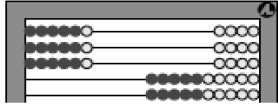


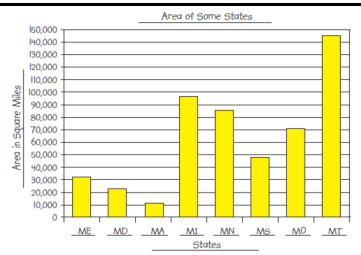
Most recent update: May 16, 2024




# RightStart™ Mathematics

## Corrections and Updates for Grade 3 Lessons and Worksheets, second edition

LESSON/WORKSHEET	CHANGE DATE	CORRECTION OR UPDATE
Lesson 8	09/24/2020	The answer to the In conclusion question should say [when the number being subtracted is <b>greater</b> than the top number], not less than.
Lesson 11	05/12/2016	The second graphic on the first has an incorrect graphic. correct graphic. <div style="text-align: right;">  <p>6 by 3 array.</p> </div>
Lesson 15	11/03/2015	On the second page, under Patterns in Multiples, first paragraph, answer should say [Each multiple is <b>10</b> more than the one above it.]
Lesson 30	11/03/2015	Answers for Worksheet 16: Using evens and odds, what kinds of numbers do you need to get an odd difference? even – odd, odd – even
Lesson 32	11/18/2016	In the conclusion, $1 \times 1 = 2$ should be $1 \times 1 = 1$ .
Lesson 33	10/14/2021	The instructions for the Ring around the Factor game on the second page have been updated. See attached <b>pdf</b> .
Lesson 37	11/03/2015	Questions 10-13: Delete the check numbers in the answers. Question 29: <b>54</b> should also be circled.
Lesson 39	12/12/2019	Answers show check numbers, that is numbers in parentheses after numbers of the equation, (7). This is not taught for another 14 lessons.
Lesson 40	06/25/2023	In the answers for Worksheets 25 on the second page, the last figure in the first column, $4 \times 4 = 1 + 5 \times 3$ is missing a white weight on the right 5-peg.
Lesson 42	12/27/2017	In the warm-up, the line of 8s should read: 8 16 24 <b>32</b> 40 <b>48</b> <b>56</b> 64 72 80 Also, the top of the second page has been changed to read as follows: <b>Ask: What does the M+ key do? [adds to memory] What do you think the M- key does? [subtracts from memory]</b> Change the problem to: $6 \times 9 - 5 \times 8 = [14]$ and ask: How can you do it now? [Use the M- key instead of the M+ key <b>to subtract the second expression.</b> ] Finally, the last equation on the worksheet is missing and should be <b><math>5 \times 20 + 2 \times 30 = 160</math></b> .

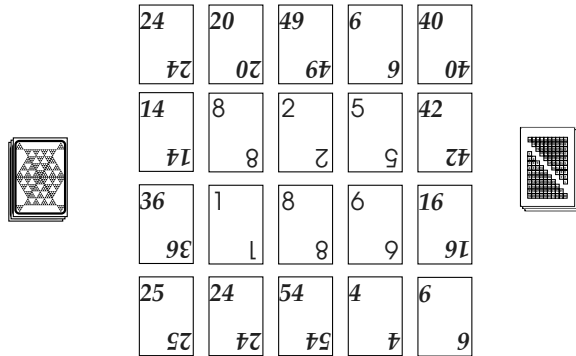
Lesson 45	12/16/2015	On the second page in the third set of graphics, the place value cards should show <b>6129</b> , not 6189, rounded to 6000.
Lesson 47	12/16/2015	An answer for the first worksheet, 31-A, is incorrect. 5737 rounded to the nearest 10 is <b>5740</b> , not 5840.
Lesson 49	12/16/2015	On the second page under the second graphic, the caption should read "Subtracting <b>700</b> ", not 777.
Lesson 51      Worksheet 35	05/30/2022	The second question should read "Make the largest and smallest numbers possible using the <b>8</b> place-value cards shown below, not "Make the largest and smallest numbers possible using the 9 place-value cards shown below." No change to the place-value cards shown.
Lesson 52	12/29/2023	Under Worksheet 36, the first equation should read $b = 35 \div 5$ , not $b = 35 \times 5$ .
Lesson 53	12/16/2015	On the second page, under Practice, the number 2588 shows a check number is [ <b>5</b> ], not [2].
Lesson 55	04/11/2016	Answers for Worksheet 39 missed that <b>18 is a multiple of 2</b> . That cell should be checked with a "y".
Lesson 59	01/04/2021	On the second page under Building Difference game, the first example should be <b><math>90 - 78 = 12</math></b> , not $89 - 28 = 61$ .
Lesson 60      Worksheet 43	04/16/2018	The worksheet has been reformatted to create more space for the calculations. See <a href="#">pdf</a> .
Lesson 62	12/29/2020	The example under the Worksheet 45 heading is using the <b>associative</b> property, not the distributive property. The example below it, under the Multiplying $50 \times 4$ heading, uses the associative property.
Lesson 69	04/11/2016	On the second page, under Can You Find Fraction game, the list of fraction pieces to pick up has a duplicate 2 thirds listed. Eliminate the second 2 thirds.
Lesson 73	03/02/2023	Under the Minutes in an Hour heading, the second sentence should read "Move the <b>minute</b> hand halfway around and ask....," rather than "Move the hour hand halfway around and ask...."
Lesson 74	05/30/2022	On the first page, under Review part of a dollar, the second paragraph has changed to: Tell the child to lay out the <b>six</b> coins of different sizes. <b>Find the light gold coin worth one dollar, or 100¢. Explain that they are not used very often.</b> It then continues on to address the half-dollar as written.
Lesson 77	04/11/2016	On the assessment, problem #11 says "Multiply $6209 \times 8$ ." Answer should be <b>49,672</b> with a check number of <b>(1)</b> . $\begin{array}{r} 6209 \text{ (8)} \\ \times 8 \text{ (8)} \\ \hline 72 \\ 1600 \\ \hline 48000 \\ 49,672 \text{ (1)} \end{array}$
Lesson 77	05/18/2017	On the assessment, numbers 54 to 57 should have answers of <b>80, 800, 8,000, and 80,000</b> , not 8, 80, 800, and 8,000.
Lesson 79	05/12/2016	Answers to questions 54 to 57 should be <b>50, 500, 5,000, and 50,000</b> , not 5, 50, 500, and 5,000.

Lesson 81		04/11/2016	The warm up has the check number of 9 as (9). It should be <b>(0)</b> .																														
Lesson 88		12/29/2023	<p>The answers for Worksheet 68-A, putting the fractions in order, was missing the third fraction. Here are the correct answers.</p> <div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>Put these fractions in order from least to greatest.</p> <table style="border-collapse: collapse; text-align: center;"> <tr> <td><math>\frac{1}{2}</math></td> <td><math>\frac{1}{3}</math></td> <td><math>\frac{1}{4}</math></td> <td><math>\frac{1}{4}</math></td> <td><math>\frac{1}{3}</math></td> <td><math>\frac{1}{2}</math></td> </tr> <tr> <td><math>\frac{1}{3}</math></td> <td><math>1\frac{1}{3}</math></td> <td><math>\frac{3}{8}</math></td> <td><math>\frac{1}{3}</math></td> <td><math>\frac{3}{3}</math></td> <td><math>1\frac{1}{3}</math></td> </tr> <tr> <td><math>\frac{1}{2}</math></td> <td><math>\frac{5}{8}</math></td> <td><math>\frac{1}{4}</math></td> <td><math>\frac{1}{4}</math></td> <td><math>\frac{1}{2}</math></td> <td><math>\frac{5}{8}</math></td> </tr> <tr> <td><math>\frac{3}{4}</math></td> <td><math>\frac{3}{4}</math></td> <td><math>\frac{3}{8}</math></td> <td><math>\frac{3}{8}</math></td> <td><math>\frac{3}{4}</math></td> <td><math>\frac{3}{4}</math></td> </tr> <tr> <td><math>\frac{4}{1}</math></td> <td><math>\frac{1}{1}</math></td> <td><math>\frac{5}{1}</math></td> <td><math>\frac{1}{1}</math></td> <td><math>\frac{1}{1}</math></td> <td><math>\frac{5}{1}</math></td> </tr> </table> </div> </div>	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{3}$	$\frac{1}{2}$	$\frac{1}{3}$	$1\frac{1}{3}$	$\frac{3}{8}$	$\frac{1}{3}$	$\frac{3}{3}$	$1\frac{1}{3}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{4}{1}$	$\frac{1}{1}$	$\frac{5}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	$\frac{5}{1}$
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Lesson 89		12/27/2017	<p>Answer for Worksheet 69, #3 should read: 3. Name the months with four syllables. <b>January and February</b></p> <p>In conclusion final answer should be [September, April, June, and <b>November</b>]</p>																														
Lesson 90		11/07/2020	In the second paragraph on the second page, the number of days between Memorial Day and Labor Day is <b>97</b> or <b>104</b> days, not 98 or 105 days.																														
Lesson 90		11/28/2023	On the first page, in the third paragraph under Calendar for a year, the answer to the second question about any months starting on the same day should be: leap years: January, <b>April</b> , & July, not January & July.																														
Lesson 95		04/11/2016	<p>The bar graph solutions for Worksheet 75 are slightly off. See attached <b>PDF</b>.</p> 																														
Lesson 95		11/07/2020	The additional game to play is the <b>Rows and Columns</b> game, not Constructing a Bar Graph.																														
Lesson 98	Worksheet 78	01/01/2022	In the second row, the second clock, the hour hand is changed slightly to reflect 9:52 clearer. See <b>PDF</b> .																														
Lesson 99		04/11/2016	In the Problem 1 section, below the story problem, should read: Adding the times, 5, 10, and <b>15</b> minutes gives 30 minutes. So she needs to start at 4:00.																														
Lesson 102		12/12/2019	The additional game to play, Multiples Solitaire, is game <b>P19</b> , not C23.																														
Lesson 103		12/12/2019	The additional game to play, Multiples Solitaire, is game <b>P19</b> , not C23.																														
Lesson 101	Worksheet 81	04/11/2016	Question #5 should read, "Seven thousand <b>three hundred</b> twenty-nine square miles is water, how much is land?" See attached <b>PDF</b> .																														
Lesson 107	Worksheet 87	11/18/2016	The bottom label for the graphs should read <b>Length of a Side in Centimeters</b> , not Number of Sides. See attached <b>PDF</b> .																														
Lesson 111 in 3rd Grade manual only		05/16/2024	The images of the math balance on both pages is incorrect. See the attached <b>PDF</b> for the corrected pages.																														
Lesson 112 in 3rd Grade manual only		05/16/2024	The images of the math balance on the second page is incorrect. See the attached <b>PDF</b> for the corrected pages.																														
Lesson 115		05/12/2016	The perimeter for Triangle G is $4\frac{1}{2} + 4\frac{1}{2} + 3\frac{8}{10} = 12\frac{8}{10}$ .																														

Lesson 116	03/09/2020	A paragraph was added on the second page, right above the Worksheet 95 heading: <b>Tell the child that a triangle with an obtuse angle is an obtuse triangle. A triangle with a right angle is a right triangle. A triangle with all acute angles is an acute triangle.</b>
Lesson 124	11/07/2020	Three graphics on the second page had very light shading and have been replaced. <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>Make <math>\frac{5}{12}</math> of the circle one color and <math>\frac{1}{4}</math> another color. What fraction of the circle is not colored? <math>\frac{1}{4}</math></p> </div> <div style="text-align: center;">  <p>Triangles often overlooked.</p> </div> <div style="text-align: center;">  <p>Rhombus often overlooked.</p> </div> </div>
Lesson 125	04/11/2016	Third figure on the worksheet, second question reads "The small square is what fraction of the medium square? [ <b>1/2</b> ]".
Lesson 133	05/12/2016	Problem #11 says "Find 6049 – 5195." Answer should be 854 with a check number of (8). <div style="float: right; text-align: right;"> <math display="block">\begin{array}{r} 6049 \text{ (1)} \\ - 5195 \text{ (2)} \\ \hline 854 \text{ (8)} \end{array}</math> </div>
Lesson 133    Worksheet 110	12/27/2017	Worksheet question #22-45, last row, third problem has been changed from $36 \div 6$ (which is a repeat) to <b><math>36 \div 9</math></b> . Answer is <b>4</b> .
Lesson 139	03/21/2022	Answer for question #93 regarding the difference between the population of BC and AB should be <b>800,000</b> , not 700,000.

## ACTIVITIES FOR TEACHING:

**Ring around the Factors activity.** Have the children do the Ring around the Factors activity. In the center, place six basic number cards face up, in two rows of three each. Around these cards, place 14 multiplication cards, also face up. Place the stocks nearby. See the figure below.



The first player checks the inside cards for pairs with a product that equals an outside card. The player removes the corresponding cards and stacks them on three piles face up. More than one group may be collected during a turn. In the figure above, the player can collect three facts:  $6 \times 1 = 6$ ,  $8 \times 5 = 40$ , and  $2 \times 8 = 16$ . The player then places a centimeter cube in the matching cell of the short multiplication table on the worksheet. See the left figure below.

1										
2	4									
3	6	9								
4	8	12	16							
5	10	15	20	25						
	12	18	24	30	36					
7	14	21	28	35	42	49				
8		24	32		48	56	64			
9	18	27	36	45	54	63	72	81		
10	20	30	40	50	60	70	80	90	100	

**This table has many of the cells filled in.**

1										
2	4									
		6								
4				16						
		12		24		36				
7	14		28	35		49				
		16		32						
										81
		20				60			90	100

For the next turn, fill in the missing cards from the respective card stocks. Play continues as the players work together to fill in as many of the cells on the short multiplication table as possible.

If a player is unable to play, she loses her turn. The next player may replace either two basic number cards or up to three multiplication cards. He then takes his turn. Play continues until the basic number card stock is exhausted.

**In conclusion.** Ask: Do you prefer the short multiplication table or the whole multiplication table?

## EXPLANATIONS:

This activity is similar to Ring around the Products game, found in *Math Card Games* book, P32.

Rather than using centimeter cubes, the cell may be colored in.

Once the children are comfortable with this format of the activity and wants to increase the pace or complexity of the activity, use nine basic numbers in the center, three rows of three cards, with 16 multiplication cards around the center.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Warm-Up**

Solve these equations.

$___ \div 7 = 7$

$24 \div ___ = 4$

$42 \div 6 = ___$

$8 \times ___ = 32$

$50 \div 5 = ___$

$7 \times ___ = 35$

$(9 \times ___) + (9 \times 3) = 36$

Subtract the same number 10 times. Use check numbers to check your work.

$3790 \quad (1)$

$\underline{- 379} \quad (1)$

 $( )$ 

$\underline{- 379} \quad (1)$

 $( )$ 

$\underline{- 379} \quad (1)$

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$\underline{- 379} \quad (1)$

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$\underline{- 379} \quad (1)$

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$\underline{- 379} \quad (1)$

 $( )$ 

$5620 \quad (4)$

$\underline{- 562} \quad (4)$

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$\underline{- 562} \quad ( )$

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$4580 \quad (8)$

$\underline{- 458} \quad (8)$

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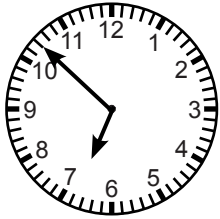
$\underline{- 458} \quad ( )$

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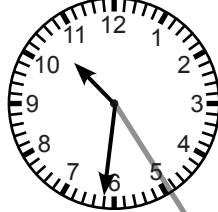
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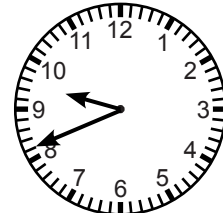
Start at the arrow. Read the instructions below the clock and draw a line from that clock to the next clock. Continue connecting the clocks. Some clocks are extras.



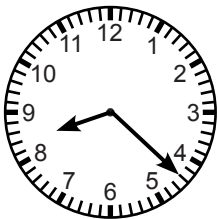
Find 1 hr 39 min later.



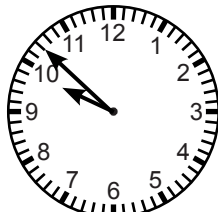
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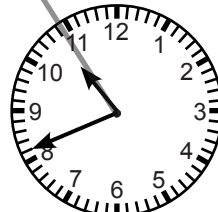
Find 1 hr 30 min later.



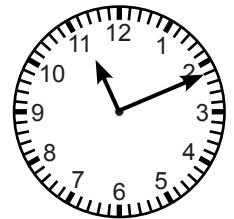
Find  $1\frac{1}{2}$  hr later.



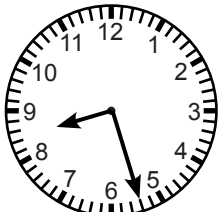
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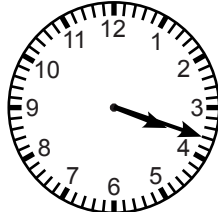
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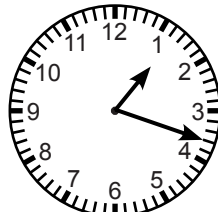
Find 1 hr later.



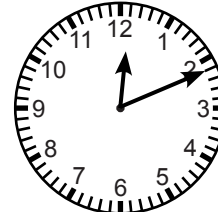
Find 5 min earlier.



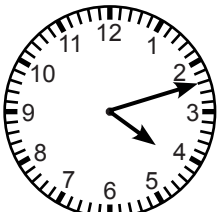
Find 2 hr earlier.



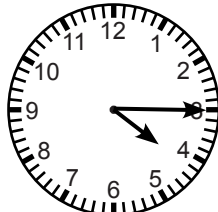
Find 1 hr 7 min earlier.



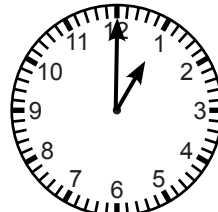
Find 19 min later.



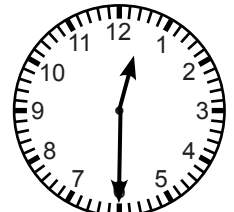
Find 4 hr 15 min later.



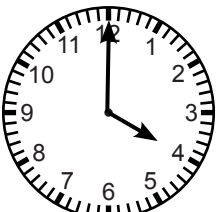
Find 3 min earlier.



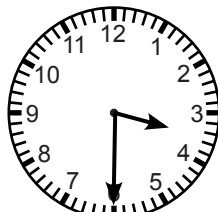
Find  $2\frac{1}{2}$  hr later.



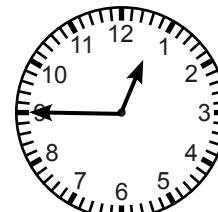
Find half hour later.



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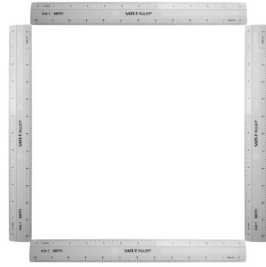
Find 3 quarters hr later.



Find quarter hr later.

**ACTIVITIES FOR TEACHING:**

**EXPLANATIONS:**

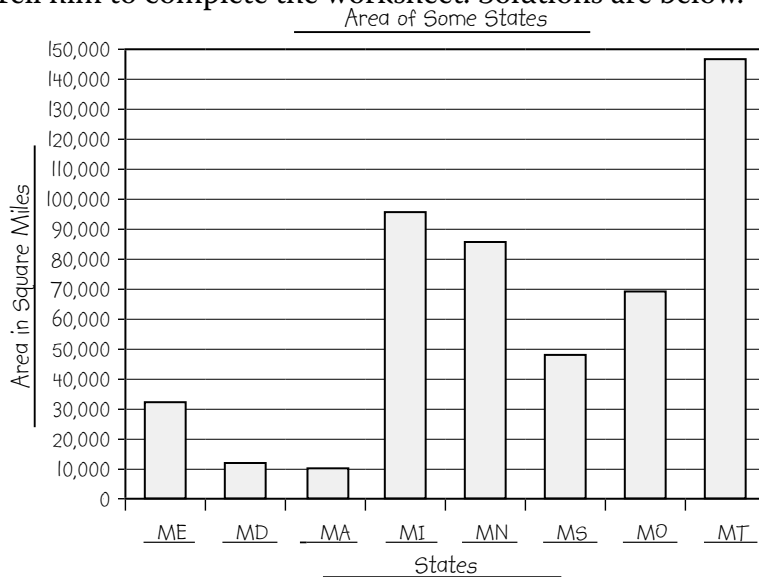


Tell them to make a square meter with the meter sticks. Ask: Would a square meter be large enough to measure the area of a state? [no]

**Square miles.** Tell them that in the United States, we usually measure these areas in square miles. Help them relate the length of a mile with a familiar distance. Ask: Can you imagine how large a square mile is? [a square whose sides are a mile long]

**Worksheet 75.** Tell the children the worksheet has a table giving the areas of eight states. They are to make a bar graph to show these areas. Discuss the categories, scales, and titles.

Tell him to complete the worksheet. Solutions are below.



For students familiar with acres, tell them that 640 acres fit in a square mile.

Worksheet 74 will be needed for reference.

Titles and scales may vary.

1. Which state has the largest area? **Montana** Does it have the largest population? **no**
2. Which state is 3 times larger than Massachusetts? **Maine**
3. Which state is about half the size of Michigan? **Mississippi**
4. The population graphs keep changing. Do the area graphs also change? **no**
5. Would Missouri and Mississippi fit in Montana at the same time? **yes**
6. How many of the smaller states could fit inside Montana at the same time? **4**

**In conclusion.** Ask: What is area? [amount of space a flat figure takes up] Would you measure how deep a small lake is in miles or square miles? [miles] Would you measure how large a small lake is in miles or square miles? [square miles]

If there is additional time following this lesson, play the Constructing a Bar Graph game, found in *Math Card Games* book, A53.



Name: \_\_\_\_\_

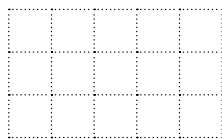
Date: \_\_\_\_\_

**Warm-Up**

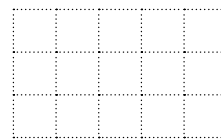
Multiply  $4792 \times 8$ .



Find  $4792 - 2974$ .



Find  $4792 + 2974$ .

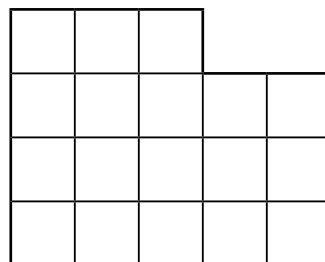


Read the information below and answer the questions.

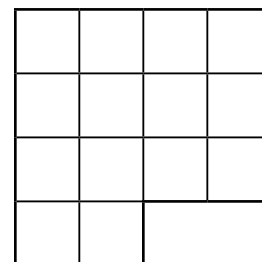
Minnesota is the twelfth largest state among the 50 states in the United States. The state is 408 miles long and 348 miles wide. It covers 86,943 square miles. Of this total, seven thousand three hundred twenty-nine square miles is covered by water. The highest point in Minnesota is Eagle Mountain at 2301 feet. The mountain is 15 miles from the shore of Lake Superior, which is the lowest point at 602 feet above sea level.

1. How many states are larger than Minnesota? \_\_\_\_\_
2. How many states are smaller than Minnesota? \_\_\_\_\_
3. Write the state's area in words. \_\_\_\_\_
4. Round the state's area to the nearest thousand. \_\_\_\_\_
5. Seven thousand three hundred twenty-nine square miles is water, how much is land? \_\_\_\_\_
6. How much longer is the state than it is wide? \_\_\_\_\_
7. What is the difference between the highest and lowest points? \_\_\_\_\_

Minnesota is divided into 87 counties; counties are divided into townships. Townships are square-shaped pieces of land with each side 6 miles long. The maps on the right show two counties in southern Minnesota and their townships.



**Cottonwood County**



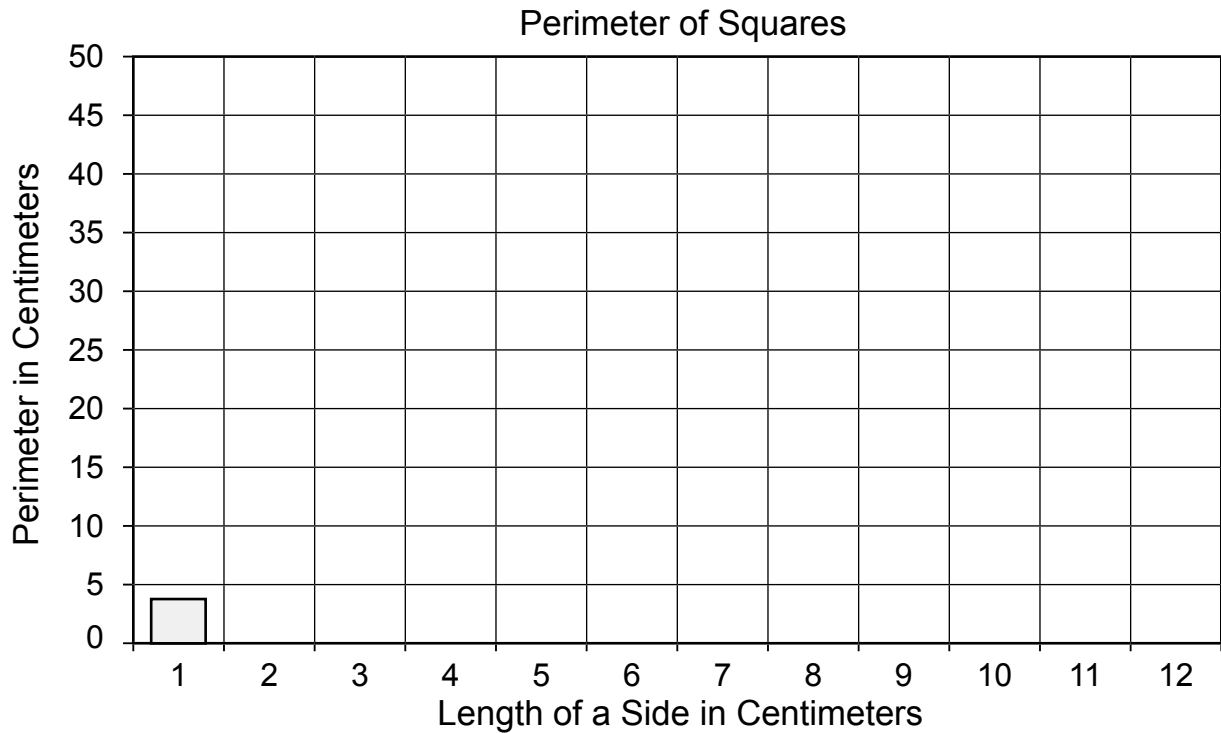
**McLeod County**

8. How many townships are in Cottonwood County? \_\_\_\_\_ in McLeod County? \_\_\_\_\_
9. Find the perimeter of each county. \_\_\_\_\_
10. Find the area of each county. \_\_\_\_\_

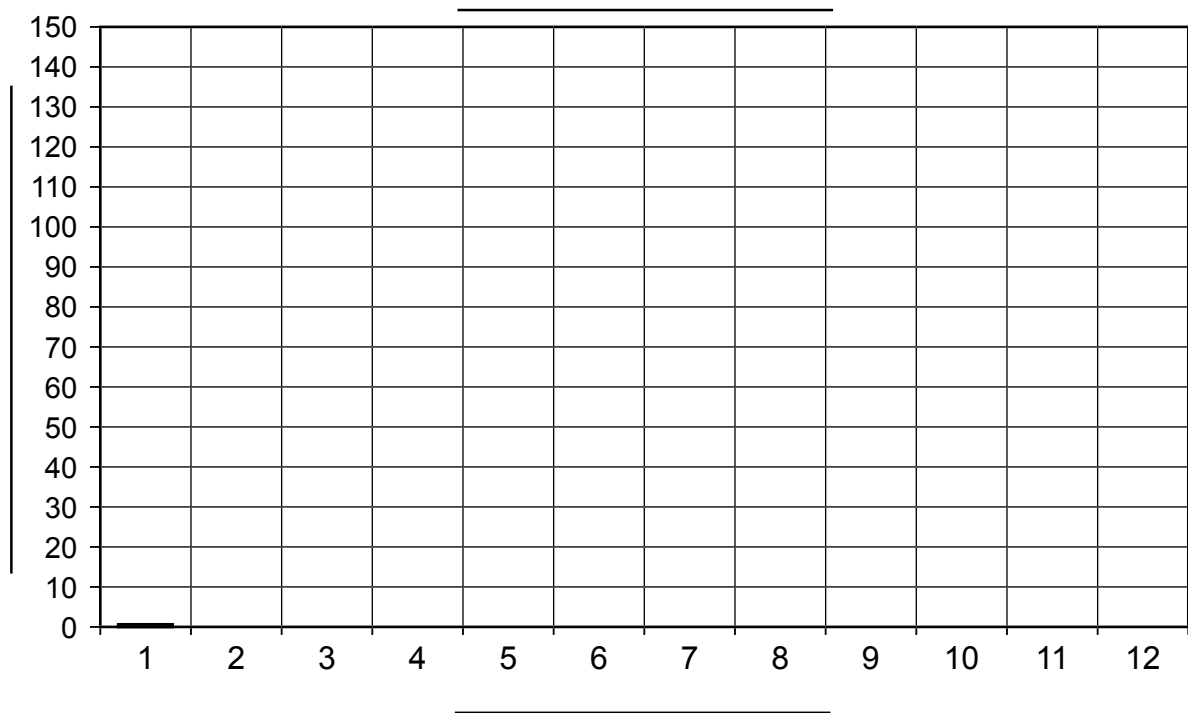
Name: \_\_\_\_\_

Date: \_\_\_\_\_

Make a bar graph showing perimeter of the squares from Worksheet 86.



Make a bar graph showing area of the squares from Worksheet 86.



# LESSON 111: MEASURING IN GRAMS

## OBJECTIVES:

1. To learn how much a *gram* is in weight
2. To weigh small objects

## MATERIALS:

1. Worksheet 91, Measuring in Grams
2. **Two 9-ounce clear plastic cups,\* and two pieces of string 8" (20 cm) long per balance**
3. Math balances, one for every 3 to 4 children
4. Centimeter cubes, tiles, geometric solids, tangrams, 3 multiplication cards
5. **Small objects to weigh \*\***

## ACTIVITIES FOR TEACHING:

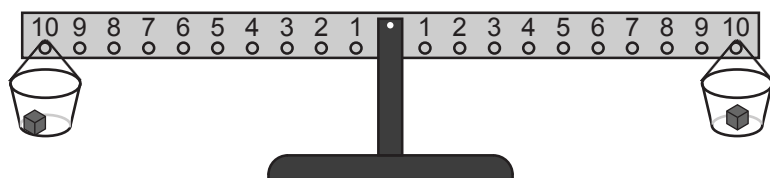
**Warm-up.** Distribute the worksheets to the children. Tell them to do just the warm-up section. Solutions are:

$$\begin{array}{r} 2448 \text{ (0)} \\ \times 7 \text{ (7)} \\ \hline 56 \\ 280 \\ 2800 \\ \hline 14000 \\ 17136 \text{ (0)} \end{array}$$

**Preparation.** To prepare the math balances to be used as a scale, punch two holes in the plastic cups near the top on opposite sides. See the figure below. Tie each end of the string at the holes as shown. On each math balance, place a cup on both 10-pegs. Be sure the balance is level.

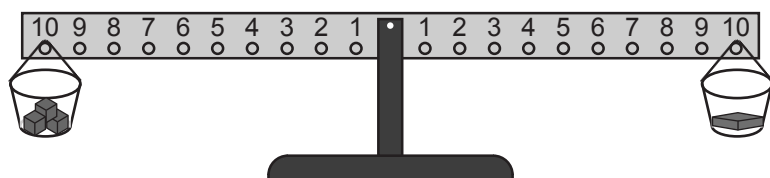
**Weighing with centimeter cubes.** Distribute the math balances with cups, centimeter cubes, tiles, geometric solids, tangrams, and cards to the children. Tell them we will now use the math balance as a scale and will not use the numbers.

Tell them to pick up one cube. Ask: Is it heavy? [no] What do you think will happen if you put a cube into each cup? Tell them to put a cube in each cup. [balances] See below.



The math balance used as a scale.

Tell them that each cube weighs *1 gram*. Explain that we can use the cubes to weigh other things. Tell to measure the weight of a tile. [3 g] See below.



One tile weighs 3 g.

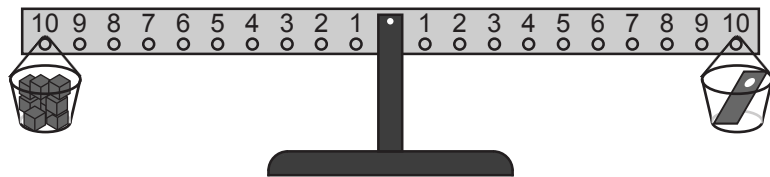
## EXPLANATIONS:

\* Paper cups would work, but clear plastic cups allow the children to see the contents of the cups more easily, but use only cups with plastic code 1. The code is found in the recycling triangle on the bottom. A cup with plastic code 6 is brittle and often breaks when making the hole, leaving sharp edges.

\*\* Some suggestions for objects for weighing include: coins, erasers, toys, teaspoon of sugar, piece of folded paper, and paper clips.

**ACTIVITIES FOR TEACHING:**

Next, tell them to weigh a math balance weight. [10 g]



**Verifying the 10-g weight weighs 10 g, the weight of 10 cubes.**

Ask: What is written on the weight? [10 g] Explain that the abbreviation for gram or grams is a lower case *g* without a period.

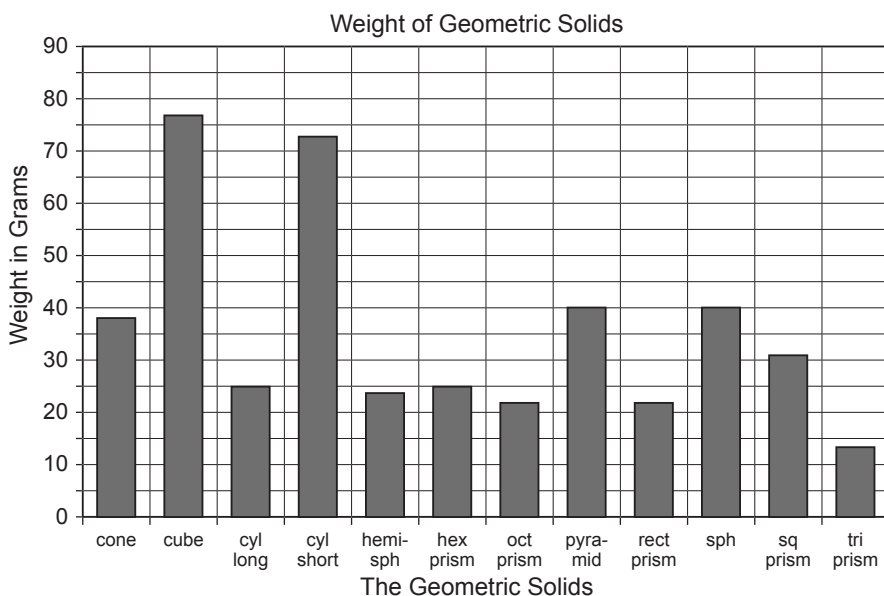
**Weighing the large tangram triangle.** Tell them to find the weight of the large tangram triangle. Ask: What happened? [Six was not enough, but 7 was too much.] Tell them: We can say the weight is *between* 6 and 7 grams. Now weigh two large triangles. [between 13 and 14 g]

**Weighing the cone.** Tell the children to find and weigh the cone, thinking about how they do it. Have them discuss it with their neighbor and then the class. A good way is to start with a 10-gram weight and add more 10-gram weights until it is too much. Then remove one 10-gram weight and add centimeter cubes the same way.

**Worksheet 91.** Tell them to complete the worksheet. The solutions are below.

1 centimeter cube	<b>1 g</b>
2 centimeter cubes	<b>2 g</b>
20 centimeter cubes	<b>20 g</b>
1 tile	<b>3 g</b>
math balance weight	<b>10 g</b>
3 tiles & 1 centimeter cube	<b>10 g</b>

3 multiplication cards	<b>4 g</b>
1 large tangram triangle	<b>between 6 and 7 g</b>



The recorded weights will vary.

**In conclusion.** Ask: Can you weigh a sphere? [yes]  
Can you weigh a circle? [no] Can you weigh a line? [no]

**EXPLANATIONS:**

Plastic cups will be used in the next lesson.

3.MD.A.2

If there is additional time following this lesson, play the Equal Quotients game, found in *Math Card Games* book, D6.

# LESSON 112: LITERS AND KILOGRAMS

## OBJECTIVES:

1. To learn how much a *liter* is
2. To weigh a liter of water
3. To learn that a liter of water weighs 1 kg
4. To compare objects weighing a kilogram

## MATERIALS:

1. Geometry panel squares
2. Centimeter cubes and rulers
3. **1-quart (4 cups or 1 liter) clear measuring cup**
4. **Water and empty container \***
5. A math balance & cups from the previous lesson

## ACTIVITIES FOR TEACHING:

**Warm-up.** Ask: What operation do you use to find the distance around something? [addition] What operation do you use to find the area of something? [multiplication] What operation do you use to find half of something? [division] What operation do you use to find the difference between two things? [subtraction]

**Building a cube.** Demonstrate how to make a cube with the geometry panels. Take two square panels and align two edges with the white sides together. Hold them together and ask a child to place a rubber band around the edges. Explain that the notches at the vertices keeps the rubber bands in place. Repeat for the remaining edges. See the figure below.

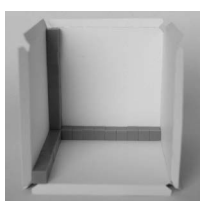
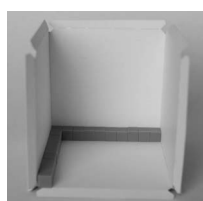
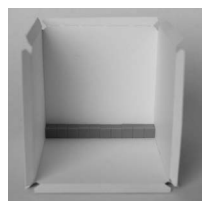


**Cube made with geometry panels.**

Tell the children that the amount of space inside the cube is called a *liter*. Write it so they can see how it is spelled.

**Liter problem.** Distribute the square geometry panels, centimeter cubes and rulers. Tell the children: Work with your neighbor to make a cube. Then find out how many cubic centimeters will fit in the cube. [1000] You might want to remove some rubber bands in order to see inside. Ask several groups to explain their work.

One way is to find out how many cubes will fit in a row [10] and how many rows will fit. [10] Then find out how many of these  $10 \times 10$  squares will fill up the cube. [10] The cube holds 1000 cubic centimeters.



## EXPLANATIONS:

\*An empty half-gallon (two liter) container from milk or juice is ideal.

Even though this activity seems to be similar to Lesson 50, that lesson was focused on quantity; whereas, this lesson focuses on volume, or capacity.

Having a child place the rubber band is modeling how two children can work together.

Outside the U.S., “liter” is usually spelled “litre.”

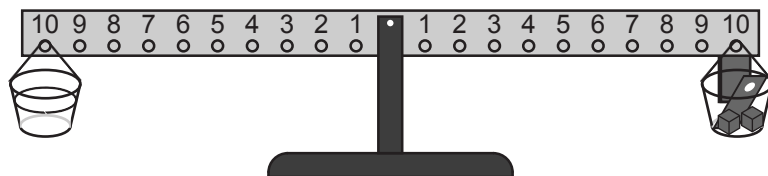
**ACTIVITIES FOR TEACHING:**

Another way is to use the rulers to measure how many centimeters will fit. [ $10 \times 10 \times 10 = 1000$ ] Ask: How many cubic centimeters fit in a liter? [1000]

**Weighing a liter of water.** Tell the children to gather in a circle. Bring the measuring cup, water, second container, centimeter cubes, and math balance with cups. You will also need something for the children to write on.

Point out the 1-liter mark on the measuring cup and fill it with water to that level. Explain that you want to weigh the liter of water. Ask: Will the whole liter of water fit into a math balance cup at one time? [no] What should we do? [weigh a bit at a time]

Remove one of the cups on the math balance and pour some of the water into it until it is about half full. Replace the cup on the scale and hold the beam of the scale while a child adds weights to make it balance. If all the 10 g weights do not fit into the cup, hang some on the 10-peg, either in front or back. See the figure below.



**Weighing a liter of water, a small amount at a time.**

Tell a child to record the weight. Pour this recorded water into the second container. Continue weighing the liter of water; pour more of the water into the cup on the scale. When all the water is weighed, tell the children to find the total weight by adding the recorded amounts. [1000 g]

Tell them: One thousand grams has a special name, a *kilogram*; the prefix “kilo” means “thousand.” Lift up the container that now has the 1 liter of water and ask: What does the water in this container weigh? [1 kg or 1000 g]

Pass it around so each child can feel the weight. Ask: Does the amount of water look like it would fill up the yellow cube you made earlier in the lesson? [yes]

Tell the children to find things in the room that weigh about one kilogram. It may be useful for them to hold out their arms like the math balance with the liter of water in one hand and an object in the other to compare the weights.

**In conclusion.** Ask: How many grams are in a kilogram? [1000] What does a liter of water weigh? [1 kg] Does a cup of water weigh more or less than a kilogram? [less]

**EXPLANATIONS:**

The total weight of the water will probably vary from the expected weight of 1000 g. You might ask the children why they think this happened. [spilled some water, didn't empty the cup completely, didn't weigh exactly]

A kilogram is equal to 2.2 pounds.

If there is additional time following this lesson, play the Find the Two Factors game, found in *Math Card Games* book, P29.

3.MD.A.2

## 2024

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28	29	30					26	27	28	29	30	31		23	24	25	26	27	28	29
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28	29	30	31				25	26	27	28	29	30	31	29	30					
October							November							December						
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## 2025

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27	28	29	30	31			24	25	26	27	28	29	30	28	29	30					
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## 2026

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25	26	27	28	29	30	31								29	30	31				
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			1	2	3	4						1	2		1	2	3	4	5	6
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# 2027

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25	26	27	28	29	30		23	24	25	26	27	28	29	27	28	29	30			
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2028

January							February							March							
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23	24	25	26	27	28	29	27	28	29					26	27	28	29	30	31		
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						1		1	2	3	4	5	6					1	2	3	
2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10	
9	10	11	12	13	14	15	14	15	16	17	18	19	20	11	12	13	14	15	16	17	
16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24	
23	24	25	26	27	28	29	28	29	30	31				25	26	27	28	29	30		
30																					
July							August							September							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
						1			1	2	3	4	5							1	2
2	3	4	5	6	7	8	6	7	8	9	10	11	12	3	4	5	6	7	8	9	
9	10	11	12	13	14	15	13	14	15	16	17	18	19	10	11	12	13	14	15	16	
16	17	18	19	20	21	22	20	21	22	23	24	25	26	17	18	19	20	21	22	23	
23	24	25	26	27	28	29	27	28	29	30	31			24	25	26	27	28	29	30	
30	31																				
October							November							December							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
1	2	3	4	5	6	7				1	2	3	4							1	2
8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9	
15	16	17	18	19	20	21	12	13	14	15	16	17	18	10	11	12	13	14	15	16	
22	23	24	25	26	27	28	19	20	21	22	23	24	25	17	18	19	20	21	22	23	
29	30	31					26	27	28	29	30			24	25	26	27	28	29	30	
														31							