

DMT INSTITUTE

Developing Mathematical Thinking Institute (DMTI)



Professional
Development



Curricular
Resources



Assessment

Jonathan Brendefur, PhD

DMTI Varied Practice Worksheets

This PowerPoint or PDF displays the worksheets that have varied situations (context, visual, equations, and other mathematical models) for children to work on. By completing these worksheets, children increase their foundational skills in the topic, which will help them with these standards and future mathematical topics.

1. If using a journal, have children present the worksheet and complete all the problems.
2. Or print the 'Varied Practice Worksheet Slides' for them to work on. Then, you can return to the PowerPoint or PDF to look at the keys to check their work.

Grade 5 – Problem Solving 2

MULTIPLICATION AND DIVISION

Grade 5: Problem Solving – Part 2


Materials Needed

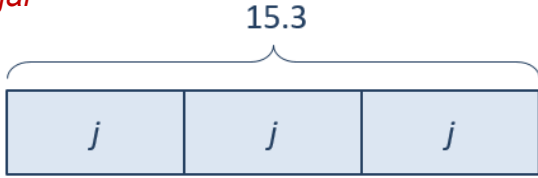
Printed copies of the Problem Solving: Multiplication and Division worksheet.

Instructions

1. Using the **Problem Solving: Multiplication and Division** worksheet, you will need to fill in all of the missing information.
2. Sometimes you will need to write your own story problem, in other cases you will need to draw a model and write an equation. You can use the given story problems to help you if you can't think of your own story.
3. Solve each problem using the **ratio table**. You may have other preferred methods you can use first, but then try to complete the ratio table after solving with another method.
4. A **Problem String template** is provided to create your own varied practice sheet.

Example:

Equation	Story Problem	Model of the Story	Ratio Table										
$12 \times .4 = g$	A leaking roof has .4 gallons of water leak through it each minute. After 12 minutes, how many gallons of water will have leaked through the roof?	<p><i>Models may vary.</i></p> 	<p><i>Ratio table strategies may vary.</i></p> <table border="1"><tbody><tr><td>minutes</td><td>1</td><td>10</td><td>2</td><td>12</td></tr><tr><td>gallons</td><td>0.4</td><td>4</td><td>.8</td><td>4.8</td></tr></tbody></table>	minutes	1	10	2	12	gallons	0.4	4	.8	4.8
minutes	1	10	2	12									
gallons	0.4	4	.8	4.8									

Equation	Story Problem	Model of the Story	Ratio Table								
$27 \times .4 = g$	A leaking roof has .4 gallons of water leak through it each minute. After 27 minutes, how many gallons of water will have leaked through the roof?		<table border="1"> <tr> <td>minutes</td> <td>1</td> <td></td> </tr> <tr> <td>gallons</td> <td>0.4</td> <td></td> </tr> </table>	minutes	1		gallons	0.4			
minutes	1										
gallons	0.4										
	Aubrey walks for 8.3 minutes each day to get to school. If she walked for a total of 33.2 minutes this week, how many days of school did she have?		<table border="1"> <tr> <td>days</td> <td>1</td> <td></td> </tr> <tr> <td>minutes</td> <td>8.3</td> <td></td> </tr> </table>	days	1		minutes	8.3			
days	1										
minutes	8.3										
	15.3 ounces, 3 jars	<p><i>j represents the ounces in each jar</i></p> 	<table border="1"> <tr> <td>ounces in each jar</td> <td>1</td> <td>.1</td> <td></td> </tr> <tr> <td>total ounces</td> <td>3</td> <td>.3</td> <td></td> </tr> </table>	ounces in each jar	1	.1		total ounces	3	.3	
ounces in each jar	1	.1									
total ounces	3	.3									
$19.6 \div 8 = n$			<table border="1"> <tr> <td></td> <td>1</td> <td></td> </tr> <tr> <td></td> <td>8</td> <td></td> </tr> </table>		1			8			
	1										
	8										

Problem String Template

Directions

1. Another way to practice your problem solving skills is to follow what is called a **problem string**. A problem string is a series of number sets that begin with numbers that are fairly easy to work with and gradually introduce new, and increasingly difficult number sets.
2. The **Problem String Template** gives you space to select an equation that you think is easy to solve, and then complete a **Story Problem**, **Model of the Story**, and use a **Ratio table** to solve the problem.
3. The next row on the **Problem String Template** is meant for slightly more difficult numbers, but every other part stays the same. You will restate the **Story Problem** with the new numbers, draw a **Model of the Story** that is similar to the first but with the correct numbers and relative sizes of the numbers, and then solve the more difficult problem.
4. Gradually increase the difficulty of the number sets until you get to a point where you feel you are solving the most difficult version of the problem you can.
5. To the right is an example for the different **Equations** that might work if you want to practice your decimal multiplication skills. Remember that for each number set in the string you will write a story problem, draw a model, and solve. Then, you would keep the same story context but change to the next problem and repeat the process.

Equation
a) $14 \times 1.5 = n$
b) $23 \times 1.5 = n$
c) $23.2 \times 1.5 = n$
d) $37.6 \times 1.5 = n$

Equation	Story Problem	Model of the Story	Ratio Table
a) $14 \times 1.5 = n$			
b) $23 \times 1.5 = n$			
c) $23.2 \times 1.5 = n$			
d) $37.6 \times 1.5 = n$			



“The Developing Mathematical Thinking Institute (DMTI) is dedicated to enhancing students’ learning of mathematics by supporting educators in the implementation of research-based instructional strategies through high-quality professional development, curricular resources and assessments.”

For more information contact
Dr. Brendefur at jbrendefur@dmtinstitute.com



KEY

Equation	Story Problem	Model of the Story	Ratio Table																										
$27 \times .4 = g$	A leaking roof has .4 gallons of water leak through it each minute. After 27 minutes, how many gallons of water will have leaked through the roof?	<p style="text-align: center;"><i>Models may vary</i></p>	<p style="text-align: center;"><i>Ratio table strategies may vary.</i></p> <table border="1"> <tr> <td>minutes</td> <td>1</td> <td>10</td> <td>20</td> <td>2</td> <td>4</td> <td>5</td> <td>25</td> <td>27</td> </tr> <tr> <td>gallons</td> <td>0.4</td> <td>4</td> <td>8</td> <td>.8</td> <td>1.6</td> <td>2.0</td> <td>10</td> <td>10.8</td> </tr> </table>	minutes	1	10	20	2	4	5	25	27	gallons	0.4	4	8	.8	1.6	2.0	10	10.8								
minutes	1	10	20	2	4	5	25	27																					
gallons	0.4	4	8	.8	1.6	2.0	10	10.8																					
$d \times 8.3 = 33.2$ $33.2 \div 8.3 = d$	Aubrey walks for 8.3 minutes each day to get to school. If she walked for a total of 33.2 minutes this week, how many days of school did she have?	<p style="text-align: center;"><i>Models may vary</i></p>	<p style="text-align: center;"><i>Ratio table strategies may vary.</i></p> <table border="1"> <tr> <td>days</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>minutes</td> <td>8.3</td> <td>16.6</td> <td>24.9</td> <td>33.2</td> </tr> </table>	days	1	2	3	4	minutes	8.3	16.6	24.9	33.2																
days	1	2	3	4																									
minutes	8.3	16.6	24.9	33.2																									
$15.3 \div 3 = j$	<p>15.3 ounces, 3 jars</p> <p>15.3 ounces of jelly needs to be split equally to 3 jars. How many ounces of jelly will be in each jar?</p>	<p style="text-align: center;"><i>j represents the ounces in each jar</i></p>	<p style="text-align: center;"><i>Ratio table strategies may vary.</i></p> <table border="1"> <tr> <td>ounces in each jar</td> <td>1</td> <td>.1</td> <td>5</td> <td>5.1</td> </tr> <tr> <td>total ounces</td> <td>3</td> <td>.3</td> <td>15</td> <td>15.3</td> </tr> </table>	ounces in each jar	1	.1	5	5.1	total ounces	3	.3	15	15.3																
ounces in each jar	1	.1	5	5.1																									
total ounces	3	.3	15	15.3																									
$19.6 \div 8 = h$ <i>h represents hours.</i>	<p style="text-align: center;"><i>Story problems may vary</i></p> <p>There are 19.6 liters of paint needed to repaint a wall. Each hour spent painting will use 8 liters of paint. How many hours to paint the entire wall are needed?</p>	<p style="text-align: center;"><i>Models may vary</i></p>	<p style="text-align: center;"><i>Ratio table strategies may vary.</i></p> <table border="1"> <tr> <td>hour</td> <td>1</td> <td>.1</td> <td>2</td> <td>.2</td> <td>.4</td> <td>2.4</td> <td>.01</td> <td>2.41</td> <td>2.42</td> <td>2.43</td> <td>2.44</td> <td>2.45</td> </tr> <tr> <td>liters</td> <td>8</td> <td>.8</td> <td>16</td> <td>1.6</td> <td>3.2</td> <td>19.2</td> <td>.08</td> <td>19.28</td> <td>19.36</td> <td>19.44</td> <td>19.52</td> <td>19.6</td> </tr> </table>	hour	1	.1	2	.2	.4	2.4	.01	2.41	2.42	2.43	2.44	2.45	liters	8	.8	16	1.6	3.2	19.2	.08	19.28	19.36	19.44	19.52	19.6
hour	1	.1	2	.2	.4	2.4	.01	2.41	2.42	2.43	2.44	2.45																	
liters	8	.8	16	1.6	3.2	19.2	.08	19.28	19.36	19.44	19.52	19.6																	