



Year 6 Worksheet 5 - Proportions and ratios

Question 1: Use cross multiplication to solve the following ratios.

$2:3$ $20:\underline{30}$	$1:4$ $2:\underline{\quad}$	$3:9$ $12:\underline{\quad}$
$3:30$ $15:\underline{\quad}$	$5:10$ $35:\underline{\quad}$	$1:4$ $4:\underline{\quad}$
$4:16$ $12:\underline{\quad}$	$5:15$ $20:\underline{\quad}$	$2:4$ $4:\underline{\quad}$
$2:12$ $8:\underline{\quad}$	$4:36$ $8:\underline{\quad}$	$2:6$ $6:\underline{\quad}$
$3:15$ $9:\underline{\quad}$	$4:28$ $16:\underline{\quad}$	$7:25$ $14:\underline{\quad}$



Question 2: Use cross multiplication to solve the following proportions.

$\frac{5}{6} = \frac{15}{18}$	$\frac{\quad}{5} = \frac{9}{15}$	$\frac{2}{\quad} = \frac{6}{15}$
$\frac{1}{\quad} = \frac{9}{27}$	$\frac{1}{2} = \frac{10}{\quad}$	$\frac{\quad}{5} = \frac{12}{15}$
$\frac{5}{8} = \frac{30}{\quad}$	$\frac{9}{45} = \frac{1}{\quad}$	$\frac{3}{4} = \frac{\quad}{12}$
$\frac{5}{\quad} = \frac{10}{16}$	$\frac{9}{15} = \frac{\quad}{5}$	$\frac{\quad}{5} = \frac{16}{20}$



Question 3: Answer the following.

1	A recipe calls for 2 cups of flour to make 24 cookies. How much flour is needed to make 36 cookies?
2	A gardener mixes soil and sand in a ratio of 5L : 2L to make potting soil. If she needs 25 kg of potting soil, how much sand does she need?
3	A scale drawing of a garden has a scale of 1 cm on the drawing representing 5 meters in real life. If the drawing of a tree is 4 cm tall, how tall is the tree in real life?
4	It takes 3 painters to paint 6 pieces of tile. How many tiles would it take for 5 painters to paint?



5	To make orange juice, you mix 2 cups of orange concentrate with 5 cups of water. How much water should you mix with 4 cups of orange concentrate?
6	A painter wants to mix red paint and white paint in a ratio of 3L : 7L to make a light pink color. If she needs 60 liters of pink paint, how much white paint does she need?
7	A fruit juice blend is made by mixing apple juice and orange juice in a ratio of 4L : 3L. If you want to make 35 liters of the blend, how much orange juice do you need?
8	A model train is built using a scale of 1 cm on the model representing 12 meters in real life. If the model train is 12 cm long, how long is the actual train?



9	Amy and Ben share their pocket money in a ratio of 3:5. If Amy gets \$12, how much do they have together?
10	The exchange rate between Australian Dollars (AUD) and US Dollars (USD) is 1 AUD = 0.75 USD. If you exchange 200 AUD, how much USD do you get?

Question 4: Answer the following.

1	A recipe for a fruit smoothie calls for a ratio of 2 cups of strawberries to 3 cups of bananas. If you want to make 10 cups of the smoothie, how many cups of bananas do you need?
2	The scale on a map is 1 cm on the map representing 5 km in real life. If the distance between two towns on the map is 15 cm, what is the actual distance between the towns?



3	A fence that is 1.5 meters tall casts a shadow that is 4.5 meters long. If a nearby tree casts a shadow that is 7.5 meters long, how tall is the tree? (Hint: Try to simplify the given ratio!)
4	Emma and Liam share a collection of stamps in a ratio of 7:9. If Emma has 28 stamps, how many stamps do they have in total?
5	The ratio of ages of two students is 4:5. If one student is 16 years old, how old is the other student?
6	Tom and Jerry share their allowance in a ratio of 2:3. If Tom gets \$20, how much do they have together?



7	John and Susan share a bag of candies in a ratio of 5:3. If John has 30 candies, how many candies do they have in total?
8	In a bag of marbles, the ratio of red marbles to blue marbles is 3:5. If there are a total of 64 marbles, how many are red?
9	A candy store sells 4 cups of candy for \$12. How much would it cost to buy 7 cups of candy?
10	The exchange rate between US Dollars and Euros is 1 USD = 0.85 EUR. If you have \$120, how many Euros do you have?



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Answer Key

Question 1: Use cross multiplication to solve the following ratios.

$2:3$ $20:\underline{30}$	$1:4$ $2:8$	$3:9$ $12:36$
$3:30$ $15:150$	$5:10$ $35:70$	$1:4$ $4:16$
$4:16$ $12:48$	$5:15$ $20:60$	$2:4$ $4:8$
$2:12$ $8:48$	$4:36$ $8:72$	$2:6$ $6:18$
$3:15$ $9:45$	$4:28$ $16:112$	$7:25$ $14:50$



Question 2: Use cross multiplication to solve the following proportions.

$\frac{5}{6} = \frac{15}{18}$	$\frac{3}{5} = \frac{9}{15}$	$\frac{2}{5} = \frac{6}{15}$
$\frac{1}{3} = \frac{9}{27}$	$\frac{1}{2} = \frac{10}{20}$	$\frac{4}{5} = \frac{12}{15}$
$\frac{5}{8} = \frac{30}{48}$	$\frac{9}{45} = \frac{1}{5}$	$\frac{3}{4} = \frac{9}{12}$
$\frac{5}{8} = \frac{10}{16}$	$\frac{9}{15} = \frac{3}{5}$	$\frac{4}{5} = \frac{16}{20}$



Question 3: Answer the following.

1	<p>A recipe calls for 2 cups of flour to make 24 cookies. How much flour is needed to make 36 cookies?</p> <p>Solution: Set up a proportion: 2 cups / 24 cookies = x cups / 36 cookies Cross-multiply and solve for x: $2 * 36 = 24 * x$ $x = 3$ cups You need 3 cups of flour to make 36 cookies.</p>
2	<p>A gardener mixes soil and sand in a ratio of 5:2 to make potting soil. If she needs 25 kg of potting soil, how much sand does she need?</p> <p>Solution: Set up a proportion: 5 parts / 2 parts = 28 kg / x kg Cross-multiply and solve for x: $5x = 50$ $x = 10$ kg She needs 10 kg of sand.</p>
3	<p>A scale drawing of a garden has a scale of 1 cm on the drawing representing 5 meters in real life. If the drawing of a tree is 4 cm tall, how tall is the tree in real life?</p> <p>Solution: The tree is 20 meters tall in real life.</p>
4	<p>It takes 3 painters to paint 6 pieces of tile. How many tiles would it take for 5 painters to paint?</p> <p>Solution: It would take 5 painters to paint 10 tiles.</p>
5	<p>To make orange juice, you mix 2 parts of orange concentrate with 5 parts of water. How much water should you mix with 4 cups of orange concentrate?</p> <p>Solution: You should mix 10 cups of water.</p>



6	<p>A painter wants to mix red paint and white paint in a ratio of 3:7 to make a light pink color. If she needs 60 liters of pink paint, how much white paint does she need?</p> <p>Solution: R : W 3:7 -> 10 pink 18:42 -> 60 pink</p>
7	<p>A fruit juice blend is made by mixing apple juice and orange juice in a ratio of 4:3. If you want to make 35 liters of the blend, how much orange juice do you need?</p> <p>Solution: 4:3 = 7 liters 20:15 = 35 liters 15 orange juice</p>
8	<p>A model train is built using a scale of 1 cm on the model representing 12 meters in real life. If the model train is 12 cm long, how long is the actual train?</p> <p>Solution: cm:m 1:12 12:144 Real train: 144 m</p>
9	<p>Amy and Ben share their pocket money in a ratio of 3:5. If Amy gets \$12, how much do they have together?</p> <p>Solution: Amy : Ben 3 : 5 12 : 20 They have a total of \$32.</p>



10	<p>The exchange rate between Australian Dollars (AUD) and US Dollars (USD) is 1 AUD = 0.75 USD. If you exchange 200 AUD, how much USD do you get?</p> <p>Solution: Set up a proportion: 1 AUD / 0.75 USD = 200 AUD / x USD Cross-multiply and solve for x: $1 * x = 0.75 * 200$ $x = 150$ USD You get 150 USD.</p>
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Question 4: Answer the following.

1	<p>A recipe for a fruit smoothie calls for a ratio of 2 cups of strawberries to 3 cups of bananas. If you want to make 10 cups of the smoothie, how many cups of bananas do you need?</p> <p>Solution: 2 : 3 → 5 cups 4 : 6 → 10 cups</p>
2	<p>The scale on a map is 1 cm on the map representing 5 km in real life. If the distance between two towns on the map is 15 cm, what is the actual distance between the towns?</p> <p>Solution: 1:5 15:75 The actual distance between the towns is 75 km.</p>
3	<p>A fence that is 1.5 meters tall casts a shadow that is 4.5 meters long. If a nearby tree casts a shadow that is 7.5 meters long, how tall is the tree?</p> <p>Solution: Tall : shadow 1.5 : 4.5 1 : 3 (Simplification) 2.5:7.5 The tree is 2.5 meters tall.</p>



4	<p>Emma and Liam share a collection of stamps in a ratio of 7:9. If Emma has 28 stamps, how many stamps do they have in total?</p> <p>Solution: 7:9 → 16 Stamps 28:36 → 64 Stamps</p>
5	<p>The ratio of ages of two students is 4:5. If one student is 16 years old, how old is the other student?</p> <p>Solution: Given ratio: 4:5 Other student's age = $(5/4) * 16 = 20$ The other student is 20 years old.</p>
6	<p>Tom and Jerry share their allowance in a ratio of 2:3. If Tom gets \$20, how much do they have together?</p> <p>Solution: Given ratio: 2:3 Total parts = $2 + 3 = 5$ Total money = $(5/2) * 20 = 50$ They have a total of \$50.</p>
7	<p>John and Susan share a bag of candies in a ratio of 5:3. If John has 30 candies, how many candies do they have in total?</p> <p>Solution: $5:3 = 8$ $30:18 = 48$ They have a total of 48 candies.</p>
8	<p>In a bag of marbles, the ratio of red marbles to blue marbles is 3:5. If there are a total of 64 marbles, how many are red?</p> <p>Solution: Given ratio: 3:5 Total parts = $3 + 5 = 8$ Red marbles = $(3/8) * 64 = 24$ There are 24 red marbles.</p>



9	<p>A candy store sells 4 pounds of candy for \$12. How much would it cost to buy 7 pounds of candy?</p> <p>Solution: Set up a proportion: 4 pounds / \$12 = 7 pounds / x dollars Cross-multiply and solve for x: $4 * x = 12 * 7$ $x = 21$ dollars It would cost \$21 to buy 7 pounds of candy.</p>
10	<p>The exchange rate between US Dollars and Euros is 1 USD = 0.85 EUR. If you have \$120, how many Euros do you have?</p> <p>Solution: Set up a proportion: 1 USD / 0.85 EUR = 120 USD / x EUR Cross-multiply and solve for x: $1 * x = 0.85 * 120$ $x = 102$ EUR You have 102 Euros.</p>