them about the number of forks, the number of spoons, and how many more or fewer forks than spoons there are.

Advanced
Have pairs of children use any graph of different color counters shown on the flipchart. Ask them to write *how many more*, *how many fewer*, and *how many in all* questions. Have them read their questions to their partner, give the answers, and explain how they find the answers.

Symbols to Compare Numbers



Hundreds	Tens	Ones

463 ◯ 457

457 ◯ 463

Hundreds	Tens	Ones

____ > ____

____ < ____

Lesson 6.5

Symbols to Compare Numbers

Materials: base-ten blocks (hundreds, tens, ones)

Provide base-ten blocks. Give the following sequence of instructions:

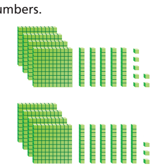
- Have children look at the visual model of 457 and 463 and write the numbers in the place-value chart. Have children compare the hundreds and tens digits. **Ask:** *Which number is greater? Which number is less?* Have children circle the greater number.
- **Say:** *We can use the greater-than symbol to show that 463 is greater than 457.* Write the symbol and have children copy it into the circle. Help children read aloud: *463 is greater than 457.* **Say:** *We know that 463 is greater and 457 is less. We can also use a less-than symbol to compare the numbers.* Write the symbol and have children copy it into the circle. Help children read aloud: *457 is less than 463.*
- Present a second pair, 317 and 263. Have children draw quick pictures and complete the place-value chart. Help children read the inequality symbols. **Ask:** *Which number should we write before the greater-than symbol?* Have children write 317 before the symbol and 263 after the symbol. Then have children read aloud the inequalities.
- Have children complete each step for other comparisons of three-digit numbers.

Proficiency Level

Beginning
Have children use base-ten blocks, place-value charts, and symbols to compare three-digit numbers. Have children show 457 and 463 with base-ten blocks. Guide children to write the numbers in the place-value chart. Ask children to compare the hundreds place and then the tens place. Then **ask:** *Which number is greater?* Show children how to write and read *463 is greater than 457*. Then **ask:** *Which number is less?* Show children how to write and read *457 is less than 463*.

Intermediate
Have children use place-value charts and symbols to compare three-digit numbers. Have children write 457 and 463 on the place-value chart. Ask children to compare the hundreds and tens digits and name the place value they used to compare the numbers. Help children write and read *463 is greater than 457*. Then ask children how they know which number is less, and guide them to write and read the second inequality.

Advanced
Have children use place-value charts and symbols to compare three-digit numbers. Review the meanings of the inequality symbols. Ask children to complete the place-value chart for 457 and 463. Then have children write and explain both inequalities.



Hundreds	Tens	Ones
4	6	3
4	5	7

463 > 457

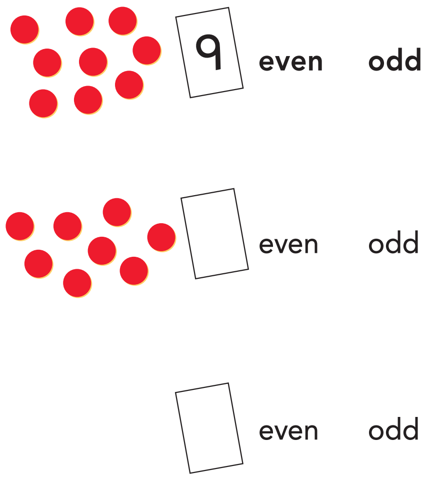
457 < 463

Hundreds	Tens	Ones
3	1	7
2	6	3

317 > 263

263 < 317

Even and Odd Numbers



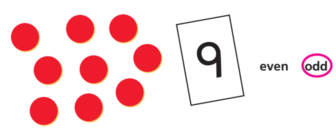
Lesson 2.1

Even and Odd Numbers

Materials: number cards, counters, Hundred Chart (Teacher Resource Masters)

Provide children with number cards, counters, and Hundred Charts. Tell them they will sort the numbers into two piles, even and odd. Have children shuffle the cards and place the pile of cards facedown. Give the following sequence of instructions:

- Have children count 9 counters to match the illustration, and find their own number card with 9.
- Have children make pairs with the counters. Explain that if they are able to pair up counters without any left over, the number is even. If they have 1 counter left over, the number is odd. **Ask:** *Is the number of counters even or odd? Explain how you know.* odd; There is one left over. Have children circle *even* or *odd.*
- Now have children show 8 counters. Tell them to determine if 8 is an even or odd number by counting by twos on the Hundred Chart. Explain that if they count a number when they count by twos, it is an even number. **Ask:** *How can counting by twos help you decide if the number of counters is even or odd?*
- Have children take turns drawing another card from the pile, showing the number with counters, and determining if it is even or odd. Children may draw the counters and write each number on the pictured numeral card, circling *even* or *odd.*
- Have children place the cards with even numbers in one pile and the cards with odd numbers in another pile, continuing until they have sorted all the cards.
- Continue with examples until children understand the concept.



Proficiency Level

Beginning
Have children count numbers and classify them as even or odd using counters and number cards. Present 9 counters and have children count them aloud. Have children find the corresponding number card and say the number. Demonstrate sorting the counters into sets of two. Ask if there are any counters left over. State for children that the number is odd because there is a counter left over. Guide children to circle and say *odd*, cross out *even*, and say *not even*. Repeat for 8 and then other numbers within 20.

Intermediate
Have children count numbers and classify them as even or odd using counters and number cards. Present one number card at a time, having children reproduce the number with counters and count them by twos. Have children classify each number as even or odd, and circle or cross out *even* and *odd* while saying the words.

Advanced
Have children count numbers and classify them as even or odd using counters and number cards. Have children write each number and state whether it is even or odd and how they know.

2.2.1 Even and Odd Numbers

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Coin Combinations

SMALL GROUPS

____¢, ____¢, ____¢, ____¢, ____¢, ____¢, ____¢, ____¢, ____¢

2.7.3 Coin Combinations

HMH Math

Lesson 7.3

Coin Combinations

SMALL GROUPS

Materials: play money (coins)

Provide coins for each child. Give the following sequence of instructions:

- Direct children to the illustrated coins. Help children recognize that these coins are not grouped by value. Explain that it is easier to find the value of coins when the coins are in order from greatest value to least value. Have children use their own coins to sort by value, and then find the value of the coins. Have them draw the coins in order and write the counting sequence.
- Have children work with partners. Have the first partner give some coins to the second partner and ask them to find the value. The second partner will sort the coins by value, draw the coins in order of value, and write the counting and total value. Have children exchanges roles.

25¢ 10¢ 10¢ 5¢ 5¢ 5¢ 1¢ 1¢ 1¢

25 ¢, 35 ¢, 45 ¢, 50 ¢, 55 ¢, 60 ¢, 61 ¢, 62 ¢, 63 ¢

Proficiency Level

Beginning

Have children use play money to compute the value of coin combinations. Ask children to place their coins on the table in the same order as those in the illustration. Ask children if it would be easier to count the coins in the order they are in or if they were sorted by value. Once children recognize it will be easier to count once sorted by value, have them sort the coins. **Ask:** *What number should we count by for the quarter?* 25 *For the dime?* 10 *Nickel?* 5 *Penny?* 1 Guide childen to count to find the value of the coins: *25, 35, 45, 50, 55, 60, 61, 62, 63*. Have them write the counting sequence as they say each number aloud and then say the total value in cents.

Intermediate

Have children use play money to compute the value of coin combinations. Guide them to start by counting the coins with the highest value. Have children count aloud by twenty-fives, then tens, then fives, then ones, and write the numbers. Ask children to say the total value in cents.

Advanced

Have children use play money to compute the value of coin combinations. Have children sort coins, writing the counting and saying the total value. Ask children why they should put the coins in order before counting.

2.7.3 Coin Combinations

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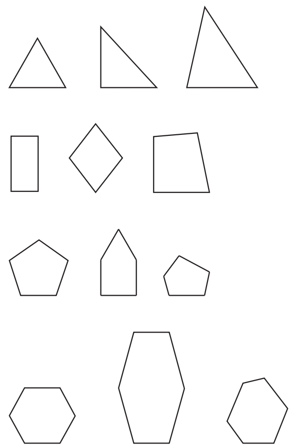
Two-Dimensional Shapes



____ sides ____ vertices

____ sides ____ vertices

____ sides ____ vertices

____ sides ____ vertices

2.21.2 Two-Dimensional Shapes

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Lesson 21.1

Two-Dimensional Shapes

Materials: two-dimensional shapes (triangles, squares, rectangles, pentagons, hexagons), Number Cards (Teacher Resource Masters)

Have children work with partners. Provide one of each shape and a set of number cards (3–6) for each pair. Give the following sequence of instructions:

- Have one partner choose a shape. Have the other partner count and say the number of sides and vertices. Remind children that the singular of *vertices* is *vertex*. Repeat for the other shapes. Have children trace each shape and write a number on it to represent the number of sides and vertices.
- Have children look at the illustrated triangles. **Ask:** *What is the same about all the triangles? What is different?* Help children understand that the triangles are different sizes but each one has 3 sides and 3 vertices. **Say:** *You can tell that each shape is a triangle because of the number of sides and vertices.* Have children write the numbers. Repeat for the quadrilaterals, hexagons, and pentagons.
- Have one partner choose a number card. Have the other partner draw a shape with that number of sides and vertices. Then have the pair name the shape: *triangle, quadrilateral, hexagon,* or *pentagon*. **Ask:** *How did you decide what shape to draw? How do you know what your shape is called?*

Proficiency Level

Beginning
Have children use two-dimensional shapes to identify and draw shapes. Present a shape and have children count the sides and vertices and name the shape. Ask children to trace the shape and identify the sides and vertices again. Have children write the number on each shape. Then say a number and ask children to name and show the shape with that number of sides and vertices.

Intermediate
Have children use two-dimensional shapes to identify and draw shapes. Ask children to count the sides and vertices of each shape and describe the shape in a complete sentence. For example: *The square has four sides and four vertices.* Have children explain what is the same and different about the different triangles. Say a number and have children draw and describe the shape with that number of sides and vertices.

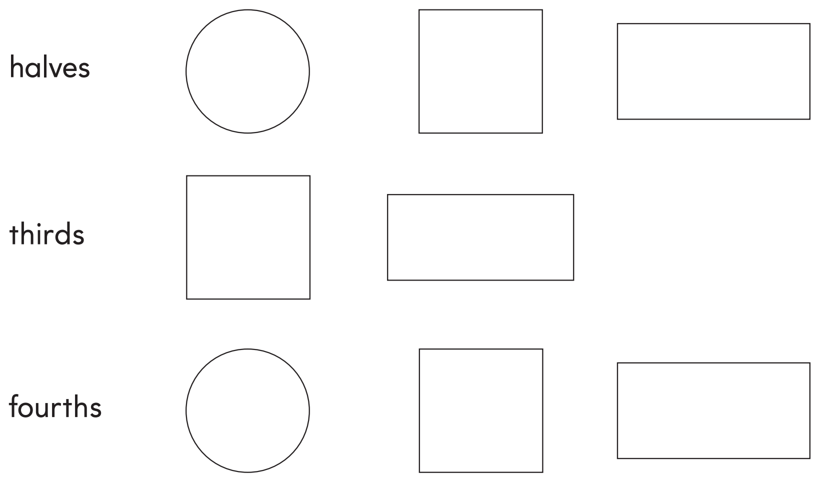
Advanced
Have children use two-dimensional shapes to identify and draw shapes. Ask children to describe each shape according to its sides and vertices, using complete sentences. Have children choose a number card and draw and describe the appropriate shape. Have children explain what is the same and different about the different triangles and between a square and a rectangle.

3 sides 3 vertices   4 sides 4 vertices   5 sides 5 vertices   6 sides 6 vertices

2.21.2 Two-Dimensional Shapes

HMH | Math

Draw Equal Shares



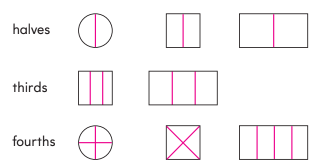
Lesson 22.3

Draw Equal Shares

Materials: construction paper circles, rectangles, and squares

Provide paper shapes for each child, three of each shape. Papers should be large enough for children to fold easily. Provide the following sequence of instructions:

- Have each child hold a rectangle. **Say:** *Fold the rectangle in half. Show the shape you have made.* Help children fold exactly in half by lining up the edges.
- Have children compare their shapes. If children have found two different ways to fold, have them discuss the different ways they folded. If not, ask if they can think of another way to make halves.
- Have each child fold a square in half and compare shapes. If no children have folded on the diagonal, **ask:** *Is there another way that you could make halves?*
- Have each child fold a circle in half and compare shapes. **Ask:** *Is there another way that you could make halves?* Help children note that no matter how they fold the circle in half, the shape is the same.
- Repeat the folding activity for fourths, noting different ways to fold the rectangle and square. Then repeat for thirds, folding only the rectangle and square.
- Call children's attention to the illustrations. **Ask:** *How many equal shares are there when you make halves?* Have children draw to show halves on the illustrated circle, square, and rectangle. Then ask children to show halves on the square and rectangle in another way. Repeat the activity for thirds and fourths. Children will not fold a circle into thirds for this activity.



Proficiency Level

Beginning
Have children use folded shapes to show halves and fourths. Guide children to fold the circle in half and then unfold and trace the line of the fold with a finger. **Ask:** *How many shares are there? What are the shares called?* Guide children to find the row of shapes labeled *halves*. Have children draw a line on the illustrated circle to show two halves. Repeat for a circle folded in fourths.

Intermediate
Have children use folded shapes to show halves, thirds, and fourths. Give children three rectangles and ask them to fold one in halves, one in thirds, and one in fourths. Have children describe each rectangle, using the number of shares and the name of the shares. Have children draw lines to show halves, thirds, and fourths on the illustrated rectangles and explain each.

Advanced
Have children use folded shapes to show halves, thirds, and fourths. Have children choose shapes to fold to show halves, thirds, and fourths. Ask children to explain their choices and how many shares they have made. Have children draw lines on the illustrated shapes and explain each using full sentences, such as: *This circle has 2 halves. This rectangle has 3 thirds.*

Collect and Record Data

________	
________	Tally

Lesson 3.1

Collect and Record Data

Materials: Tally Charts (Teacher Resource Masters)

Give the following sequence of instructions:

- Provide a blank tally chart. Review how to make tally marks. Make sure that children understand that they will make a tally mark for each response.
- Have children survey 10 classmates to find each person's favorite lunch: sandwich, soup, salad, or mac and cheese. Guide children to come up with a title and to list the four lunch options as categories. Have a volunteer fill in this information on the tally chart.
- After children complete their survey, ask them to interpret the data with questions, such as:
  - Which lunch did most children choose?
  - How many children chose soup and salad?
  - How many more children chose salad than sandwich?
- If more practice is needed, repeat the activity with other scenarios, including favorite color, book, or school subject.

________	
________	Tally

Proficiency Level

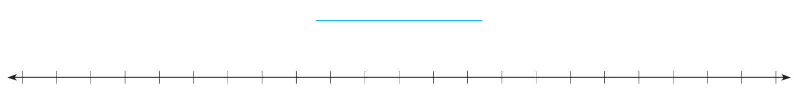
Beginning
Have children read the completed tally chart. Guide children to read *Lunch* and *Tally* on the tally chart. **Say:** *The tally chart shows what some children chose for lunch.* Have children look at the first row and help them read *sandwich*. Ask children to count the tally marks in that row. **Say:** *Each tally mark means that one child chose a sandwich. How many children chose sandwiches?* Repeat for the other rows, having children read or repeat the name of the food, say what each tally mark means, count the tally marks, and say the number.

Intermediate
Have children read and discuss the completed tally chart. Guide children to read the labels and count the tallies. Ask children to say the total for each food. **Ask:** *Which food did the most children choose? How can you tell?* Repeat with similar questions, such as which food was chosen the most, which food was chosen by three children, and which two foods were chosen by the same number of children.

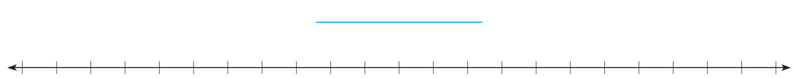
Advanced
Have children make and discuss the completed tally chart. Guide children through interpreting the data in the chart. Have them make statements about the data in the chart, such as *More children like soup than salad* or *Three children like sandwiches for lunch.* Encourage them to use complete sentences to describe the data.

Round to the Nearest Ten or Hundred

SMALL GROUPS



Nearest ten: __________



Nearest hundred: __________

3.9.5 Round to the Nearest Ten or Hundred

HMH Math

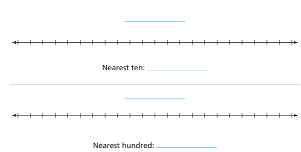
Lesson 9.5

Round to the Nearest Ten or Hundred

SMALL GROUPS

Give the following sequence of instruction:

- Ask students to write the number 26. Let them know that they will round this number to the nearest tens place.
- Have students label the first number line from 10 to 32.
- Have students locate the point where 26 would be on the first number line. Ask a student to draw the point and label it 26.
- **Ask:** Between which two tens is the number 26? 20 and 30
- Have students discuss which ten is closest and how they know. 30
- Next, have students circle the digit in the place to which they are rounding and underline the digit to the immediate right.
- **Ask:** How can you use the digit to the right of the tens place to know which ten it is closest to? Possible answer: The digit 6 is greater than 5, so I know 26 is closest to 30.
- Repeat to round a 3-digit number to the nearest hundred using the second number line. Have students label tick marks on the number line by tens.
- As time permits, have students round other numbers to the nearest ten or hundred.



Proficiency Level

Beginning
Have students demonstrate their understanding of rounding to the nearest ten in two ways. Have them mark 26 on the number line. **Ask:** Which two tens is 26 between? Have students point to the two tens and count to demonstrate which is closer. Then write the number 26. **Say:** Circle the place you are rounding to. Underline the number to the right of this place. **Ask:** Is this number greater than 5 or less than 5? Follow a similar process for rounding to the nearest hundred.

Intermediate
Have students work in pairs to compare how to round the number 673. Have one partner round to the nearest ten and the other partner round to the nearest hundred. Students may use the following sentence frames. I rounded to the nearest ________ by looking at the digit in the ________ place. Since ________ is ________ than 5, 673 rounds to ________.

Advanced
Have students work together to write a list of steps for rounding a number to the nearest ten and to the nearest hundred. Have them demonstrate their steps by using an example on the number line.

3.9.5 Round to the Nearest Ten or Hundred

HMH Math

Commutative Property of Multiplication

SMALL GROUPS

$3 \times 5 = 15$ $5 \times 3 = 15$

3.1.4 Commutative Property of Multiplication

HMH Math

Lesson 1.4

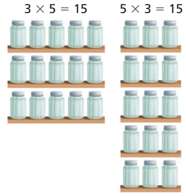
Commutative Property of Multiplication

SMALL GROUPS

Give the following sequence of instruction:

- Have students look at the pictures showing 3 shelves with 5 jars on each shelf and 5 shelves with 3 jars on each shelf. Have students discuss how the multiplication equations model the pictures.
- Have students work in pairs to draw their own pictures to represent two related situations involving equal groups.
- Have pairs exchange their work and write the multiplication equations under the pictures.
- Have each pair share their pictures and equations with the group by drawing and writing on the right side of the flipchart.
- Discuss why the products of the related multiplication equations are the same.
- Have students discuss if the number of objects is the same and why.

$3 \times 5 = 15$ $5 \times 3 = 15$



Proficiency Level

Beginning
Have students demonstrate the Commutative Property of Multiplication shown in the picture using counters. Have students make an array of 3 rows with 5 counters in each row. **Ask:** How many counters are in the array? Write the equation $3 \times 5 = 15$. Have students make an array of 5 rows with 3 counters in each row. **Ask:** How many counters are in the array? Write the equation $5 \times 3 = 15$. **Ask:** For each equation, does the first factor show the number of rows or the number of counters in each row? Write *number of rows* under each first factor. **Ask:** For each equation, does the second factor show the number of rows or the number of counters in each row? Write *number of counters* under each second factor.

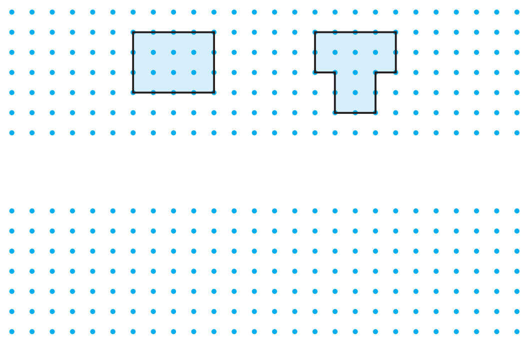
Intermediate
Have students describe how their pictures show the Commutative Property of Multiplication. Have students complete the following sentences to describe their pictures: My first picture shows ______ equal groups with ______ objects in each group. My second picture shows ______ equal groups with ______ objects in each group. Both pictures show ______ objects. The multiplication equation modeling my first picture is ______. The multiplication equation modeling my second picture is ______. Then have students use the words *factors*, *order*, and *product* to complete the following sentence to describe the Commutative Property of Multiplication: The ______ of the ______ has changed, but the ______ stays the same.

Advanced
Have students verbally describe the Commutative Property of Multiplication in their own words. Students should include the word *order* in their descriptions. Have them relate the property to the pictures they drew.

3.1.4 Commutative Property of Multiplication

HMH Math

Area by Unit Squares

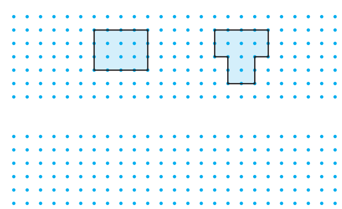


Lesson 2.1

Area by Unit Squares

Give the following sequence of instruction:

- **Say:** Each image is a design for a play space at a park.
- **Ask:** What is a unit square? a square with a side length of one unit
- **Ask:** How can you use unit squares to find the area of each play space? Count the number of unit squares in each play space.
- Have students shade each unit square in the designs one unit square at a time.
- **Ask:** What is the area of each design? 12 square units
- Have students draw a different design for the play space that is still 12 square units in area.
- **Ask:** How do you know your design has an area of 12 square units? Possible answer: My design completely covers 12 unit squares with no gaps or overlapping.
- Repeat by having students draw designs for play spaces with areas of 10 square units and 15 square units. Ask students to explain how they know their designs have the required areas.



Proficiency Level

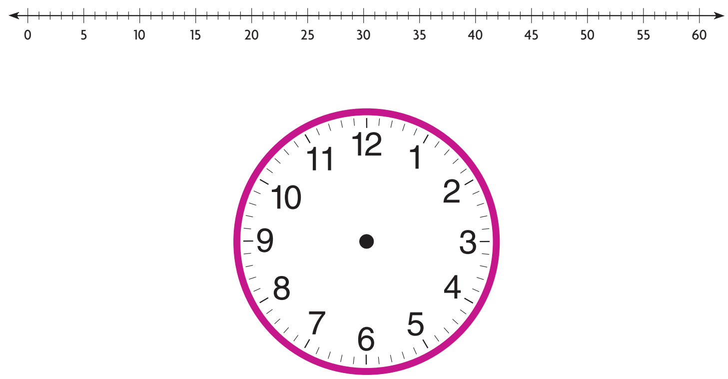
Beginning
Have students demonstrate understanding of counting unit squares to determine area. Draw a plane figure on dot paper. Have students count the unit squares aloud, touching each unit square as they count. **Ask:** How many square units is the area?

Intermediate
Have students complete the following sentence frame to describe how to measure the area of a plane figure: I can find the ______ of a shape by counting the number of ______ it takes to fill the shape.

Advanced
Have students verbally explain how to use unit squares to find the area of a given shape and how to draw a shape with a given area.

Time to the Minute

SMALL GROUPS



HMH Math

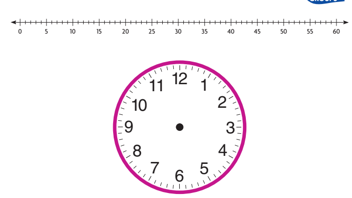
Lesson 12.1

Time to the Minute

SMALL GROUPS

Give the following sequence of instruction:

- Have students start at 0 and count by fives on the number line.
- Then have students count by fives minutes on the clock. Remind students to start with 0 at 12 on the clock.
- Have students determine between which two numbers representing hours (1–12) on the analog clock the following number of minutes are located:
  - 57 11 and 12
  - 12 2 and 3
  - 31 6 and 7
- Then have students label each number of minutes on the analog clock.



Proficiency Level

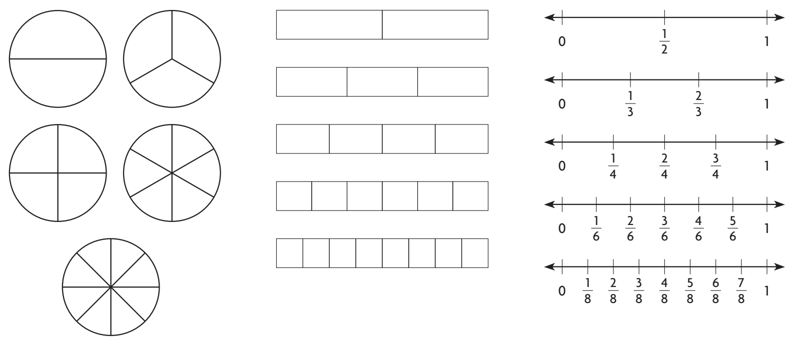
Beginning
Have students identify 1 minute. Point to 12 on the clock.
Say: A minute is a unit used to measure short amounts of time. In 1 minute, the minute hand moves from one mark to the next. Have students identify 1 minute from 12 on the clock.

Intermediate
Have students work in pairs to tell time. Show 1:17 on the clock. Have students complete the sentence frames to answer the questions. **Ask:** What does the hour hand show you? The hour hand shows ______. **Ask:** How can you count the minutes on the clock? Count on by ______ from 12 to 1, from 1 to 2, and from 2 to 3. Count from zero at the 12: 0, 5, 10, 15. Then count the marks by ______ from 3 to where the minute hand points: 16, 17. **Ask:** What time does the clock show? The clock shows ______.

Advanced
Have students explain how to tell the minutes shown on a clock. Students' explanations should include counting zero at 12 and counting by fives and ones.

HMH Math

Compare Fractions Using Models



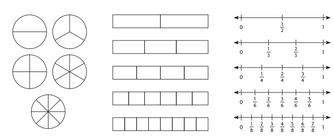
3.15.1 Compare Fractions Using Models

Lesson 15.1

Compare Fractions Using Models

Give the following sequence of instruction:

- Tell students they are going to compare the fractions $\frac{2}{3}$ and $\frac{2}{4}$ to determine which is greater.
- Have one student represent the two fractions on fraction circles.
- Have one student represent the two fractions with fraction strips.
- Have one student represent the two fractions on number lines.
- Ask each student in turn to say which fraction is greater and how their representation shows this. Emphasize that with fraction circles, they can look for which fraction has a greater area, or a greater "wedge," that is shaded. For fraction strips, they can look for which fraction has a longer shaded section. For number lines, they can look for which fraction is farther from 0.
- Repeat with $\frac{5}{6}$ and $\frac{5}{8}$, having students change roles.
- Repeat with $\frac{1}{3}$ and $\frac{3}{8}$, having students change roles.



Proficiency Level

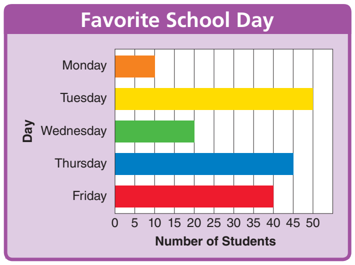
Beginning
Have students use concrete and visual models to represent and compare fractions. Show students fraction strips that represent various fractions, including $\frac{5}{6}$ and $\frac{5}{8}$. Have students point to the visual models for $\frac{5}{6}$ and $\frac{5}{8}$. **Ask:** Which is longer, five sixths or five eighths? Have students choose the appropriate symbol to complete this statement: $\frac{5}{6} \bigcirc \frac{5}{8}$.

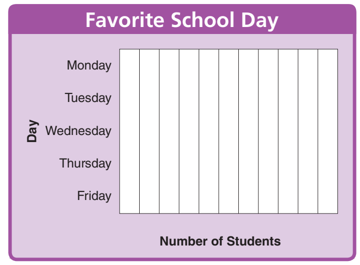
Intermediate
Have small groups of students work together to use concrete and visual models to represent and compare fractions. Have students make concrete or visual models of $\frac{5}{6}$ and $\frac{5}{8}$. Have students say the name of each fraction and show their models. **Ask:** Which covers more of the circle/is longer/is farther from zero? Which fraction is greater?

Advanced
Have students explain how to use concrete and visual models to represent and compare fractions. Have students write the fractions $\frac{5}{6}$ and $\frac{5}{8}$ and represent them with visual models. Have students write to describe making their models and explain how their models support their choice of which fraction is greater.

3.15.1 Compare Fractions Using Models

Bar Graphs





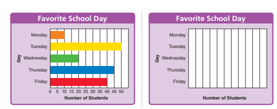
Lesson 18.3

Bar Graphs

Materials: Favorite School Day Bar Graph (Teacher Resource Masters)

Give the following sequence of instruction:

- Direct students' attention to the bar graph. **Say:** Kara asked other students a question. She used the answers to make this bar graph. **Ask:** What question do you think she asked? Possible answer: What is your favorite school day?
- **Ask:** What information does each bar show? the number of students who said they like each day best
- Have students circle the bar that represents the least popular day. **Ask:** How did you find your answer? Possible answer: Monday has the shortest bar. The shortest bar means the fewest students chose Monday as their favorite school day.
- Have students circle the heading that describes the scale of the graph. **Ask:** What is the scale of the graph? counting by 5s
- Have students write a multiplication equation to represent the number of students who like Tuesday best. $10 \times 5 = 50$
- Have students write a multiplication equation to represent the number of students who like Friday best. $8 \times 5 = 40$
- Have students write an equation to find how many more students like Tuesday best than like Friday best. $50 - 40 = 10$
- Repeat by asking students to write equations to compare or combine the numbers of students who chose various school days.



Proficiency Level

Beginning
Have students demonstrate understanding of using bar graphs to solve *how many more* and *how many less* problems. Direct student attention to the bar graph Favorite School Day. **Say:** The graph shows how many students like each day best. **Ask:** Is the day with the shortest bar the most popular or the least popular? Which day is more popular, Tuesday or Thursday? Point to the bar for Friday. **Ask:** How many students like Friday best? Do you add or subtract to find how many more students like Tuesday best than like Friday best? Have each student write an equation to show how many more students like Tuesday best than like Friday best.

Intermediate
Have students describe verbally how to read a bar graph and use it to solve *how many more* and *how many less* problems. Have students complete the sentence frames to explain how many more students like Tuesday best than like Friday best: The bar for Tuesday shows ________ students like Tuesday best. The bar for Friday shows ________ students like Friday best. The equation ________ shows that ________ more students like Tuesday best than like Friday best.

Advanced
Have students verbally describe how to read a bar graph and use it to solve *how many more* and *how many less* problems. Have students list the steps they take to find the difference between the number of students who like Tuesday best and the number of students who like Friday best.

Multiply 3-Digit and 4-Digit Numbers

$$\begin{array}{r} 213 \\ \times \quad 2 \\ \hline \end{array} \qquad \begin{array}{r} 217 \\ \times \quad 2 \\ \hline \end{array} \qquad \begin{array}{r} 217 \\ \times \quad 7 \\ \hline \end{array}$$

$$\begin{array}{r} \times \qquad \\ \hline \end{array} \qquad \begin{array}{r} \times \qquad \\ \hline \end{array} \qquad \begin{array}{r} \times \qquad \\ \hline \end{array}$$

4.5.6 Multiply 3-Digit and 4-Digit Numbers

HMH Math

Lesson 5.6

Multiply 3-Digit and 4-Digit Numbers

Materials: base-ten blocks

Give the following sequence of instruction:

- Have students work in pairs.
- Have students estimate each product.
- Then have students find each product.
- After students find all three products, have them use base-ten blocks to show the multiplication that required regrouping.
- Ask students to share their work on the flipchart. Have students compare and contrast the three exercises.
- As time permits, repeat by having students find three other products.

$$\begin{array}{r} 213 \\ \times \quad 2 \\ \hline \end{array} \qquad \begin{array}{r} 217 \\ \times \quad 2 \\ \hline \end{array} \qquad \begin{array}{r} 217 \\ \times \quad 7 \\ \hline \end{array}$$

Proficiency Level

Beginning
Have students identify the ones, tens, and hundreds digits of a product. Point to the first exercise, 213 × 2. **Ask:** Do both factors have ones digits? Then ask students to point to the ones digit of each factor. **Ask:** Do both factors have tens digits? Then ask students to point to the tens digit of 213. **Ask:** Do both factors have hundreds digits? Then ask students to point to the hundreds digit of 213. Then write the product 426. Have students model 213 × 2 using base-ten blocks to show the product 426.

Intermediate
Have students recognize when regrouping is needed for multiplication. Have students use the following sentence frames to complete the first two exercises: Multiply the ________. There are (fewer / more) than 9 ________, so (regrouping is not needed / regroup) ________ as ________ (ten / tens) ________ ones. Multiply the ________. (There are no regrouped ones to add. / Add the regrouped ones.) There are (fewer / more) than 9 ________, so (regrouping is not needed / regroup) ________ as ________ (hundred / hundreds) ________ tens.

Advanced
Have students compare and contrast the three exercises to describe when regrouping is needed for multiplication. Students should use the words *regrouping* and *product* in their descriptions.

4.5.6 Multiply 3-Digit and 4-Digit Numbers

HMH Math

Multistep Multiplication and Division Problems

SMALL GROUPS

____ ○ ____ = ____

____ ○ ____ = ____

____ ○ ____ = ____

____ ○ ____ = ____

4.7.4 Multistep Multiplication and Division Problems

HMH Math

Lesson 7.4

Multistep Multiplication and Division Problems

SMALL GROUPS

Give the following sequence of instruction:

- Have students solve a multistep word problem. Read the following problem aloud: *Vinny has 2 sheets of 20 stickers. He wants to put 8 stickers on each birthday card. How many birthday cards can he make?*
- **Ask:** What equation models how many stickers Vinny has? $2 \times 20 = 40$ Have a student draw a visual representation of the equation.
- **Ask:** How many stickers does Vinny have? 40 stickers
- **Ask:** What equation models how birthday cards Vinny can make? $40 \div 8 = 5$ Have a student draw a visual representation of the equation.
- **Ask:** How many birthday cards can Vinny make? 5 birthday cards
- If time allows, repeat this process with the following problem: *Sasha has 3 bags of 12 apples. She wants to put 6 apples in each basket. How many baskets can she fill?*

____ ○ ____ = ____

____ ○ ____ = ____

____ ○ ____ = ____

____ ○ ____ = ____

Proficiency Level

Beginning
Write the problem and read it aloud. Have students identify the phrases in the word problem that are used to write an equation. **Ask:** How many sheets of stickers does Vinny have? Then read the first sentence again and underline the phrase *2 sheets of 20 stickers*. **Ask:** Can multiplication be used to find how many stickers Vinny has in all? **Ask:** How many birthday cards can Vinny make with stickers? Then read the second sentence again and underline the phrase *8 stickers on each birthday card*. **Ask:** Can division be used to find out how many birthday cards Vinny can make?

Intermediate
Have students organize information from the word problem to write an equation. Have students use the following sentence frames to set up the problem: First, I need to use ________ to find out how many stickers Vinny has on the two sheets. Then, I need to use ________ to find out how many birthday cards Vinny can make.

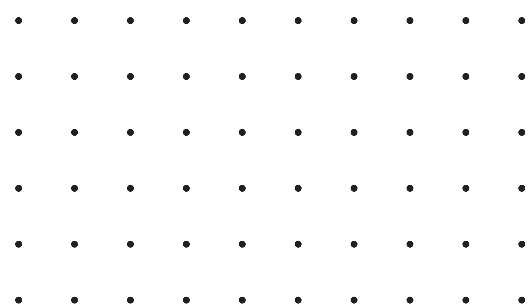
Advanced
Have students explain why they need to use multiplication as well as division to solve the problem. Students should use the terms *quotient* and *product* in their explanations.

4.7.4 Multistep Multiplication and Division Problems

HMH Math

Perimeter Formula for Rectangles

SMALL GROUPS



4.2.4 Perimeter Formula for Rectangles

HMH Math

Lesson 2.4

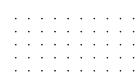
Perimeter Formula for Rectangles

SMALL GROUPS

Review the term *perimeter* with students.

Give the following sequence of instruction:

- Draw a 7 by 3 rectangle on the dot grid. Point to one corner of the rectangle. Move your finger along the outside of the shape, and have students count every dot that you move your finger over. Students should not count the dot where you start because you have not moved yet.
- Once you arrive back at the corner where you started, tell students that their counted value is equivalent to the perimeter of the rectangle. Students should have counted a total of 20 dots.
- Have students take turns drawing a rectangle or other polygon on the dot grid, with the condition that they can only use horizontal or vertical lines between dots.
- Have students move their fingers along the outside of the polygon, counting every dot that they move over. Tell students that their counted value is the perimeter of the polygon that they have drawn.



ML Proficiency Level

Beginning
Have students repeat names for the parts of a rectangle and use them to find perimeter. Draw a 7 by 3 rectangle on the dot grid. Point to and name the figure as a rectangle. Label the top and bottom of the rectangle *length* and the left and right sides *width*. Trace each side with your finger as you say its name. Have students repeat your actions and words. Move your finger along the top of the rectangle. **Say:** The length of the rectangle is 7 units. Move your finger down the right side of the rectangle. **Ask:** What is the width of the rectangle? Repeat for the bottom and left side. **Say:** The perimeter of a rectangle is the distance around it. Trace the perimeter with your finger. Say *perimeter*, and have students repeat. Write perimeter = length + width + length + width. Point to and say aloud each part of the equation. **Ask:** What is the perimeter of the rectangle?

Intermediate
Have students use key words to explain and use the formula for the perimeter of a rectangle. Draw a rectangle on the dot grid. Have students trace the length, the width, and the perimeter of the rectangle with their fingers. Write the perimeter formula: $P = l + w + l + w$. Have students use the terms *length*, *width*, and *perimeter* to tell what each letter in the formula represents. Then have students use the formula to find the perimeter of the rectangle.

Advanced
Have students use key words to explain how to find the perimeter of a rectangle.

4.2.4 Perimeter Formula for Rectangles

HMH Math

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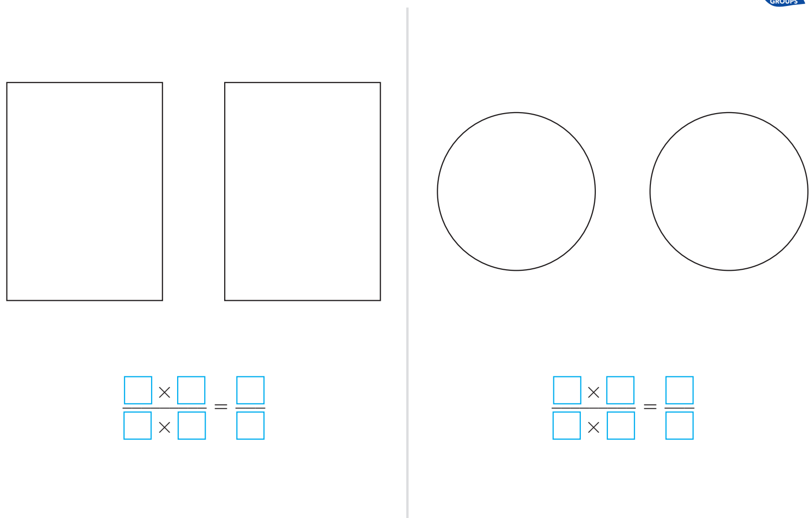
Generate Equivalent Fractions

SMALL GROUPS



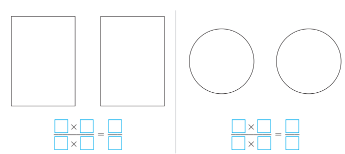
Lesson 11.4

Generate Equivalent Fractions

SMALL GROUPS

Have students work in pairs. Give the following sequence of instruction:

- Have students make two identical fraction models of $\frac{3}{4}$.
- Then have them make the second fraction model have twice as many parts.
- Have a student show the fraction models using the rectangles or the circles on the flipchart. **Ask:** How many parts are in the whole of the second fraction model? 8
- **Ask:** How many eighths are shaded in this equivalent fraction? six eighths
- **Ask:** How are the number of shaded parts for the two fractions related? There are twice as many parts in $\frac{6}{8}$.
- Have students write an equation to show how multiplication can be used to show that $\frac{3}{4}$ is equivalent to $\frac{6}{8}$. $\frac{2 \times 3}{2 \times 4} = \frac{6}{8}$
- Repeat the same questioning using the fractions $\frac{1}{5}$ and $\frac{5}{6}$.



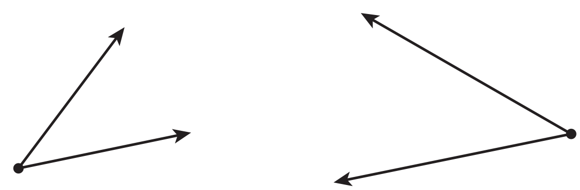
Proficiency Level

Beginning
Have students relate the numerator and denominator of a fraction to a visual model. Write the fraction $\frac{5}{8}$. Ask students to point to the number that represents the total number of parts in the whole. Then ask for a volunteer to draw visual models, both rectangle and circle, showing the whole divided appropriately. Then ask students to point to the number that represents the number of parts that should be shaded. Then ask for a volunteer to shade the appropriate parts. Repeat for other fractions.

Intermediate
Have students generate a fraction equivalent to $\frac{2}{3}$. Have them make two identical visual models for $\frac{2}{3}$. Then have them draw lines in the second visual model so that it has twice as many parts. Have students complete the following sentence frames to explain why the fraction is equivalent: The second fraction model has ________ parts, and ________ of the parts are shaded. ________ is a fraction that is equivalent to $\frac{2}{3}$.

Advanced
Have students discuss the steps taken to generate a pair of equivalent fractions. Students should use the terms *equivalent, whole*, *shaded parts*, and *same size* in their discussions.

Angles



_____ unit angles _____ unit angles

_____ unit angles _____ unit angles

4.13.2 Angles

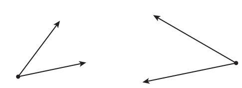
HMH Math

Lesson 13.2

Angles

Give the following sequence of instruction:

- Ask students to draw a unit angle to measure the angle on the left. Have students determine the number of unit angles needed to fill the angle.
- Ask students to use the same unit angle to measure the angle on the right. Have students determine the number of unit angles needed to fill the angle.
- Have students compare the angles. Students should notice that the figures represent angles with the same measure.
- Repeat with a different unit angle.



_____ unit angles _____ unit angles

_____ unit angles _____ unit angles

Proficiency Level

Beginning
Say the words *endpoint* and *ray*. Have students repeat each word. Ask students to point to the rays of each angle. Then ask students to point to the endpoint of each ray. **Say:** An angle is a figure formed by two rays that meet at a common endpoint. The endpoint of an angle is also called the vertex. Ask students to point to the vertex of each angle. As students point to each vertex, say the word *vertex* and have students repeat.

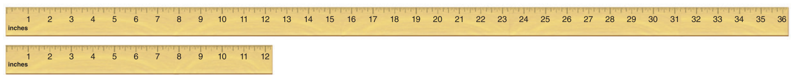
Intermediate
Have students work in pairs to compare angles. Have one partner determine the number of unit angles to fill the angle on the right, and have the other partner determine the number of unit angles to fill the angle on the left. **Ask:** How can you use unit angles to know that these angles have the same measure? Have students complete the following sentence: These angles have the same measure because the _____ number of unit angles fills the space of each angle.

Advanced
Have students draw an angle and describe how to use a unit angle to measure it. Students' descriptions should include that the measure of the drawn angle is how many unit angles it takes to fill the opening.

4.13.2 Explore Angles

HMH Math

Compare Customary Units of Length



______ ______ ◯ ______ ______

Lesson 19.2

Compare Customary Units of Length

Give the following sequence of instruction:

- Draw students' attention to the measuring tools. **Ask:** What do you know about these measuring tools? Possible answers: They are used to measure length. The top tool is a yardstick and the bottom tool is a foot ruler.
- **Ask:** How many inches are in 1 foot? 12 inches How do you know? Possible answer: A foot ruler has 12 inches. How many inches are in 1 yard? 36 inches How do you know? Possible answer: A yardstick has 36 inches.
- **Ask**: How many 1-foot rulers are equal in length to the yardstick? 3 How do you know? Possible answer: I can lay three 1-foot rulers end-to-end, and they will have the same length as the yardstick. There are 12 inches in 1 foot. I can multiply $12 \times 3 = 36$ to check that there are 3 feet in 1 yard. Have students explore the number of feet in a yard by drawing two more foot rulers along the length of the yardstick.
- **Ask**: Which is longer, 2 feet or 20 inches? 2 feet Have students write the comparison on the flipchart. How do you know? Possible answer: There are 24 inches in 2 feet. 24 inches is longer than 20 inches. If students have trouble, have them mark the end of the second foot ruler on the yardstick.
- Repeat with other comparisons. As students become more confident, ask them to pose questions to others, such as "Which is shorter, 14 inches or 1 foot?"

Proficiency Level

Beginning
Say the customary units of length, *inch, foot,* and *yard*, aloud. Have students repeat as you say each word. Ask students to point to the foot ruler. Ask students to point to the yardstick.

Intermediate
Have students identify customary units of length. Point to the yardstick. **Ask:** How many inches are in one yard? Have students complete the following sentence: There are ______ inches in one ______. Point to the ruler. **Ask:** How many inches are in one foot? Have students complete the following sentence: There are ______ inches in one ______. Have students work in pairs to compare 2 feet and 20 inches. **Ask:** How many inches are 2 feet? Have students complete the following sentence: There are ______ inches in 2 feet.

Advanced
Have students describe how to use a yardstick and a ruler to compare inches, feet, and yards. Students' descriptions should include using the tools to see that there are 12 inches in 1 foot and 3 feet or 36 inches in 1 yard.

Estimate with 2-Digit Divisors

SMALL GROUPS

1,740 ÷ 58

_____ ÷ _____ = _____

_____ ÷ _____ = _____

_____ ÷ _____

_____ ÷ _____ = _____

_____ ÷ _____ = _____

5.2.3 Estimate with 2-Digit Divisors

HMH Math

Lesson 2.3

Estimate with 2-Digit Divisors

SMALL GROUPS

Give the following sequence of instruction:

- Show students the problem on the left half of the flipchart.
- **Say:** You are going to use compatible numbers to estimate the quotient. Compatible numbers are close to the actual numbers but easier to divide.
- Ask students to think of the nearest ten to 58. 60 Have students write the number as the divisor in both equations on the flipchart.
- Have students think about multiples of 60. What are two multiples of 60 that are close to 1,740? Possible answer: 1,200 and 1,800
- Have students write each number as a divisor in one of the two equations. Then have students use the equations to estimate the quotient. **Ask:** What are two estimates of the quotient? Possible answer: 20 and 30
- Have students discuss which estimate is closer to the actual quotient.
- Repeat the activity by having students estimate other quotients.

1,740 ÷ 58

_____ ÷ _____ = _____

_____ ÷ _____ = _____

Proficiency Level

Beginning
Have students describe how to estimate using compatible numbers. **Ask:** What multiple of 10 is closest to 58? Have students write the number. Say the number aloud and ask students to repeat. **Ask:** What multiple of 60 is close to 1,740? Have students write the number. Say the number aloud and ask students to repeat. **Say:** These numbers are called *compatible numbers* because they are easy to compute with. Read the following sentence frames, pausing appropriately for students to complete: Two compatible numbers close to 1,740 and 58 are ______ and ______. An estimate of 1,740 divided by 58 is ______.

Intermediate
Have students work in pairs to describe how to estimate the quotient 1,740 ÷ 58 using compatible numbers. Have partners find two pairs of compatible numbers and describe how they chose the numbers using the terms *close to* and *multiple*.

Advanced
Have students describe how to estimate using 2-digit divisors by writing a list of steps to follow. Have students use the terms *compatible numbers* and *multiple* in their descriptions.

5.2.3 Estimate with 2-Digit Divisors

HMH Math

Divide Decimals

SMALL GROUPS

Original Division Problem

$\_\_\_\_\_\_ \div \_\_\_\_\_\_ = \_\_\_\_\_\_$

$$\frac{\square}{\square} \times \frac{\square}{\square} = \frac{\square}{\square}$$

New Division Problem

$\_\_\_\_\_\_ \div \_\_\_\_\_\_ = \_\_\_\_\_\_$

5.17.6 Divide Decimals

HMH Math

Lesson 17.6

Divide Decimals

SMALL GROUPS

Give the following sequence of instruction:

- Have students write 15.75 ÷ 3.5 in the first division equation frame. **Ask:** How can you estimate the quotient? Possible answer: 16 ÷ 4 = 4
- **Say:** You can make the problem easier by getting rid of the decimal in the divisor. Have students write $\frac{15.75}{3.5}$ in the first fraction. **Ask:** What can you multiply 3.5 by to get a product with no decimal? Possible answer: 10 Have students write 10 in the denominator of the second fraction.
- **Say:** If you multiply $\frac{15.75}{3.5}$ by 1, the product is $\frac{15.75}{3.5}$. **Ask:** What number can you write in the numerator to get a fraction equal to 1? 10 Have students write 10 in the numerator of the second fraction.
- **Ask:** What is the product of $\frac{15.75}{3.5}$ multiplied by $\frac{10}{10}$? $\frac{157.5}{35}$ Have students write the product in the third fraction.
- Have students write 157.5 ÷ 35 in the second division equation frame. **Ask:** What is the quotient? 4.5 How do you know your answer is reasonable? Possible answer: The quotient is close to my estimate, 4.
- Repeat to find the quotient 35.96 ÷ 6.2.

Original Division Problem

$\_\_\_\_\_\_ \div \_\_\_\_\_\_ = \_\_\_\_\_\_$

$$\frac{\square}{\square} \times \frac{\square}{\square} = \frac{\square}{\square}$$

New Division Problem

$\_\_\_\_\_\_ \div \_\_\_\_\_\_ = \_\_\_\_\_\_$

Proficiency Level

Beginning
Have students demonstrate using place-value strategies to divide decimal numbers. Have students write 15.75 ÷ 3.5 for the original division problem. Have students rewrite the expression as a fraction. **Ask:** What fraction can you multiply by to get rid of the decimal in 3.5, $\frac{10}{1}$ or $\frac{10}{10}$? Have students multiply $\frac{15.75}{3.5}$ by $\frac{10}{10}$ and write the product. Point to $\frac{157.5}{35}$. Draw a long division symbol. Have students complete the division. Point to the original division equation. **Ask:** What is the quotient?

Intermediate
Have students describe using place-value strategies to divide decimal numbers. Have students work in a small group to demonstrate dividing 15.75 by 3.5 by renaming the problem 157.5 divided by 35. Have students verbally explain their work, including the terms *decimal point*, *multiply*, *numerator*, *denominator*, *divide*, *dividend*, *divisor*, and *quotient*.

Advanced
Have students describe using place-value strategies to divide decimal numbers. Have students verbally explain each step as they divide 15.75 by 3.5.

5.17.6 Divide Decimals

HMH Math

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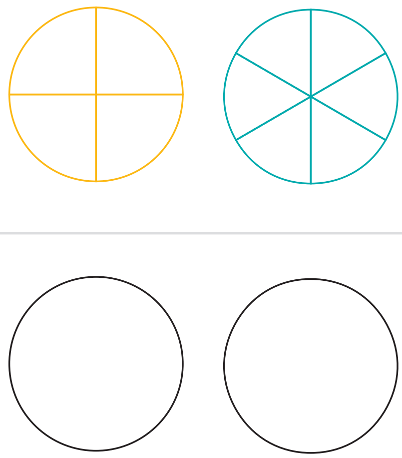
Fractions with a Common Denominator



Lesson 6.4

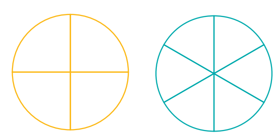
Fractions with a Common Denominator

Materials: fraction circles

Students use fraction circles to find equivalent fractions and a common denominator.

Give the following sequence of instruction:

- Have students name the fraction that one part of the first circle represents. $\frac{1}{4}$
- Have students use their fraction circles to find other same-sized pieces that fit exactly in a $\frac{1}{4}$ part.
- Have students draw on the chart to show the same-sized pieces they found.
- Have students write two different equivalent fractions for $\frac{1}{4}$ below the first circle. $\frac{2}{8}$ and $\frac{3}{12}$
- Have students name the fraction that one part of the second circle represents. $\frac{1}{6}$
- Have students use their fraction circles to find other same-sized pieces that fit exactly in a $\frac{1}{6}$ part.
- Have students draw on the chart to show the same-sized pieces they found.
- Have students write an equivalent fraction for $\frac{1}{6}$ below the second circle. $\frac{2}{12}$
- Have students circle the equivalent fractions for $\frac{1}{4}$ and $\frac{1}{6}$ that have a common denominator. $\frac{3}{12}$ and $\frac{2}{12}$
- Have students repeat the activity with other pairs of fractions.



Proficiency Level

Beginning
Have students represent equivalent fractions and a common denominator using fraction circles. Write the term *equivalent fractions*, and then have students write fractions that are equivalent to $\frac{1}{4}$ and $\frac{1}{6}$. Have students point to the equivalent fractions they wrote. As students point, say *equivalent fractions*, and have them repeat. Write the term *common denominator*, and then have students circle $\frac{3}{12}$ and $\frac{2}{12}$ and then point to the denominators. As students point, say *common denominator*, and have them repeat.

Intermediate
Have students describe equivalent fractions and a common denominator. Have students describe the following fraction pairs: $\frac{1}{4}$ and $\frac{3}{12}$, $\frac{1}{6}$ and $\frac{2}{12}$, and $\frac{3}{12}$ and $\frac{2}{12}$. Have students use the terms *equivalent fractions* and *common denominator* in their comparisons.

Advanced
Have students explain the meaning of the term *equivalent fractions*. Then have students explain the meaning of a common denominator. Have students use the fractions $\frac{1}{4}$ and $\frac{1}{6}$ in their explanations.

Grouping Symbols

$$5 + 6 \times 9 - 3$$

5.4.4 Grouping Symbols

Math

Lesson 4.4

Grouping Symbols

Students explore how adding parentheses changes the value of a numerical expression.

Give the following sequence of instruction:

- Have students look at the numerical expression on the student-facing side. Ask them to evaluate the numerical expression. 56
- Ask students to show where they can add a pair of parentheses to the numerical expression without changing the value. Have them explain why this does not change the value. Lead students to state that the order of operations does not change. $(5 + 6 \times 9) - 3$; $5 + (6 \times 9) - 3$
- Ask students where they would place a pair of parentheses so the value of the numerical expression is 96. $(5 + 6) \times 9 - 3$ Have a student demonstrate on the flipchart and explain his or her strategy for placing the parentheses.
- Ask students where they would place a pair of parentheses so the value of the numerical expression is 41. $5 + 6 \times (9 - 3)$ Have a student demonstrate on the flipchart and explain his or her strategy in placing the parentheses.
- Ask students where they would place parentheses so the value of the numerical expression is 66. $(5 + 6) \times (9 - 3)$ Have a student demonstrate on the flipchart and explain his or her strategy for placing the parentheses.
- As time permits, repeat the activity with another numerical expression.

$$5 + 6 \times 9 - 3$$

Proficiency Level

Beginning
Have students demonstrate their understanding of parentheses. Write the numerical expressions $(5 + 6) \times 9 - 3$ and $5 + 6 \times (9 - 3)$. Point to one pair of parentheses in the numerical expressions. **Say:** These are called *parentheses*. Operations inside parentheses are evaluated first. **Ask:** Which part of each numerical expression is evaluated first? Have students point to the parts they will evaluate first. For each numerical expression, **ask:** What is the value?

Intermediate
Have students work in pairs to describe how parentheses and the order of operations determine how an expression is evaluated. Have one partner evaluate $(5 + 6) \times 9 - 3$ and the other partner evaluate $5 + 6 \times (9 - 3)$. Have them describe the order in which they evaluate the expressions. Have pairs use words that describe the order, such as *first*, *then*, *next*, or *finally*.

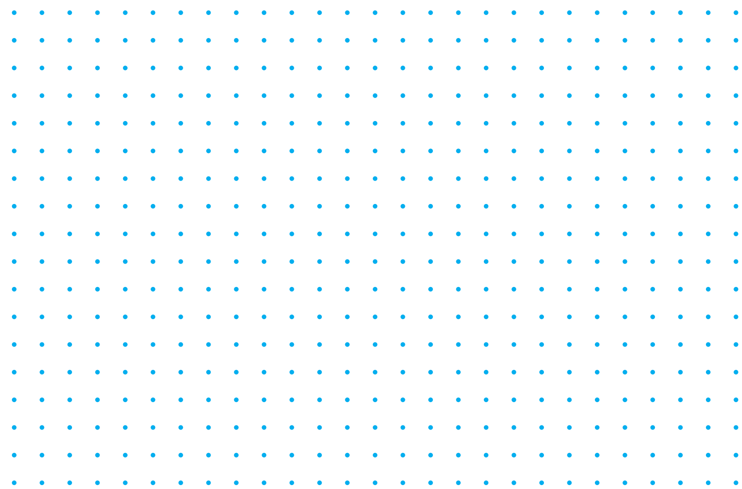
Advanced
Have students explain how grouping symbols affect the way a numerical expression is evaluated. Students should use examples, such as $(5 + 6) \times 9 - 3$ and $5 + 6 \times (9 - 3)$, and include the term *order of operations* in their explanations.

5.4.4 Grouping Symbols

Math

Triangles

SMALL GROUPS



Lesson 20.2

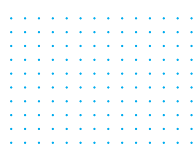
Triangles

SMALL GROUPS

Materials: 3-Section Spinner (Teacher Resource Masters)

Give the following sequence of instruction:

- Write the words *acute*, *right*, and *obtuse* on the sections of a 3-section spinner. Write the words *equilateral*, *isosceles*, and *scalene* on the sections of a second 3-section spinner.
- Have one student spin the pointers. That student should record the results (e.g., *obtuse isosceles*) at the top of the dot paper.
- The other students should draw triangles that satisfy the description, or state that a triangle with that description cannot exist (obtuse equilateral, right equilateral).
- Have students decide as a group whether each triangle satisfies the description. If a triangle does not satisfy the description, have students work together to modify the triangle so that it does satisfy the description.
- **Ask:** How are your triangles alike? How do they differ? Answers will vary.
- Repeat with a different student spinning the pointers and recording the results.



Proficiency Level

Beginning
Have students demonstrate how to identify and classify triangles by side lengths and angle measures. Show students a list of triangle attributes (*acute, right, obtuse, scalene, isosceles, equilateral*) and a selection of 7 paper triangles. The triangles should be acute scalene, acute isosceles, equilateral, right isosceles, right scalene, obtuse isosceles, and obtuse scalene. Have students indicate their answers to the following questions by grouping the appropriate triangles together. **Ask:** Which are acute triangles? right? obtuse? Which are equilateral triangles? isosceles? scalene? Point to one triangle. **Ask:** Which words on the list describe this triangle? Students can point to the correct word(s) or respond verbally. Repeat for the remaining triangles.

Intermediate
Have students identify and classify triangles by side lengths and angle measures. Show students the selection of 7 paper triangles from the Beginning activity. Have students complete the following description for each triangle: The triangle has ______ sides that are the same length. The triangle has ______ angles less than 90°, ______ 90° angles, and ______ angles greater than 90°. The triangle is ______ and ______.

Advanced
Have students explain how to identify and classify triangles by side lengths and angle measures. Have students draw examples of each of the 7 types of triangles, and label each triangle with its classifications.

Numerical Patterns

Number of Elephants	1	2	3	4	5	6
Number of Trunks	1	2				
Number of Legs	4	8				

5.19.4 Numerical Patterns

Math

Lesson 19.4

Numerical Patterns

Materials: Generate and Identify Numerical Patterns (Teacher Resource Masters)

Give the following sequence of instruction:

- Direct students to look at the situation represented by the table on the flipchart.
- **Ask:** When you add an elephant, by how much does the number of trunks increase? 1
- **Ask:** When you add an elephant, by how much does the number of legs increase? 4
- Discuss with students what the rule for the number of trunks is. Guide students to identify the rule "Add 1," starting at 1. Have students complete the table for the number of trunks.
- Discuss with students what the rule for the number of legs is. Guide students to identify the rule "Add 4," starting at 4. Have students complete the table for the number of legs.
- Have students compare the row for the number of trunks to the row for the number of legs. Ask students how the corresponding entries are related. Possible answer: The number of legs is 4 times the number of trunks.
- Ask students to write the ordered pairs relating the number of trunks and legs using the number of trunks for the *x*-coordinates and the number of legs for *y*-coordinates. (1, 4), (2, 8), (3, 12), (4, 16), (5, 20), (6, 24)
- As time permits, have students identify patterns with another situation.

Number of Elephants	1	2	3	4	5	6
Number of Trunks	1	2				
Number of Legs	4	8				

Proficiency Level

Beginning
Explain that to identify a pattern, students should look for a rule to go from one number to the next. **Say:** Look at the chart. Point to patterns that start at 1. Have students point to examples of these rules: *Add 1. Add 4.* Then write the ordered pair (1, 4). **Say:** Point to the coordinate that represents the trunks. Repeat for legs.

Intermediate
Have students match these rules to the patterns in the chart: *Start at 1. Start at 4. Add 1. Add 4.* **Ask:** What operation can you use to show the relationship between trunks and legs?

Advanced
Have pairs write a rule for the number of trunks and the number of legs. Then have them express the relationship between the numbers of trunks and legs in a complete sentence.

5.19.4 Numerical Patterns

Math

Notes

Notes

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