



Year 7 Worksheet 5: Ratios and Proportions

Question 1: Understanding ratios and proportions.

1	If there are 12 boys and 8 girls in a classroom, what is the ratio of boys to girls?
2	A recipe calls for 2 cups of flour and 1 cup of sugar. What is the ratio of flour to sugar in the recipe?
3	In a group of 30 students, 18 prefer pizza and 12 prefer burgers. Find the ratio of students who prefer pizza to those who prefer burgers.
4	If a map scale is 1 cm represents 5 km, how far is a location from your current position if it is 15 cm on the map?
5	In a fruit basket, there are 9 apples and 6 oranges. What is the ratio of apples to the total number of fruits?



6	If the ratio of boys to girls in a school is 4:5, and there are 360 students in total, how many are girls?
7	In a bag of marbles, the ratio of red marbles to blue marbles is 2:3. If there are 30 marbles in total, how many are blue?
8	A recipe for 1 pancake calls for 1 cup of milk and 2 cups of flour. If you want to make 12 pancakes, how much flour do you need?
9	The ratio of students who passed an exam to those who failed is 4:1. If 45 students failed, how many students passed?
10	A rectangular garden has a length of 15 meters and a width of 10 meters. What is the ratio of the length to the width?



Question 2: Solving problems involving ratios and proportions.

1	A car travels 180 kilometers in 3 hours. What is its speed in kilometers per hour (km/h)?
2	The scale of a map is 1:10,000. If the distance between two cities on the map is 5 cm, what is the actual distance between the cities?
3	If 8 oranges cost \$4, how much would 15 oranges cost?
4	The ratio of the number of pages Mary read to the number of pages John read in a book is 2:3. If they read a total of 100 pages, how many pages did Mary read?
5	In a school, the ratio of students to teachers is 25:1. If there are 600 students, how many teachers are there?



6	In a school, the ratio of boys to girls is 3:4. If there are 126 students in total, how many are boys?
7	If a bottle contains 3 parts water and 1 part juice, what fraction of the liquid is juice?
8	A bicycle travels 60 kilometers in 2 hours. How far would it travel in 6 hours at the same speed?
9	You want to mix red and blue paint in a 3:2 ratio to create purple paint. If you need 10 liters of purple paint, how much of each color should you use?
10	A fruit basket contains 4 apples and 3 oranges. What is the ratio of apples to the total number of fruits?



Question 3: Answer the following.

1	A recipe calls for $\frac{2}{3}$ cup of sugar, but you want to make half the recipe. How much sugar should you use?
2	If a pizza is divided into 8 equal slices, and you eat 3 slices, what fraction of the pizza did you eat?
3	A store offers a 15% discount on a \$40 jacket. Calculate the sale price.
4	A rectangle has a length of $\frac{5}{8}$ meter and a width of $\frac{3}{4}$ meter. What is the area of the rectangle?
5	You want to mix red and blue paint in a 2:5 ratio to create purple paint. If you need 14 liters of purple paint, how much of each color should you use?



6	A group of 60 students is divided into boys and girls in a 3:2 ratio. How many students are girls?
7	If a pizza costs \$12 and you want to leave a 20% tip, how much should the tip be?
8	You have a mixture of juice that is $\frac{2}{5}$ orange juice and $\frac{3}{5}$ apple juice. If you have 15 cups of the mixture, how many cups are apple juice?
9	A school fundraiser collected \$800, and the money was divided into three parts in a 2:3:5 ratio. How much money is in each part?
10	If a store marks up the cost of an item by 25% and sells it for \$125, what was the original cost of the item?



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Answer Key

Question 1: Answer the following.

1	<p>If there are 12 boys and 8 girls in a classroom, what is the ratio of boys to girls? Answer: The ratio of boys to girls is 12:8, which can be simplified to 3:2.</p>
2	<p>A recipe calls for 2 cups of flour and 1 cup of sugar. What is the ratio of flour to sugar in the recipe? Answer: The ratio of flour to sugar is 2:1.</p>
3	<p>In a group of 30 students, 18 prefer pizza and 12 prefer burgers. Find the ratio of students who prefer pizza to those who prefer burgers. Answer: The ratio of students who prefer pizza to burgers is 18:12, which can be simplified to 3:2.</p>
4	<p>If a map scale is 1 cm represents 5 km, how far is a location from your current position if it is 15 cm on the map? Answer: The actual distance is 75 km ($15 \text{ cm} \times 5 \text{ km/cm}$).</p>
5	<p>In a fruit basket, there are 9 apples and 6 oranges. What is the ratio of apples to the total number of fruits? Answer: The ratio of apples to the total number of fruits is 9:15, which can be simplified to 3:5.</p>
6	<p>If the ratio of boys to girls in a school is 4:5, and there are 360 students in total, how many are girls? Answer: There are 200 girls ($360 \text{ total students} \times 5/9 \text{ girls}$).</p>
7	<p>In a bag of marbles, the ratio of red marbles to blue marbles is 2:3. If there are 30 marbles in total, how many are blue? Answer: There are 18 blue marbles ($30 \text{ total marbles} \times 3/5 \text{ blue marbles}$).</p>
8	<p>A recipe for 1 pancake calls for 1 cup of milk and 2 cups of flour. If you want to make 12 pancakes, how much flour do you need? Answer: You need 24 cups.</p>



9	The ratio of students who passed an exam to those who failed is 4:1. If 45 students failed, how many students passed? Answer: 180 students passed (4 times the number of students who failed).
10	A rectangular garden has a length of 15 meters and a width of 10 meters. What is the ratio of the length to the width? Answer: The ratio of length to width is 3:2.

Question 2: Answer the following.

1	A car travels 180 kilometers in 3 hours. What is its speed in kilometers per hour (km/h)? Answer: The speed is 60 km/h ($180 \text{ km} \div 3 \text{ hours}$).
2	The scale of a map is 1:10,000. If the distance between two cities on the map is 5 cm, what is the actual distance between the cities? Answer: The actual distance is 50,000 cm or 500 meters ($5 \text{ cm} \times 10,000$).
3	If 8 oranges cost \$4, how much would 15 oranges cost? Answer: 15 oranges would cost \$7.50 ($15/8$ times the cost of 8 oranges).
4	The ratio of the number of pages Mary read to the number of pages John read in a book is 2:3. If they read a total of 100 pages, how many pages did Mary read? Answer: Mary read 40 pages ($100 \text{ total pages} \times 2/5 \text{ pages read by Mary}$).
5	In a school, the ratio of students to teachers is 25:1. If there are 600 students, how many teachers are there? Answer: There are 24 teachers ($600 \text{ students} \div 25 \text{ students per teacher}$).
6	In a school, the ratio of boys to girls is 3:4. If there are 126 students in total, how many are boys? Answer: There are 54 boys ($126 \text{ total students} \times 3/7 \text{ boys}$).
7	If a bottle contains 3 parts water and 1 part juice, what fraction of the liquid is juice?



	Answer: $\frac{1}{4}$ of the liquid is juice (1 part juice out of 4 parts in total).
8	A bicycle travels 60 kilometers in 2 hours. How far would it travel in 6 hours at the same speed? Answer: It would travel 180 kilometers (3 times the distance in 2 hours).
9	You want to mix red and blue paint in a 3:2 ratio to create purple paint. If you need 10 liters of purple paint, how much of each color should you use? Answer: Use 6 liters of red paint and 4 liters of blue paint.
10	A fruit basket contains 4 apples and 3 oranges. What is the ratio of apples to the total number of fruits? Answer: The ratio of apples to total fruits is 4:7.

Question 3: Answer the following.

1	A recipe calls for $\frac{2}{3}$ cup of sugar, but you want to make half the recipe. How much sugar should you use? Answer: You should use $\frac{1}{3}$ cup of sugar ($\frac{1}{2}$ of $\frac{2}{3}$ cup).
2	If a pizza is divided into 8 equal slices, and you eat 3 slices, what fraction of the pizza did you eat? Answer: You ate $\frac{3}{8}$ of the pizza.
3	A store offers a 15% discount on a \$40 jacket. Calculate the sale price. Answer: The sale price is \$34 (\$40 - 15% of \$40).
4	A rectangle has a length of $\frac{5}{8}$ meter and a width of $\frac{3}{4}$ meter. What is the area of the rectangle? Answer: The area is $\frac{15}{32}$ square meters ($\frac{5}{8}$ meter \times $\frac{3}{4}$ meter).
5	You want to mix red and blue paint in a 2:5 ratio to create purple paint. If you need 14 liters of purple paint, how much of each color should you use? Answer: Use 4 liters of red paint and 10 liters of blue paint.
6	A group of 60 students is divided into boys and girls in a 3:2 ratio. How many students are girls?



	Answer: There are 24 girls ($60 \text{ students} \times \frac{2}{5} \text{ girls}$).
7	If a pizza costs \$12 and you want to leave a 20% tip, how much should the tip be? Answer: The tip should be \$2.40 (20% of \$12).
8	You have a mixture of juice that is $\frac{2}{5}$ orange juice and $\frac{3}{5}$ apple juice. If you have 15 cups of the mixture, how many cups are apple juice? Answer: There are 9 cups of apple juice ($15 \text{ cups} \times \frac{3}{5} \text{ apple juice}$).
9	A school fundraiser collected \$800, and the money was divided into three parts in a 2:3:5 ratio. How much money is in each part? Answer: The amounts are \$160, \$240, and \$400 for the three parts.
10	If a store marks up the cost of an item by 25% and sells it for \$125, what was the original cost of the item? Answer: The original cost was \$100 (the selling price divided by 1.25).