

Ratios

PERCENT

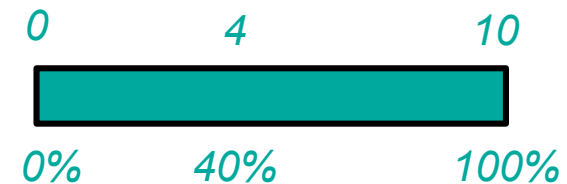
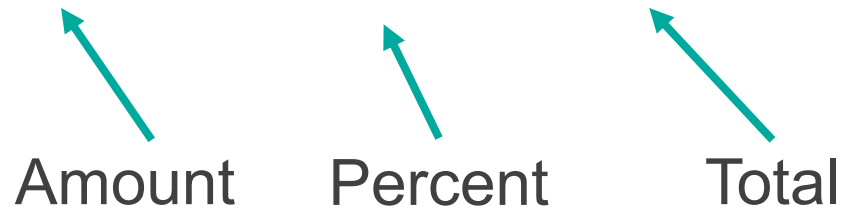
Ratio and Proportion: Percent

The bar model helps represent proportional situations as percentages. Many times these situations are set up as _____ is _____ % of _____.



Let's use a race as an example.

4 miles is **40%** of a **10** mile race.

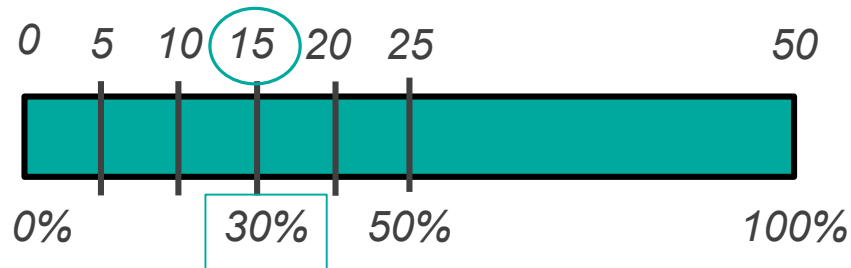


Ratio and Proportion: Percent

We'll spend some time exploring percent in this way for the first section of the practice on Thursday.

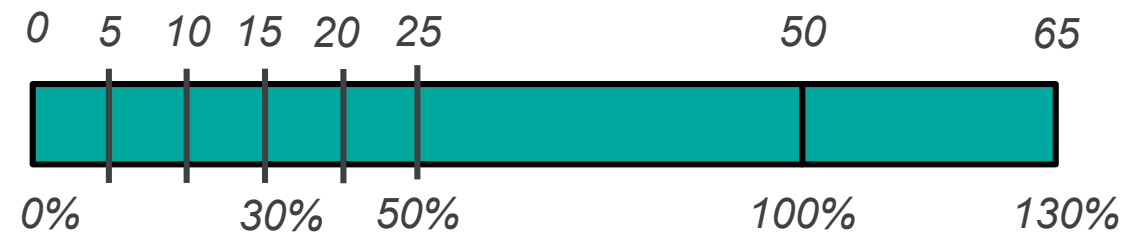
For example, the model below would demonstrate these statements:

15 is 30% of 50
30% of 50 is 15



We can also go beyond 100%. The model below would demonstrate these statements:

65 is 130% of 50
130% of 50 is 65

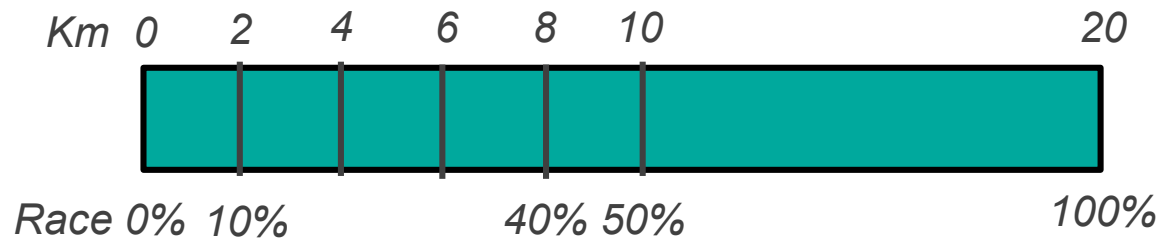


Ratio and Proportion: Percent

Now we can use the concept and models for finding percent to solve problems such as:

You are running a 20 kilometer race. If you have run 8 kilometers, what percentage of the race have you completed? What percentage do you still have to run?

Just like we have in previous problems, we can also use the ratio table to solve and/or notate our steps with the bar model.



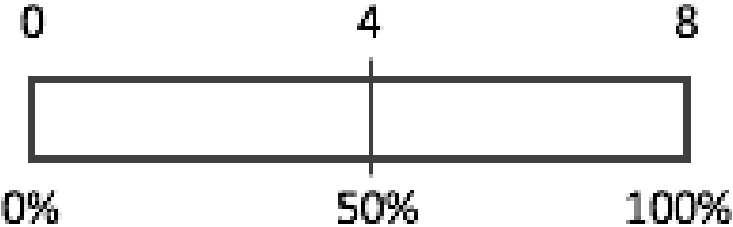
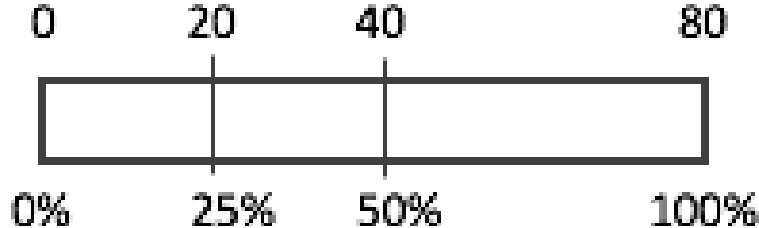
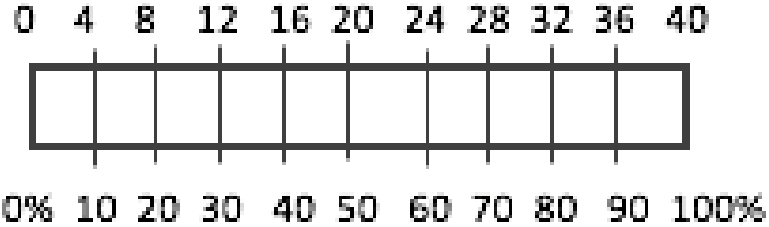
Km	20	10	2	8	12
Race (%)	100	50	10	40	60

Worksheet 1.1 – Ratios: Percent and bar models

1. Use a bar model to find the missing value in the statement.
2. Use the model to help generate a second statement represented in the bar model.

Statement	Bar Model	Second Statement
____ is 50% of 8		
20 is 25% of ____		
16 is ____% of 40		

1. Use a bar model to find the missing value in the statement.
2. Use the model to help generate a second statement represented in the bar model.

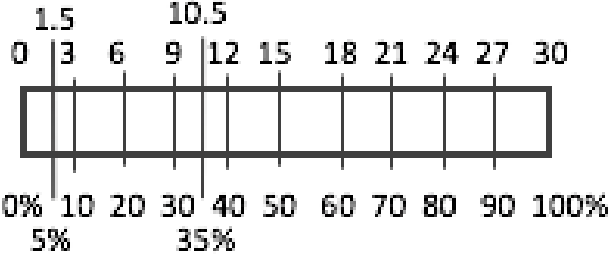
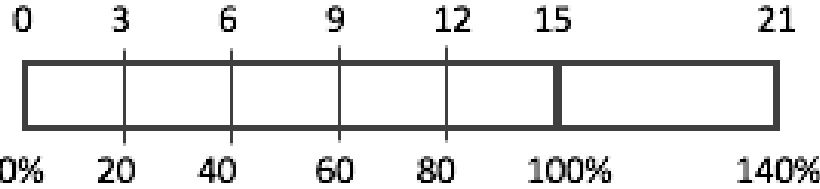
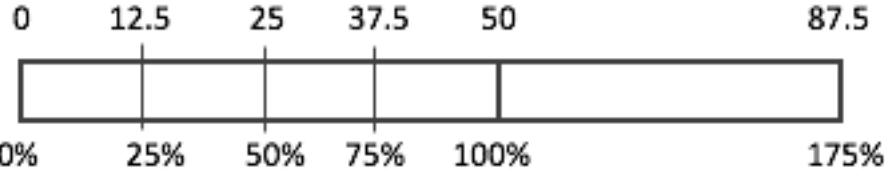
Statement	Bar Model	Second Statement
<p><u>4</u> is 50% of 8</p>		<p>50% of 8 is 4</p>
<p>20 is 25% of <u>80</u></p>		<p>25% of 80 is 20</p>
<p>16 is <u>40%</u> of 40</p>		<p>40% of 40 is 16</p>

Worksheet 1.2 – Ratios: Percent and bar models

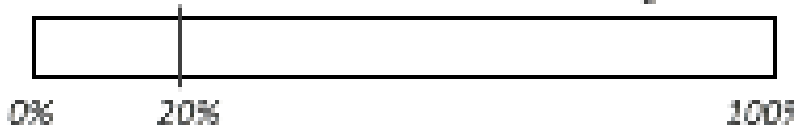
1. Use a bar model to find the missing value in the statement.
2. Use the model to help generate a second statement represented in the bar model.

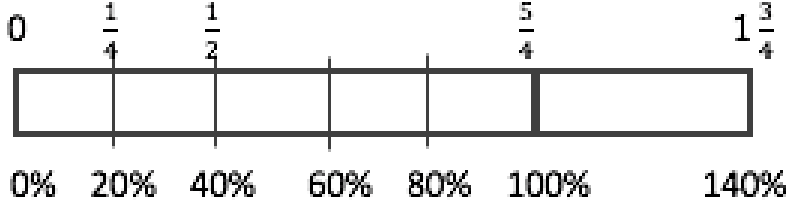
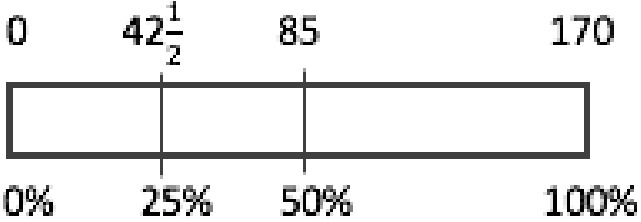

Statement	Bar Model	Second Statement
_____ is 35% of 30		
21 is 140% of _____		
87.5 is _____% of 50		

1. Use a bar model to find the missing value in the statement.
2. Use the model to help generate a second statement represented in the bar model.

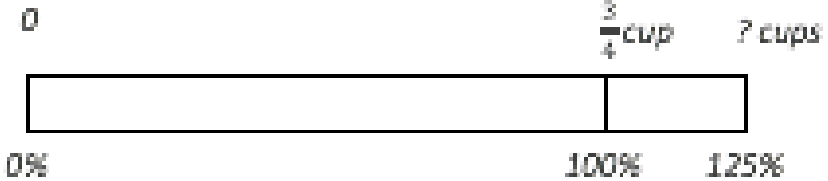
Statement	Bar Model	Second Statement
<p><u>10.5</u> is 35% of 30</p>		<p>35% of 30 is 10.5</p>
<p>21 is 140% of <u>15</u></p>		<p>140% of 15 is 21</p>
<p>87.5 is <u>175%</u> of 50</p>		<p>175% of 50 is 87.5</p>

Worksheet 2.1 – Ratios: Percent

Context	Bar Model	Ratio Table												
<p>A smoothie recipe asks for $1\frac{1}{4}$ cups of strawberries. You want 120% of that amount. How many cups of strawberries will you need?</p>														
		<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding: 5px;">Calories burned</td> <td style="padding: 5px;">$42\frac{1}{2}$</td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;">?</td> </tr> <tr> <td style="padding: 5px;">Percent</td> <td style="padding: 5px;">25</td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;">100</td> </tr> </table>	Calories burned	$42\frac{1}{2}$?	Percent	25				100
Calories burned	$42\frac{1}{2}$?									
Percent	25				100									
	<div style="text-align: center;"> <p>0 7 bags of leaves $2\frac{1}{2}$ bags of leaves</p>  <p>0% 20% 100%</p> </div>													

Context	Bar Model	Ratio Table										
<p>A smoothie recipe asks for $1\frac{1}{4}$ cups of strawberries. You want 140% of that amount. How many cups of strawberries will you need?</p>		<table border="1"> <tr> <td data-bbox="1717 229 1964 334">Strawberries (cups)</td> <td data-bbox="1964 229 2135 334">$1\frac{1}{4} = \frac{5}{4}$</td> <td data-bbox="2135 229 2249 334">$\frac{1}{4}$</td> <td data-bbox="2249 229 2364 334">$\frac{1}{2}$</td> <td data-bbox="2364 229 2491 334">$1\frac{3}{4}$</td> </tr> <tr> <td data-bbox="1717 334 1964 412">Percent</td> <td data-bbox="1964 334 2135 412">100%</td> <td data-bbox="2135 334 2249 412">20</td> <td data-bbox="2249 334 2364 412">40</td> <td data-bbox="2364 334 2491 412">140</td> </tr> </table>	Strawberries (cups)	$1\frac{1}{4} = \frac{5}{4}$	$\frac{1}{4}$	$\frac{1}{2}$	$1\frac{3}{4}$	Percent	100%	20	40	140
Strawberries (cups)	$1\frac{1}{4} = \frac{5}{4}$	$\frac{1}{4}$	$\frac{1}{2}$	$1\frac{3}{4}$								
Percent	100%	20	40	140								
<p>You have burned $42\frac{1}{2}$ calories and are only 25% finished with your workout. How many calories will you have burned at the end of the workout?</p>		<table border="1"> <tr> <td data-bbox="1786 615 1997 719">Calories burned</td> <td data-bbox="1997 615 2125 719">$42\frac{1}{2}$</td> <td data-bbox="2125 615 2252 719">85</td> <td data-bbox="2252 615 2392 719">170</td> </tr> <tr> <td data-bbox="1786 719 1997 798">Percent</td> <td data-bbox="1997 719 2125 798">25</td> <td data-bbox="2125 719 2252 798">50</td> <td data-bbox="2252 719 2392 798">100</td> </tr> </table>	Calories burned	$42\frac{1}{2}$	85	170	Percent	25	50	100		
Calories burned	$42\frac{1}{2}$	85	170									
Percent	25	50	100									
<p>Cleaning up your lawn will fill $2\frac{1}{2}$ bags full of leaves. How many bags will 20% of your lawn fill?</p>		<table border="1"> <tr> <td data-bbox="1844 996 2066 1100">Bags</td> <td data-bbox="2066 996 2219 1100">$2\frac{1}{2}$</td> <td data-bbox="2219 996 2333 1100">$\frac{1}{2}$</td> </tr> <tr> <td data-bbox="1844 1100 2066 1179">Percent</td> <td data-bbox="2066 1100 2219 1179">100</td> <td data-bbox="2219 1100 2333 1179">20</td> </tr> </table>	Bags	$2\frac{1}{2}$	$\frac{1}{2}$	Percent	100	20				
Bags	$2\frac{1}{2}$	$\frac{1}{2}$										
Percent	100	20										

Worksheet 2.2 – Ratios: Percent

Context	Bar Model	Ratio Table										
		<table border="1"> <tr> <td data-bbox="1717 225 1941 332">Milk (Liters)</td> <td data-bbox="1941 225 2091 332">?</td> <td data-bbox="2091 225 2206 332"></td> <td data-bbox="2206 225 2339 332"></td> <td data-bbox="2339 225 2474 332">20</td> </tr> <tr> <td data-bbox="1717 332 1941 415">Percent</td> <td data-bbox="1941 332 2091 415">$12\frac{1}{2}\%$</td> <td data-bbox="2091 332 2206 415"></td> <td data-bbox="2206 332 2339 415"></td> <td data-bbox="2339 332 2474 415">100</td> </tr> </table>	Milk (Liters)	?			20	Percent	$12\frac{1}{2}\%$			100
Milk (Liters)	?			20								
Percent	$12\frac{1}{2}\%$			100								
	 <p>0 $\frac{3}{4}$ cup 7 cups 0% 100% 125%</p>											
<p>You have 1.5 gallons of water for the marathon. After 5 miles, you drank 20%, how much water do you have left?</p>												

Context	Bar Model	Ratio Table										
<p>A restaurant has 20 liters of milk to use in recipes. They decide to use $12\frac{1}{2}\%$ of the milk to make macaroni and cheese. How many liters of milk did they use for macaroni and cheese?</p>		<table border="1"> <tr> <td>Milk (Liters)</td> <td>?</td> <td></td> <td></td> <td>20</td> </tr> <tr> <td>Percent</td> <td>$12\frac{1}{2}\%$</td> <td></td> <td></td> <td>100</td> </tr> </table>	Milk (Liters)	?			20	Percent	$12\frac{1}{2}\%$			100
Milk (Liters)	?			20								
Percent	$12\frac{1}{2}\%$			100								
<p>A serving of cereal is $\frac{3}{4}$ of a cup. If you eat 125% of a serving, how many cups of cereal did you eat?</p>		<table border="1"> <tr> <td>Cereal (Cups)</td> <td>$\frac{3}{4}$</td> <td>$\frac{3}{16}$</td> <td>$\frac{15}{16}$</td> </tr> <tr> <td>Percent (serving)</td> <td>100%</td> <td>25</td> <td>125</td> </tr> </table>	Cereal (Cups)	$\frac{3}{4}$	$\frac{3}{16}$	$\frac{15}{16}$	Percent (serving)	100%	25	125		
Cereal (Cups)	$\frac{3}{4}$	$\frac{3}{16}$	$\frac{15}{16}$									
Percent (serving)	100%	25	125									
<p>You have 1.5 gallons of water for the marathon. After 5 miles, you drank 20%, how much water do you have left?</p>		<table border="1"> <tr> <td>Water (gallons)</td> <td>1.5</td> <td>.15</td> <td>.3</td> <td>.1.2</td> </tr> <tr> <td>Percent</td> <td>100</td> <td>10</td> <td>20</td> <td>80</td> </tr> </table>	Water (gallons)	1.5	.15	.3	.1.2	Percent	100	10	20	80
Water (gallons)	1.5	.15	.3	.1.2								
Percent	100	10	20	80								