

Multistep Number Stories

Home Link 8-1

NAME _____

DATE _____

TIME _____

The fourth-grade students in Mr. Kennedy's class are investigating energy and motion. Students worked in teams to build two machines: a car that is propelled by a mousetrap and a boat that is propelled by balloons. Today the teams are competing to see which cars and boats go farthest.



Each car or boat gets 3 trials. The total distance from all 3 trials is used to determine which car or boat went farthest. Solve the number stories to help Mr. Kennedy's class compare the machines made by various teams.

- ① Team A's car went 173 cm on the first trial, 206 cm on the second trial, and 245 cm on the third trial. Team B's car went 217 cm on each of the three trials.

Which car went the farthest overall? _____

How much farther did it go? _____

- ② Team A's boat went 130 cm in all. Team B's boat went the same distance on all 3 trials and lost to Team A's boat by 7 cm.

How far did Team B's boat go on each trial? _____

- ③ Team D's car went the same distance on each of its trials. Team C's car went exactly 1 cm farther in each trial than Team D's car. Team C's car went 543 cm in all.

How far did Team D's car go on each trial? _____

Practice

④ $5,624 \div 8 =$ _____

⑤ $8,500 \div 3 =$ _____

⑥ $4 \overline{)9,207}$

⑦ $5 \overline{)3,578}$

Finding Unknown Angle Measures

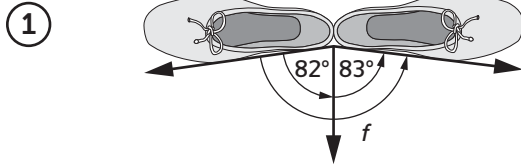
Home Link 8-2

NAME _____

DATE _____

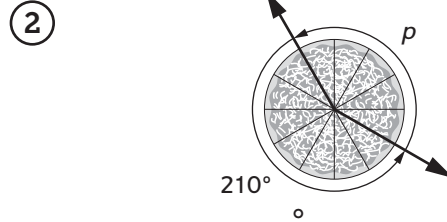
TIME _____

Find the missing angle measures. For each problem, write an equation with a letter for the unknown to show how you found your answer.



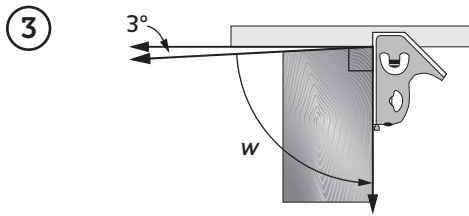
$f = \underline{\hspace{2cm}}$

Equation: _____



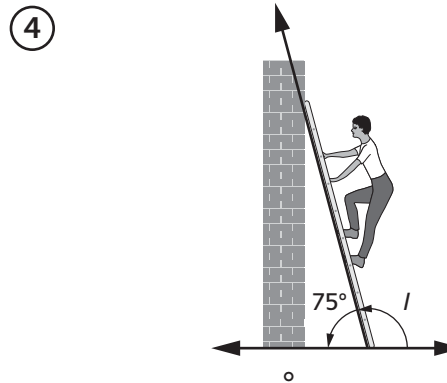
$p = \underline{\hspace{2cm}}$

Equation: _____



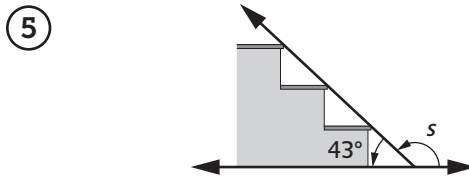
$w = \underline{\hspace{2cm}}$

Equation: _____



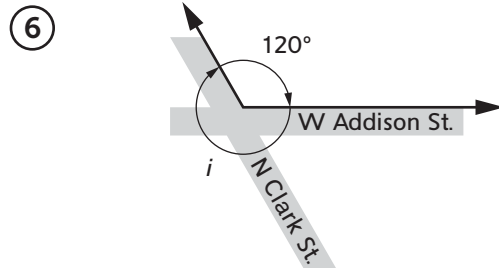
$l = \underline{\hspace{2cm}}$

Equation: _____



$s = \underline{\hspace{2cm}}$

Equation: _____



$i = \underline{\hspace{2cm}}$

Equation: _____

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Practice

⑦ $\frac{1}{3} + \frac{2}{3} + \frac{2}{3} = \underline{\hspace{2cm}}$

⑧ $\frac{1}{4} + \frac{3}{4} + \frac{3}{4} = \underline{\hspace{2cm}}$

⑨ $\frac{4}{5} + \frac{4}{5} + \frac{3}{5} = \underline{\hspace{2cm}}$

⑩ $\frac{5}{12} + \frac{3}{12} + \frac{7}{12} = \underline{\hspace{2cm}}$

Finding Pattern-Block Measures

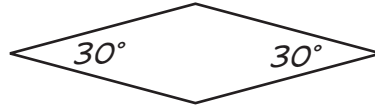
Home Link 8-3

NAME _____

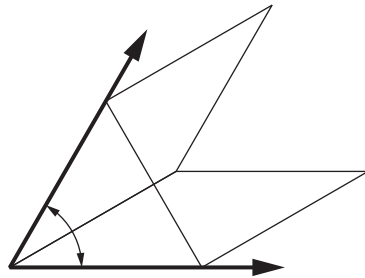
DATE _____

TIME _____

Molly is using pattern blocks to find angle measures of other pattern blocks. She knows that the measure of the small angle of a white rhombus is 30° .

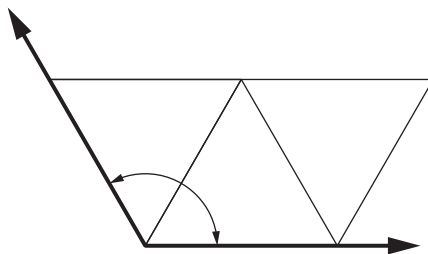


- ① Molly fills an angle of the green triangle with the small angles of white rhombuses. What is the measure of the triangle's angle? Explain how you know.



Angle measure: _____^o

- ② Molly fills a red trapezoid's large angle with angles of the green triangle. What is the measure of the red trapezoid's large angle? Explain how you know.



Angle measure: _____^o

Practice

③ $5,588 * 3 =$ _____

④ $9,037 * 5 =$ _____

⑤ $52 * 94 =$ _____

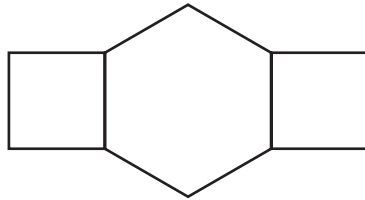
⑥ $83 * 77 =$ _____

Line Symmetry

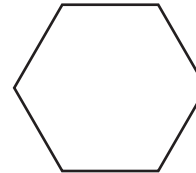


Use a straightedge to draw the lines of symmetry on each shape.

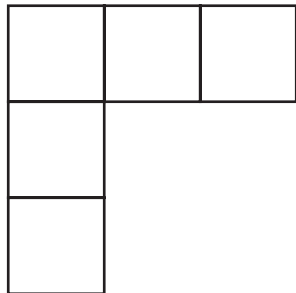
- ① Draw 2 lines of symmetry.



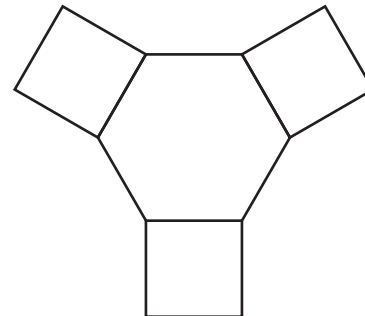
- ② Draw 6 lines of symmetry.



- ③ Draw 1 line of symmetry.

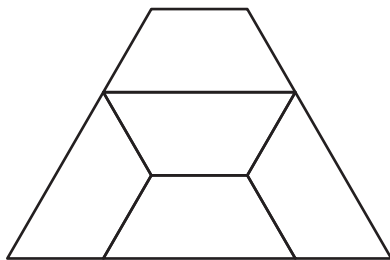


- ④ Draw 3 lines of symmetry.



- ⑤ How many lines of symmetry does this shape have? _____

Draw the line(s) of symmetry.



- ⑥ Draw your own shape. Show the lines of symmetry. Be sure your shape includes at least 1 right angle.

Practice

⑦ $6 * \frac{5}{6} =$ _____

⑧ $3 * \frac{3}{8} =$ _____

⑨ $4 * \frac{7}{10} =$ _____

⑩ $6 * \frac{4}{12} =$ _____

Designing a Bookcase

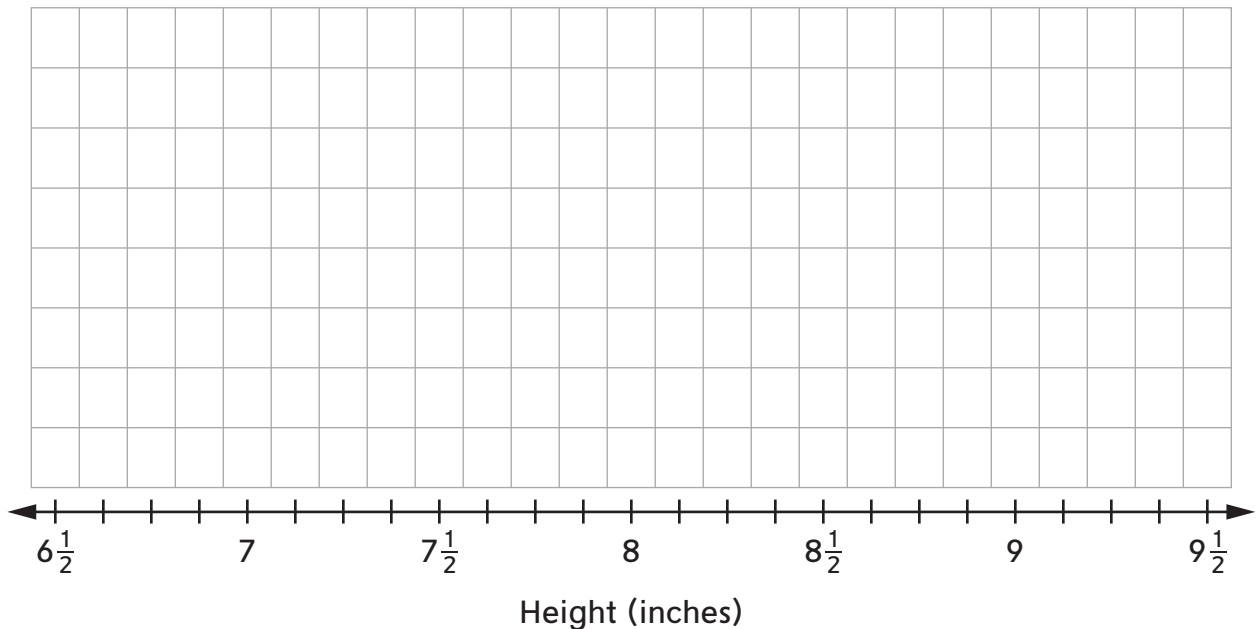
Nicholas is building a bookcase. To help with the design, he measured the height of each of his books to the nearest $\frac{1}{8}$ inch. His measurements are given below.



$6\frac{1}{2}$, $9\frac{1}{4}$, $7\frac{1}{8}$, $7\frac{1}{2}$, 8, $6\frac{7}{8}$, $9\frac{1}{4}$, $9\frac{1}{4}$, $9\frac{1}{4}$, $9\frac{1}{4}$, $8\frac{1}{4}$, 8, $8\frac{1}{4}$, $8\frac{3}{8}$,
 $6\frac{1}{2}$, $7\frac{1}{8}$, 9, $6\frac{7}{8}$, $9\frac{3}{8}$, $6\frac{7}{8}$, $7\frac{1}{2}$, 8, $8\frac{1}{4}$, $9\frac{1}{4}$, $6\frac{7}{8}$, $6\frac{7}{8}$, $8\frac{1}{4}$, $8\frac{1}{4}$, $8\frac{1}{4}$

Plot the data set on the line plot below.

Book Heights



Use the completed line plot to answer the questions below.

- ① What is the difference in height between the tallest and shortest books? _____ in.
- ② Nicholas wants the space between the shelves to be $\frac{7}{8}$ inch taller than his tallest book.
 - a. How far apart should he make the shelves? _____ in.
 - b. If the thickness of the wood he uses for the shelves is $\frac{5}{8}$ inch, what will be the total height of each shelf? (*Hint: The total height is the thickness of one piece of wood plus the distance between shelves.*) _____ in.

Practice

- ③ $8,207 \div 7 \rightarrow$ _____
- ④ $7,109 \div 8 \rightarrow$ _____

Perimeters and Missing Measures

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DATE _____

TIME _____

Use a formula to find the perimeter of each rectangle. Show your work in the space provided.



<p>① Length = $3\frac{3}{6}$ yd Width = $\frac{1}{6}$ yd</p> <p style="text-align: center;">Perimeter: _____ yd</p>	<p>② Length = $5\frac{1}{12}$ ft Width = $4\frac{11}{12}$ ft</p> <p style="text-align: center;">Perimeter: _____ ft</p>
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For each rectangle, find the unknown side measure.

<p>③ Perimeter: $\frac{74}{100}$ kilometer Length = $\frac{25}{100}$ km Width = _____ km</p>	<p>④ Perimeter: 10 inches Length = $4\frac{3}{8}$ in. Width = _____ in.</p>
<p>⑤ Perimeter: $12\frac{8}{10}$ centimeters Length = $4\frac{1}{10}$ cm Width = _____ cm</p>	<p>Try This</p> <p>⑥ Perimeter: $16\frac{1}{2}$ ft Length = _____ ft Width = $3\frac{1}{2}$ ft</p>

Practice

⑦ $2 * \frac{2}{3} =$ _____

⑧ $5 * \frac{3}{4} =$ _____

⑨ $9 * \frac{4}{5} =$ _____

⑩ $8 * \frac{6}{12} =$ _____

Decimal Number Stories

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Solve each number story. Write your answer as a decimal.

Show how you found your answer.



- ① An Olympic men's shot put weighs 7.26 kilograms. An Olympic women's shot put weighs 4 kilograms. How much more does the men's shot put weigh than the women's shot put?

_____ kilograms

- ② The recipe for homemade glue calls for 0.5 liter of skim milk, 0.09 liter of vinegar, and 0.06 liter of water. When you combine the ingredients, how much liquid will you have?

_____ liter

- ③ Ben cut a piece of string 11.4 cm long. Then he cut 3.6 cm off of it. How long is the string now?

_____ cm

Try This

- ④ What is the answer to Problem 3 in milliliters? _____ milliliters

Practice

⑤ $3,579 * 4 =$ _____

⑥ $2,904 * 6 =$ _____

⑦ $36 * 56 =$ _____

⑧ $47 * 72 =$ _____

Area and Perimeter



Solve the problems below.

- ① The Murphy family bought two rectangular dog beds for their pets. Fluffy's bed was 3 feet by $1\frac{9}{12}$ feet. Pete's bed was 4 feet by $2\frac{4}{12}$ feet.

a. How much more area does Pete's bed have than Fluffy's?

Answer: _____ square feet

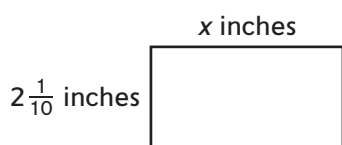
b. What is the perimeter of Pete's bed? Answer: _____ feet

- ② The Cho family bought two rectangular cat beds for their cats. George's bed is 2 feet by $1\frac{2}{12}$ feet. Sammie's bed is 2 feet by $1\frac{7}{12}$ feet.

a. What is the total area of these two beds? Answer: _____ square feet

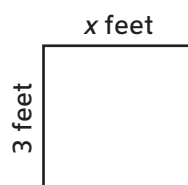
b. What is the perimeter of George's bed? Answer: _____ feet

- ③ Perimeter: $12\frac{2}{10}$ inches



Area: _____ square inches

- ④ Area: $9\frac{3}{8}$ square feet



Width: _____ feet

Practice

⑤ $\frac{5}{6} - \frac{1}{6} =$ _____

⑥ $\frac{8}{8} - \frac{3}{8} =$ _____

⑦ $\frac{9}{10} - \frac{5}{10} =$ _____

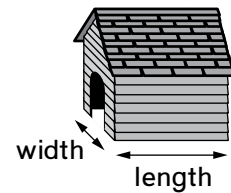
⑧ $\frac{11}{12} - \frac{5}{12} =$ _____

Using Doghouse Dimensions



Dan and Diane's Doghouse Dynasty builds doghouses to order. They can change the length and width for doghouses, but they always build them to have the same height. Solve the number stories about doghouses built to certain widths and lengths based on the information given in the table. Use drawings or equations to show how you solved each problem.

Custom Doghouse Dimensions		
Size	Length (in feet)	Width (in feet)
Extra small	$3\frac{1}{4}$	$1\frac{1}{3}$
Small	$3\frac{1}{2}$	$1\frac{1}{2}$
Medium	4	$1\frac{3}{4}$
Large	$4\frac{1}{4}$	$1\frac{5}{6}$
Extra large	$4\frac{5}{6}$	2



- Mrs. Swift ordered 3 medium-size doghouses. What will their combined width be?
_____ feet
- Kisa's Kennel has a space that is 18 feet wide in which they want to place doghouses side by side. If they order 5 small and 4 medium doghouses, will they all fit in the space? _____

Practice

③ $2 * \frac{3}{6} =$ _____

④ $5 * \frac{7}{10} =$ _____

⑤ $9 * \frac{6}{100} =$ _____

⑥ $7 * \frac{8}{12} =$ _____

Liquid Measurement and Fractions



Complete the “What’s My Rule?” tables and state the rules.

① Rule: _____

in (gallons)	out (pints)
2	16
$3\frac{1}{2}$	
	48
$7\frac{1}{4}$	
	80

② Rule: _____

in (quarts)	out (cups)
3	12
$4\frac{1}{2}$	
	32
$9\frac{3}{4}$	
$12\frac{1}{4}$	

Use this recipe for a Creamsicle Smoothie to solve the problems below.

$\frac{3}{4}$ cup orange juice 4 fluid ounces cold water 1 cup vanilla ice cream

Combine all ingredients.

③ a. Will this recipe fit in a glass that holds 24 fluid ounces? _____

Explain your thinking. _____

b. About how many more cup(s) of smoothie could fit in the glass? _____ cup(s)

c. Frank wants to triple the recipe. How much of each ingredient will he need?

_____ orange juice

_____ cold water

_____ vanilla ice cream

d. After tripling the recipe, how much smoothie will Frank have? _____ fluid ounces

Practice

④ $3,560 \div 3 \rightarrow$ _____

⑤ $9,295 \div 5 \rightarrow$ _____

⑥ $7 \overline{)8,210}$

⑦ $9 \overline{)4,671}$

Planning a Cookout

The Whispering Lakes Neighborhood Association is having a hamburger cookout. Each family can choose whether to order the hamburgers or bring their own. Use the information in the table to solve the number stories. Use drawings, tables, or equations to show what you did.

Size of Hamburger	Weight of One Hamburger Patty (lb)
Small	$\frac{1}{8}$
Medium	$\frac{1}{4}$
Large	$\frac{1}{2}$
Jumbo	$\frac{3}{4}$
King of the Burgers	$1\frac{1}{2}$



- ① a. What is the combined weight of 1 of each size hamburger?
- _____ pounds
- b. How many ounces is that?
- _____ ounces
- c. Mrs. Ward found 80-ounce packages of hamburger on sale. If she needs to make 2 of each size hamburger, how many packages of meat will she need to buy?
- _____ packages
- ② The Finch family ordered 2 small hamburgers, 1 medium hamburger, and 1 jumbo hamburger. How many pounds of hamburger meat does the neighborhood association need to buy for this family?
- _____ pounds

Practice

- ③ $5,107 * 3 =$ _____
- ④ $4,794 * 6 =$ _____
- ⑤ $74 * 29 =$ _____
- ⑥ $93 * 48 =$ _____

Number-Tile Computations

Cut out the 0–9 number tiles at the bottom of the page. Use them to help you solve the problems. Each of the 20 tiles can only be used once.



- ① Use odd-numbered tiles 1, 3, 5, 7, and 9 to make the largest sum.

$$\begin{array}{r} \square \square \square \\ + \quad \square \square \\ \hline \end{array}$$

- ② Use even-numbered tiles 0, 2, 4, 6, and 8 to make the smallest difference.

$$\begin{array}{r} \square \square \square \\ - \quad \square \square \\ \hline \end{array}$$

- ③ Use number tiles 0, 4, 6, and 8 to make the largest product.

$$\begin{array}{r} \square \square \\ * \square \square \\ \hline \end{array}$$

- ④ Use number tiles 1, 2, 5, and 7 to make the smallest whole-number quotient. The answer may have a remainder.

$$\square \square \square \div \square \rightarrow \underline{\hspace{2cm}}$$

- ⑤ Answer the following questions using only the unused tiles and any operation. Write number sentences to show your work.

a. What is the largest answer you can find? _____

$$\square \square \square = \square$$

b. What is the smallest answer you can find? _____

$$\square \square \square = \square$$

Practice

⑥ $4\frac{3}{5} + 3\frac{4}{5} = \underline{\hspace{2cm}}$

⑦ $1\frac{5}{8} + 3\frac{5}{8} = \underline{\hspace{2cm}}$

⑧ $2\frac{9}{12} + 4\frac{5}{12} = \underline{\hspace{2cm}}$

⑨ $5\frac{89}{100} + 5\frac{92}{100} = \underline{\hspace{2cm}}$

0	1	2	3	4	5	6	7	8	9
0	1	2	3	4	5	6	7	8	9



Many Names for Numbers

Write five names in each box below. Use as many different kinds of numbers (such as whole numbers, fractions, decimals) and different operations (+, −, *, ÷) as you can.

SRB

33

①

9,990

②

32.68

Make up your own name-collection boxes.

③

④

Practice

⑤ $5\frac{1}{4} - 1\frac{3}{4} =$ _____

⑥ $4\frac{3}{10} - 2\frac{7}{10} =$ _____

⑦ $6\frac{7}{12} - 3\frac{11}{12} =$ _____

⑧ $8\frac{1}{6} - 4\frac{5}{6} =$ _____

Congratulations!

By completing *Fourth Grade Everyday Mathematics*, your child has accomplished a great deal. Thank you for all of your support this year.

This Family Letter is a resource to use throughout your child's vacation. It includes an extended list of "Do-Anytime Activities," directions for games that can be played at home, a list of mathematics-related books to check out over vacation, and a sneak preview of what your child will be learning in *Fifth Grade Everyday Mathematics*. Enjoy your vacation!

Do-Anytime Activities

Mathematics means more to everyone when it is rooted in real-life situations. To help your child review many of the concepts he or she has learned in fourth grade, we suggest the following activities for you to do together over the break. These activities will not only help to prevent your child from forgetting content, but they will also help prepare him or her for *Fifth Grade Everyday Mathematics*.

1. Practice multiplication and division facts to maintain fluency.
2. Convert measurements in real-world contexts. For example, at the grocery store ask, "How many quarts are in this gallon of milk?"
3. Have your child practice multidigit multiplication and division using the algorithms with which he or she is most comfortable.
4. Look at advertisements and compare sale prices to original prices. Use a calculator to find unit prices to determine possible savings.

Building Skills through Games

The following section lists rules for games that can be played at home. You will need a deck of number cards, which can be made from index cards or by modifying a regular deck of cards as follows:

A regular deck of playing cards includes 54 cards (52 regular cards plus 2 jokers).

Use a permanent marker to write on the cards or a ballpoint pen to write on pieces of white adhesive labels to mark some of the cards:

- Mark each of the four aces with the number "1."
- Mark each of the four queens with the number "0."
- Mark each of the four jacks and the four kings with one of the numbers from 11–18.
- Mark the two jokers with the numbers 19 and 20.

Name That Number

Materials 1 set of cards. See above for directions to make this set.

Players 2 or 3

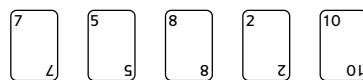
Object of the Game To collect the most cards

Directions

1. Shuffle the cards and deal five cards to each player. Place the remaining cards number-side down. Turn over the top card and place it beside the deck. This is the **target number** for the round.
2. Players try to match the target number by adding, subtracting, multiplying, or dividing the numbers on as many of their cards as possible. A card may be used only once.
3. Players write their solutions on a sheet of paper or a slate. When players have written their best solutions, they:
 - Set aside the cards they used to name the target number.
 - Replace used cards by drawing new cards from the top of the deck.
 - Put the old target number on the bottom of the deck.
 - Turn over a new target number and play another hand.
4. Play continues until there are not enough cards left to replace all of the players' cards. The player who sets aside more cards wins the game.

Example: Target number: 16

A player's cards:



Some possible solutions:

$$10 + 8 - 2 = 16 \text{ (three cards used)}$$

$$7 * 2 + 10 - 8 = 16 \text{ (four cards used)}$$

$$8 / 2 + 10 + 7 - 5 = 16 \text{ (all five cards used)}$$

The player sets aside the cards used to make a solution and draws the same number of cards from the top of the deck.

Top-It Games

Materials Number cards 1–9 (4 of each) as described above
1 calculator (optional)

Players 2 to 4

Skills Addition, Subtraction, and Multiplication

Object of the Game To collect the most cards

Addition Top-It**Directions**

1. Shuffle the cards and place them number-side down on the table.
2. Each player takes eight cards, forms two 4-digit numbers, and finds the sum. Players should carefully consider how they form their numbers, because different arrangements lead to different sums. For example, $7,431 + 5,269$ has a greater sum than $1,347 + 2,695$. The player with the largest sum takes all the cards. In case of a tie, each player turns over eight more cards and calls out the sum. The player with the largest sum takes all the cards from both rounds.
3. Check answers, using a calculator if necessary.
4. The game ends when there are not enough cards left for each player to have another turn.
5. The player with the most cards wins.

Subtraction Top-It**Directions**

1. Shuffle the cards and place the deck number-side down on the table.
2. Each player takes eight cards, forms two 4-digit numbers, and finds the difference. Players should carefully consider how they form their numbers, because different arrangements lead to greater differences. For example, $7,431 - 5,269$ has a smaller difference than $7,431 - 2,695$. The player with the largest difference takes all the cards. In case of a tie, each player turns over eight more cards and calls out the difference. The player with the largest difference takes all the cards from both rounds.
3. Check answers, using a calculator if necessary.
4. The game ends when there are not enough cards left for each player to have another turn.
5. The player with the most cards wins.

Multiplication Top-It**Directions**

1. Shuffle the cards and place them number-side down on the table.
2. Each player turns over four cards, forms two 2-digit numbers, and finds the product. Players should carefully consider how they form their numbers, because different arrangements lead to different products. For example, $74 * 52$ has a greater product than $47 * 25$. The player with the largest product takes all the cards. In case of a tie, each player turns over four more cards and calls out the product. The player with the largest product takes all the cards from both rounds.
3. Check answers, using a calculator if necessary.
4. The game ends when there are not enough cards left for each player to have another turn.
5. The player with the most cards wins.

Vacation Reading with a Mathematical Twist

Books can contribute to students' learning by representing mathematics in a combination of real-world and imaginary contexts. The titles listed below were recommended by teachers who use *Everyday Mathematics* in their classrooms. They are organized by mathematical topic. Visit your local library and check out these and other mathematics-related books with your child.

Operations and Algebraic Thinking

A Remainder of One by Elinor J. Pinczes
17 Kings and 42 Elephants by Margaret Mahy
Anno's Magic Seeds by Mitsumasa Anno
Pattern by Henry Pluckrose
The Grapes of Math by Greg Tang

Numeration and Operations in Base-Ten

If the World Were a Village by David J. Smith
The Doorbell Rang by Pat Hutchins
The Man Who Counted: A Collection of Mathematical Adventures by Malba Tahan
The Grizzly Gazette by Stuart J. Murphy

Numeration and Operations: Fractions

Fraction Fun by David A. Adler
Working with Fractions by David Adler
Full House by Dayle Ann Dodds
Funny & Fabulous Fraction Stories by Dan Greenberg
Civil War Recipes: Adding and Subtracting Simple Fractions by Lynn George

Music Math: Exploring Different Interpretations of Fractions by Kathleen Collins
My Half Day by Doris Fisher and Dani Sneed
The Wishing Club by Donna Jo Napoli

Measurement and Data

How Tall, How Short, How Faraway by David A. Adler
Is a Blue Whale the Biggest Thing There Is? by Robert E. Wells
Math Curse by Jon Scieszka and Lane Smith
Counting on Frank by Rod Clement
Spaghetti and Meatballs for All! by Marilyn Burns

Geometry

The Greedy Triangle by Marilyn Burns
Grandfather Tang's Story by Ann Tompert
Sweet Clara and the Freedom Quilt by Deborah Hopkinson
Whale of a Tale by Barbara Pearl
Zachary Zormer, Shape Transformer by Joanne Reisberg

Looking Ahead: *Fifth Grade Everyday Mathematics*

Next year, your child will . . .

- Continue to explore and practice whole-number operations, including the use of exponents, and work with larger numbers.
- Expand skills with decimals and fractions, including using all four operations.
- Investigate methods for solving problems using mathematics in everyday situations.
 - o Graph points on coordinate planes to solve real-world mathematical problems
 - o Work with number lines, times, dates, and rates
 - o Collect, organize, describe, and interpret numerical data
- Analyze patterns and relationships.
- Further explore the properties, relationships, and measurement of 2-dimensional objects and begin to work with 3-dimensional objects.
- Understand the concepts of volume.

Again, thank you for all of your support this year. Have fun increasing your own understanding of mathematics while continuing your child's mathematical learning!