

Independent Recap

Ratio
Week 10

Year 6

Arithmetic

1. $\frac{2}{3} \times \frac{3}{7}$

2. $5 - 0.16$

3. 0.5×32

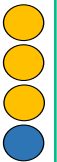
4. $2\frac{1}{2} \times 6$

Practice: Introducing Ratio

5. Recap: Explain what ratio shows.



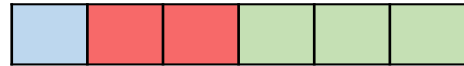
6. Complete the sentences. a. For every 1 blue counter, there are ? yellow counters. b. The ratio of blue to yellow counters is?:?. c. There are ? counters in total.



7. Complete the sentences. a. For every 2 bananas there are ? cherries. What fraction is: b. bananas, c. cherries?



8. This bar model shows the ratio 1:2:3. What is fraction: a. blue, b. red, c. green?



9. In 5 counters, $\frac{2}{5}$ are blue. The rest are red. What is the ratio of red to blue counters?



10. Explain how this ratio and fraction are linked.

$\frac{1}{5}$ and 1:4



11. In a multipack of crisps, $\frac{3}{10}$ are plain, $\frac{4}{10}$ are cheese and onion and the rest are prawn cocktail. What is the ratio of plain to cheese and onion to prawn cocktail crisps?

12. In a pack of 12 pens, there are 3 colours. $\frac{8}{12}$ are black. The rest are split evenly amongst blue and red colours. What is the ratio of black to blue to red pens?

13. Toby says the diagram shows $\frac{2}{3}$ of the counters are green. Is this correct? Explain.



Challenge

14. A shop has a bargain box containing purple and red tops. $\frac{5}{9}$ of the tops are purple. Write as many ratio or fraction facts as you can about this statement.



You might want to talk to an adult



Spot the mistake

Answers

Q no.	Question	Answer
1	$\frac{2}{3} \times \frac{3}{7}$	$\frac{6}{21}$
2	$5 - 0.16$	4.84
3	0.5×32	16
4	$2 \frac{2}{5} \times 6$	15
5	Explain what ratio shows.	Ratio shows the relationship between two values. Ratio can also describe how one value is related to multiple values.
6	Complete the sentences.	a. 3, b. 1:3, c. 4
7	Complete the sentences.	a. 3, b. $\frac{2}{5}$, c. $\frac{3}{5}$
8	What is fraction: a. blue, b. red, c. green?	a. $\frac{1}{6}$, b. $\frac{2}{6}$, c. $\frac{3}{6}$
9	What is the ratio of red to blue counters?	3:2
10	Explain how this ratio and fraction are linked.	Ratio compares the size of quantities but fractions (or proportions) compare the relationship between two sets of quantities. The fraction shows 1 in every five parts whereas the ratio shows 1 part for every four. The total number of items being compared are the same (5) but the way the parts are described are different.
11	What is the ratio of plain to cheese and onion to prawn cocktail crisps?	3:4:3
12	What is the ratio of black to blue to red pens?	8:2:2 or 4:1:1
13	Is this correct? Explain.	Toby is incorrect. This shows he does not fully understand the connection between fractions and ratio. The correct fraction is $\frac{2}{5}$ as there are five counters in total and 2 are green.
14	A shop has a bargain box containing purple and red tops. $\frac{5}{9}$ of the tops are purple. Write as many ratio or fraction facts as you can about this statement.	For every 5 purple tops, there are 4 red tops. There are $\frac{4}{9}$ red tops. For every 4 red tops there are 5 purple tops. Pupils may identify that $\frac{5}{9}$ could be simplified. If they identify this, they may create alternative sentences such as 'For every 8 red tops, there are 10 purple tops.' Accept answers that reflect the original fraction of $\frac{5}{9}$.

Arithmetic

1. $\frac{9}{10} \times \frac{2}{5}$

2. $7 - 1.36$

3. 0.2×71

4. 3 and $\frac{1}{3} \times 5$

Practice: Calculating Ratio

5. Recap: Explain how you would represent this ratio on a bar model.



1:3

6. Mr Jones plants some flowers. For every 3 roses, he plants 2 daisies. He plants 15 roses. How many daisies did he plant? How many flowers did he plant altogether?



7. Bhupinder mixes 5 parts blue paint with 2 parts white paint. He starts with 10 parts of blue paint. How much white paint will he need? How many parts is that altogether?

8. In a packet of sweets, there are 3 lemon for every 4 lime. There are 12 lime sweets. How many lemon sweets are there? How many lemon and lime sweets are there altogether?

9. In a classroom, there are 6 boys for every 7 girls. There are 26 children in the class. How many boys are there? How many girls?

10. Explain how you found the answers in question 9.



11. In a bag, there are 2 red marbles for every 5 blue marbles. There are 21 marbles altogether. How many red marbles are there? How many blue?

12. In a pencil case, the ratio of red to blue to yellow pencils is 2:3:4. There are 18 pencils altogether. How many of each colour are there?

13. Lola says that the answer to question 12 is red = 2, blue = 3 and yellow = 4. Is she correct? Explain.



Challenge

14. One salad is made from lettuce leaves, cucumber slices and tomatoes in a ratio of 6:4:5. Use this ratio to solve these questions.

- If there are 100 tomatoes, how many lettuce leaves and cucumber slices are needed?
- If there are 92 cucumber slices, how many lettuce leaves and tomatoes are needed?
- There are a total of 900 items (lettuce leaves + cucumber slices + tomatoes) altogether. How many of each item is there?



You might want to talk to an adult



Spot the mistake

Answers

Q no.	Question	Answer
1	$\frac{9}{10} \times \frac{2}{5}$	$\frac{18}{50}$ or $\frac{9}{25}$
2	$7 - 1.36$	x
3	0.2×71	x
4	3 and $\frac{1}{3} \times 5$	$\frac{50}{3}$ or 16 and $\frac{2}{3}$
5	Explain how you would represent this ratio on a bar model.	Pupils should demonstrate that the bar model needs to have four parts in total. This could be one bar with three parts the same and one part different or it could be two bars, one on top of the other, one with one part and the other with three parts. The parts in the bars should all be equal sizes.
6	How many daisies did he plant? How many flowers did he plant altogether?	10, 25
7	How much white paint will he need? How many parts is that altogether?	4, 14
8	How many lemon sweets are there? How many lemon and lime sweets are there altogether?	9, 21
9	How many boys are there? How many girls?	12, 14
10	Explain how you found the answers in question 9.	Answers will vary depending on the method the pupil has used. This question is designed to help the pupils develop their metacognition (thinking about thinking). This should also highlight if a pupil is using an inefficient method.
11	How many red marbles are there? How many blue?	6, 15
12	How many of each colour are there?	Red – 4, blue – 6, yellow – 8
13	Is she correct? Explain.	Lola is incorrect as she has not used the fact there are 18 pencils. This indicates that Lola does not understand that, like fractions, ratios can be simplified.
14	One salad is made from lettuce leaves, cucumber slices and tomatoes in a ratio of 6:4:5. Use this ratio to solve these questions.	a. 120 lettuce leaves, 80 cucumber slices. b. 138 lettuce leaves, 115 tomatoes. c. 360 lettuce leaves, 240 cucumber slices, 300 tomatoes

Arithmetic

1. $\frac{7}{8} \times \frac{4}{9}$

2. $12 - 3.79$

3. 15×2.3

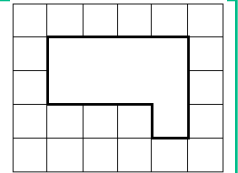
4. $2 \frac{3}{4} \times 4$

Practice: Using Scale Factors

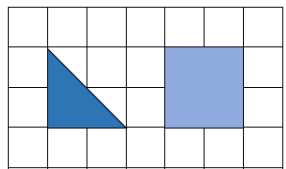
5. Recap: Explain what 'increase by a scale factor of 2' means.



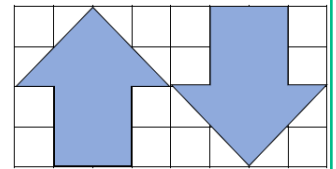
6. Copy the shape onto squared paper and draw it twice as big.



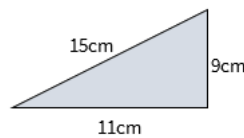
7. Copy the shapes onto squared paper and draw them three times as big.



8. Copy the shapes onto squared paper and draw them twice as big.



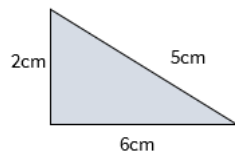
9. Enlarge this triangle by scale factor 2.



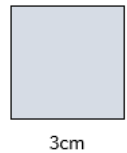
10. When enlarging shapes, do the angles also increase? Explain.



11. Enlarge this triangle by scale factor 3.



12. Enlarge this square by scale factor 4.



13. Mason has enlarged a square with sides of 10cm by a scale factor of 4. He says the new sides measure 14cm. Is this correct? Explain.



Challenge

14. Louise and Alister are making dinner. The recipe is for 4 people. Rewrite the ingredient list for a. 2 people, b. 3 people.

Pasta - 450g

Basil - 10 leaves

Tinned tomatoes - 2 tins (800g)

Garlic - 1 clove

Cheese - 15g



You might want to talk to an adult

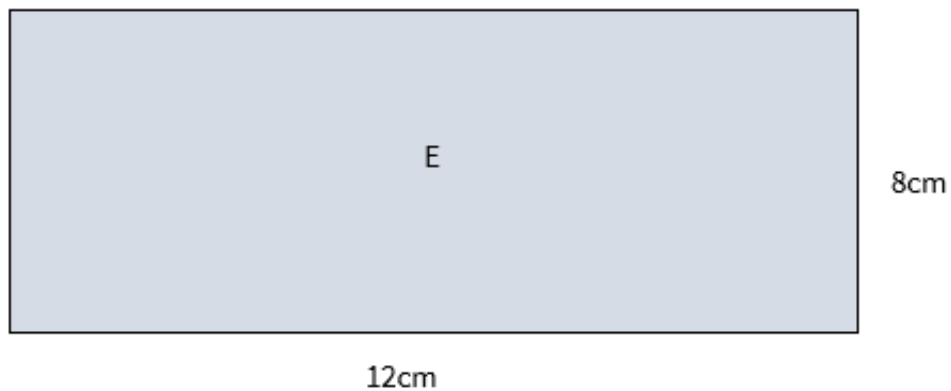
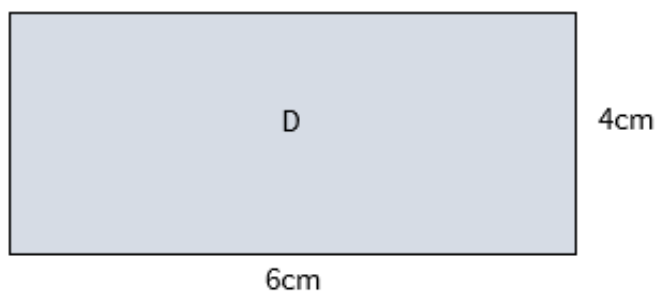
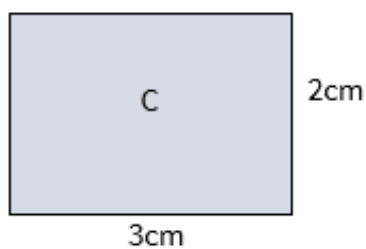
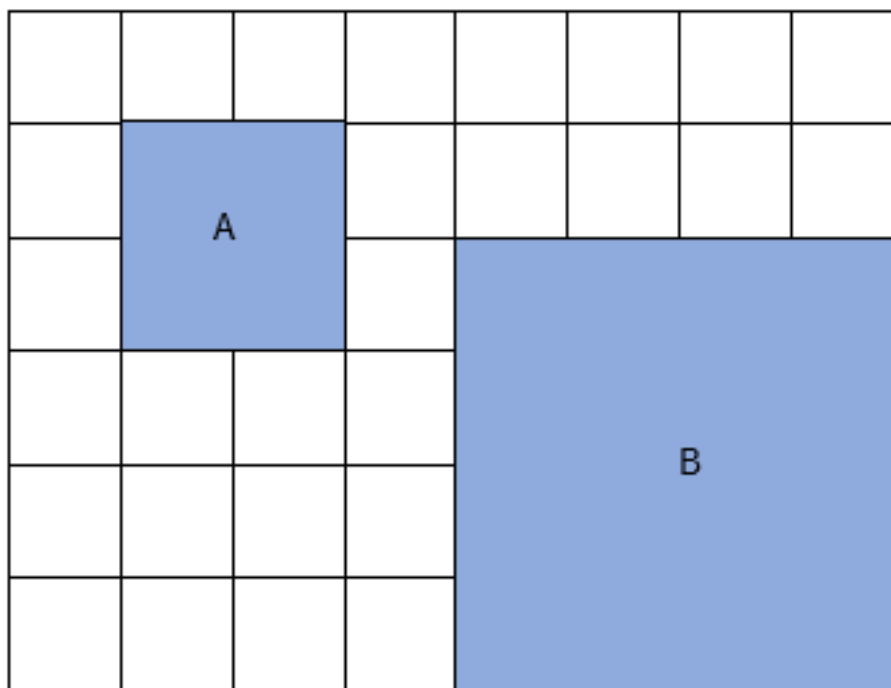


Spot the mistake

Answers

Q no.	Question	Answer
1	$\frac{7}{8} \times \frac{4}{9}$	$\frac{28}{72}$
2	$12 - 3.79$	8.21
3	15×2.3	34.5
4	$2 \frac{3}{4} \times 4$	11
5	Explain what 'increase by a scale factor of 2' means.	With shapes - This means the dimensions of the shape need to all be multiplied by 2. With numbers - This means the number needs to be multiplied by 2. An error that could be made with this is believing it means adding 2.
6	Copy the shape onto squared paper and draw it twice as big.	The sides should all be double the original.
7	Copy the shapes onto squared paper and draw them three times as big.	The sides should all be three times the original.
8	Copy the shapes onto squared paper and draw them twice as big.	The sides should all be double the original.
9	Enlarge this triangle by scale factor 2.	Correctly drawn (30cm, 18cm, 22cm)
10	When enlarging shapes, do the angles also increase? Explain.	Angles do not change when a shape is enlarged. Some pupils may believe that the angles would enlarge, this can be disproved by looking at question 9. In question 9, the triangle is a right angle triangle. The right angle does not change when they enlarge it. The angles do not increase as the angles at which the lines meet has not changed.
11	Enlarge this triangle by scale factor 3.	Correctly drawn (6cm, 15cm, 18cm)
12	Enlarge this square by scale factor 4.	12 x 12cm
13	Is this correct? Explain.	Mason is incorrect. He has added 4 to the length instead of increasing by a scale factor of 4.
14	Louise and Alister are making dinner. The recipe is for 4 people. Rewrite the ingredient list for a. 2 people, b. 3 people. Pasta - 450g Basil - 10 leaves Tinned tomatoes - 2 tins (800g) Garlic - 1 clove Cheese - 15g	a. Pasta - 225g Basil - 5 leaves Tinned tomatoes - 1 tin (400g) Garlic - ½ clove Cheese - 7.5g b. Pasta - 337.5g Basil - 7.5 leaves Tinned tomatoes - 1 ½ tins (600g) Garlic - ¾ clove Cheese - 11.25g

Shapes



Arithmetic

1. $\frac{3}{8} \times \frac{1}{9}$

2. $9 - 7.02$

3. 13×4.5

4. 2 and $\frac{2}{3} \times 3$

Practice: Calculating Scale Factors

5. Recap: Explain how to calculate a scale factor of an enlarged shape.



6. Complete the sentences.

Shape B is ? times as big as shape A.
Shape A has been enlarged by scale factor ?.

7. Look at the three rectangles. The scale factor of enlargement for each set of shapes is:

a. C to D b. D to E c. C to E

8. Look at the three rectangles. The scale factor of enlargement for each set of shapes is:

a. D to C b. E to D c. E to C

9. A square has been enlarged by scale factor 3. One of its sides now measures 15cm.

What did it measure before?

10. Explain what 'similar' means in mathematics.



11. A triangle has 3 sides measuring 7cm, 8cm and 9cm. It's enlarged by scale factor 5.

What do the sides measure now?

12. A square has an area of 4cm^2 . It is enlarged by scale factor 3.

What is its new area?

13. A square with sides of 6cm is enlarged to have side of 36cm. Tim says this is a scale factor of 5.

Explain the mistake.



Challenge

14. Draw a triangle. Enlarge it by a scale factor of 3.

Use the new triangle and enlarge it by a scale factor of 5.

Use the new triangle and enlarge it by a scale factor of 1.5.

Label the measures of each new triangle.



You might want to talk to an adult



Spot the mistake

Answers

Q no.	Question	Answer
1	$\frac{3}{8} \times \frac{1}{9}$	$\frac{3}{72}$ or $\frac{1}{24}$
2	$9 - 7.02$	1.98
3	13×4.5	58.5
4	2 and $\frac{2}{3} \times 3$	8
5	Explain how to calculate a scale factor of an enlarged shape.	Pupils should find the measures of their original shape and the enlarged shape. From there, they need to calculate how much bigger one shape is compared to the other. This will provide the scale factor.
6	Complete the sentences	2, 2
7	Calculate the scale factors	a. 2, b. 2, c. 4
8	Calculate the scale factors	a. $\frac{1}{2}$, b. $\frac{1}{2}$, c. $\frac{1}{4}$
9	What did it measure before?	5cm
10	Explain what 'similar' means in mathematics.	'Similar' means that shapes do not just share common properties, similar means they are exact enlargements. This could be an exact enlargement of a shape or an exact enlargement of a number.
11	What do the sides measure now?	35cm, 40cm, 45cm
12	What is its new area?	36cm ²
13	Explain the mistake.	Tim is wrong. He has completed the calculation incorrectly. This answer shows an understanding of how to find a scale factor (in this example, 36cm divided by 6cm). Tim has made a mistake when completing this and found the answer to be 5 instead of 6. It is important that pupils learn to check their answers carefully to avoid mistakes.
14	<p>Draw a triangle. Enlarge it by a scale factor of 3.</p> <p>Use the new triangle and enlarge it by a scale factor of 5.</p> <p>Use the new triangle and enlarge it by a scale factor of 1.5.</p> <p>Label the measures of each new triangle.</p>	Answers will vary depending on the dimensions of the starting triangle.