



<https://whiterosemaths.com/homelearning/year-6/>

White Rose Hub online video & BBC Bitesize Maths lessons

This week we are on week 10 on the White Rose Hub website. We are revising ratio which we covered at the beginning of lock down. Now that most of Year 6 are back in school, we wanted to make sure that you have a good understanding of this topic. Make sure you watch the video and try the practice questions as you go before you try the sheet. There are also some expected and greater depth questions for you to try as well.

Challenge:

Each day, there are some optional Greater Depth challenge questions linked to each lesson and you can also watch the BBC Bitesize Maths lesson for that day for extra learning. Also, I have included a greater depth arithmetic test this week as many of you are scoring close to 30/30. Challenge yourselves and be ready for Year 7.

Support:

Ask an adult to watch the video with you and help you to complete the questions you can do. You might also find it helpful to watch the BBC Bitesize lesson as well. If this is still too tricky, then don't worry complete the 'I need more help' maths learning pack instead and complete the easier task.



BBC Bitesize daily maths lessons

<https://www.bbc.co.uk/bitesize/dailylessons>



<https://play.numbots.com/#/account/school-login/2875>



<https://play.ttrockstars.com/auth/school/student/2875>

Extra challenge

Here is a chance to play a version of the classic **Countdown Game**. The challenge is to use the numbers available and the four standard operations (addition, subtraction, multiplication and division) to hit the target.

Each card can only be used once but it may not be necessary to use all the cards.

<https://nrich.maths.org/6499>



What is Ratio?

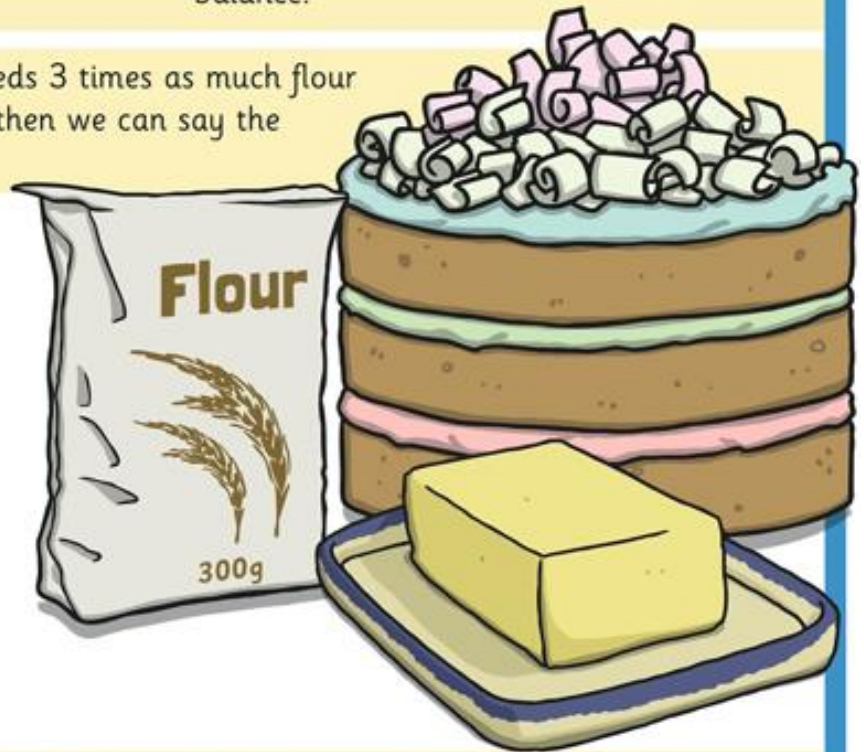


Ratio

Ratio is all about comparing 2 numbers.

It is usually used when working with quantities as it helps you keep them in balance.

If a cake mixture needs 3 times as much flour compared to butter then we can say the ratio is 3:1.



If we need to use 100g of butter, then there still needs to be 3 times as much flour, which would be 300g.

If we increased the quantity to 900g of flour, how much butter is needed?



What is the ratio of red paint to blue paint?

Introducing the ratio symbol

White Rose Maths

- 1 The ratios show shaded parts to non-shaded parts. Match the ratios, statements and bar models.

2:3	five to two	
5:2	three to two	
2:5	two to three	
3:2	two to five	

- 2



The ratio of purple to yellow is 5:4

Mo

It is 4:5

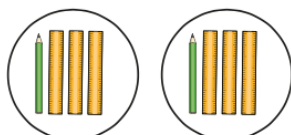


Alex

Who is correct? _____

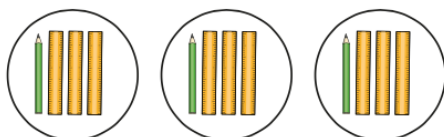
Explain your answer.

- 5 Here are some rulers and some pencils.



- a) What is the ratio of pencils to rulers? :

- b) Here are some more rulers and pencils.



The ratio of pencils to rulers is the same as in part a).

Ron

Ron is wrong because there are more pencils and more rulers.



Dora

Who is correct? _____

Explain your answer.

- 3 Dani has some counters, cubes and marbles. Complete the sentences.

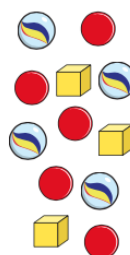
The ratio of counters to marbles is :

The ratio of marbles to cubes is :

The ratio of cubes to counters is :

The ratio of counters to cubes is :

The ratio of counters to cubes to marbles is : :



- 4 Brett has drawn some triangles and squares.

The ratio of triangles to squares is 1:3

- a) Are there more triangles or more squares? _____

Explain how you know.

- b) Brett has drawn more than 10 shapes.

Draw what Brett might have drawn.

- 6 The ratio of horses to chickens in a field is 2:5

Here are the horses. Draw the chickens.



- 7 Shade squares so that the ratio of shaded to non-shaded squares is 1:4

a)

b)

c)

- 8 A box contains dark, white and milk chocolates.

$\frac{3}{8}$ of the box are dark chocolates.

$\frac{1}{2}$ of the box are milk chocolates.

The rest are white chocolates.

What does each ratio represent?

- a) 1:3

- b) 4:1

- c) 3:5



Introducing the ratio symbol



- 1 The ratios show shaded parts to non-shaded parts.
Match the ratios, statements and bar models.

2:3 five to two

5:2 three to two

2:5 two to three

3:2 two to five

- 2



The ratio of purple to yellow is 5:4

Mo

It is 4:5

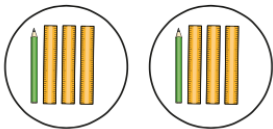


Alex

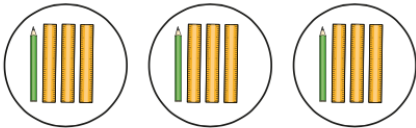
Who is correct? Mo
Explain your answer.

There are 5 purple and 4 yellow.

- 5 Here are some rulers and some pencils.



- a) What is the ratio of pencils to rulers? 1:3
b) Here are some more rulers and pencils.



The ratio of pencils to rulers is the same as in part a).

Ron

Ron is wrong because there are more pencils and more rulers.



Dora

Who is correct? Ron
Explain your answer.

There are still 3 rulers for every 1 pencil.

- 3 Dani has some counters, cubes and marbles.
Complete the sentences.

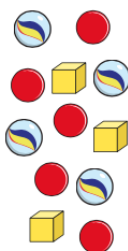
The ratio of counters to marbles is 5 : 4

The ratio of marbles to cubes is 4 : 3

The ratio of cubes to counters is 3 : 5

The ratio of counters to cubes is 5 : 3

The ratio of counters to cubes to marbles is 5 : 3 : 4



- 4 Brett has drawn some triangles and squares.

The ratio of triangles to squares is 1:3

- a) Are there more triangles or more squares? Squares
Explain how you know.

For every 1 triangle there are 3 squares.

- b) Brett has drawn more than 10 shapes.
Draw what Brett might have drawn.

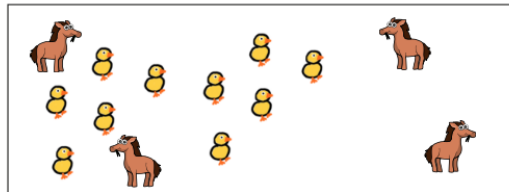
e.g.



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- 6 The ratio of horses to chickens in a field is 2:5

Here are the horses. Draw the chickens.



- 7 Shade squares so that the ratio of shaded to non-shaded squares is 1:4



- 8 A box contains dark, white and milk chocolates.

$\frac{3}{8}$ of the box are dark chocolates.

$\frac{1}{2}$ of the box are milk chocolates.

The rest are white chocolates.

What does each ratio represent?

a) 1:3
white to dark

b) 4:1
milk to white

c) 3:5
dark to not dark



Additional task

Lesson 1 29.06.20 – Introducing the ratio symbol

Expected - fluency, problem solving & reasoning

Introducing the Ratio Symbol

5a. True or false? The ratio of bananas to apples is 4:3.



VF

6a. Match the statements that mean the same thing.

A. 1:2 red counters to blue counters

1. There are twice as many blue counters as red counters.

B. 3:2 red counters to blue counters

2. For every 2 blue counters, there are 3 red counters.

C. 2:3 red counters to blue counters

3. For every 2 red counters, there are 3 blue counters.



VF

7a. Write a statement to describe the ratio of 6:8 shown below.



VF

8a. Circle the odd one out by matching the ratios to the description.



1:3

rings to necklaces to watches

1:3:2

rings to necklaces

3:2:1



VF

Introducing the Ratio Symbol

4a. This machine turns sentences into ratios. Could this ratio be correct?

There are twice as many pears as oranges. For every 2 oranges, there are 3 apples.



3:2:4

Convince me.



R

5a. Each child's statement is correct.



Cole

The ratio is 4:3.



Elise

The fraction is $\frac{4}{13}$.

Explain how this is possible.



R

6a. In a bag of 10 sweets, $\frac{3}{5}$ are red. The rest are green or blue.

Write down 3 solutions for the possible ratio of red to blue to green sweets.

Draw counters to support your answers.



PS



Introducing the Ratio Symbol

9a. True or false? The ratio of rings to watches to necklaces is 2:1:3.



VF

10a. Match the statements that mean the same thing.

A. 1:3:5 apples to oranges to pears

1. For every apple, there are 2 oranges and 4 pears.

B. 5:3:1 apples to pears to oranges

2. For every apple, there are 5 pears and 3 oranges.

C. 1:2:4 apples to oranges to pears

3. For every orange, there are 5 apples and 3 pears.



VF

11a. Write a statement to describe the ratio of 1:3:4 shown below.



VF

12a. Circle the odd one out by matching the ratios to the description.



2:2:5

corn to peas to carrots

2:5

corn to carrots

5:2:2



VF

Introducing the Ratio Symbol

7a. This machine turns sentences into ratios. Could this ratio be correct?

$\frac{3}{8}$ of a bag of sweets are red. For every 2 blue sweets, there are 3 green sweets.



Convince me.



R

8a. Each child's statement is correct.



Leemar

The ratio is 2:3.



Persephone

The fraction is $\frac{1}{3}$.



Explain how this is possible.



R

9a. In a class of 30 children, $\frac{3}{10}$ have a pet dog. The rest either have a pet cat or have no pets. More children have a pet than don't have a pet.

Write down 3 solutions for the possible ratio of dogs to cats to none.

Draw counters to support your answers.



PS



Answers

Expected

- 5a. False; it is 3:4.
- 6a. A: 1; B: 2; C: 3.
- 7a. There are 6 corn for every 8 carrots.
- 8a 3:2:1 is the odd one out.

Greater Depth

- 9a. False; it is 1:2:3.
- 10a. A: 2; B: 3; C: 1.
- 11a. For every plain sock, there are 3 spotty and 4 striped.
- 12a. 5:2:2 is the odd one out.

Expected

- 4a. Yes because the ratio of apples to oranges to pears would be 3:2:4.
- 5a. Cole is describing the ratio of rectangles to triangles. Elise is describing the proportion of shapes that are rectangles.
- 6a. Various answers, for example: 6:1:3, 6:2:2, 6:3:1

Greater Depth

- 7a. Yes because the ratio of red to blue to green sweets would be 3:2:3.
- 8a. Leemar is describing the ratio of circles to trapeziums. Persephone is describing the proportion of the shapes that are trapeziums.
- 9a. Various answers, for example: 9:20:1, 9:19:2, 9:18:3



Calculating ratio



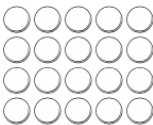
1 Eva is baking cakes and cookies.
For every 1 cake, she will bake 2 cookies.



a) If Eva bakes 3 cakes, how many cookies will she bake?

b) If Eva bakes 10 cookies, how many cakes will she bake?

2 The ratio of red to yellow counters is 2:3
There are 20 counters in total.
How many counters of each colour are there?
You can colour the counters to help you.



yellow red

6 a) Huan is making a drink by mixing 1 part juice with 5 parts water.
Complete the table to show the amounts he would need to use.

Juice	Water
1 litre	5 litres
2 litres	
4 litres	
100 ml	
200 ml	
300 ml	
	30 litres
	750 ml

b) Huan makes 1 litre 500 ml of drink in total.
How much juice and water does he need to use?

juice water

3 Tom has 5 green cubes for every 3 yellow cubes.
He has 16 cubes in total.
Draw a diagram to represent this.

4 Esther is building a tower of cubes.
The ratio of red to yellow cubes is 3:1
The tower has 6 yellow cubes. How many red cubes are there?

5 Nijah plays 21 games of chess.
For every 2 games she wins, she loses 5 games.
How many more games does she lose than win?

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7 A group of students study French or German in the ratio 3:7
a) Which subject has the most students? _____
b) Draw a diagram to represent this.

c) There are 80 students in total.
How many more students study German than French?

8 Describe a situation for each bar model.

a)

green	<div><div></div><div></div><div></div><div></div></div>	} 28
blue	<div><div></div><div></div></div>	

b)

	<div><div></div><div></div><div></div><div></div></div>	28
green	<div><div></div><div></div><div></div><div></div></div>	
blue	<div><div></div><div></div></div>	

c)

green	<div><div></div><div></div><div></div><div></div></div>	28
blue	<div><div></div><div></div></div>	

Compare answers with a partner.
What is the same and what is different?



Calculating ratio

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- 1 Eva is baking cakes and cookies.
- For every 1 cake, she will bake 2 cookies.



a) If Eva bakes 3 cakes, how many cookies will she bake?

6

b) If Eva bakes 10 cookies, how many cakes will she bake?

5

- 2 The ratio of red to yellow counters is 2:3
- There are 20 counters in total.
- How many counters of each colour are there?
- You can colour the counters to help you.



yellow 12 red 8



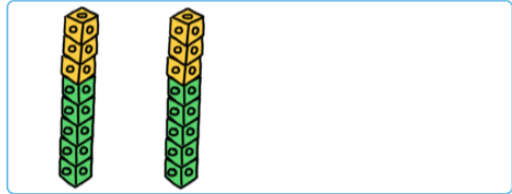
- 6 a) Huan is making a drink by mixing 1 part juice with 5 parts water.
- Complete the table to show the amounts he would need to use.

Juice	Water
1 litre	5 litres
2 litres	10 litres
4 litres	20 litres
100 ml	500 ml
200 ml	1 litre
300 ml	1.5 litres
6 litres	30 litres
150 ml	750 ml

- b) Huan makes 1 litre 500 ml of drink in total.
- How much juice and water does he need to use?

juice 250 ml water 1,250 ml

- 3 Tom has 5 green cubes for every 3 yellow cubes.
- He has 16 cubes in total.
- Draw a diagram to represent this.



- 4 Esther is building a tower of cubes.
- The ratio of red to yellow cubes is 3:1
- The tower has 6 yellow cubes. How many red cubes are there?

18

- 5 Nijah plays 21 games of chess.
- For every 2 games she wins, she loses 5 games.
- How many more games does she lose than win?

9

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- 7 A group of students study French or German in the ratio 3:7
- a) Which subject has the most students? German
- b) Draw a diagram to represent this.



- c) There are 80 students in total.
- How many more students study German than French?

32

- 8 Describe a situation for each bar model. Various answers.

a) green 4 blue 4 28

b) green 4 blue 4 28

c) green 4 blue 4 28

Compare answers with a partner.
What is the same and what is different?



Additional task

30.06.20 Lesson 2

Calculating ratio

Expected - fluency, problem solving & reasoning

Calculating Ratio

4a. Use the image below to complete the ratio statements.



For every ____ apples, there are ____ bananas.

:

If there are 12 apples, how many bananas will there be?



VF

5a. There are 28 pieces of fruit on a plate. For every 4 strawberries, there are 3 raspberries. Use the bar model to help you calculate:

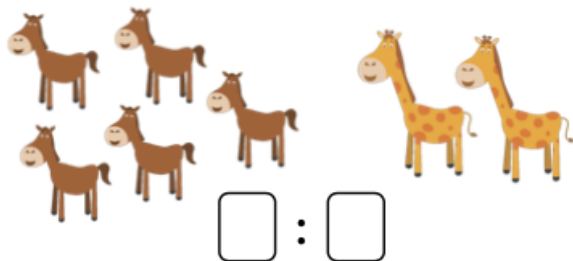
How many strawberries altogether?

How many raspberries altogether?



VF

6a. What is the ratio of horses to giraffes?



:

Use the ratio to calculate how many animals there will be altogether if there are 20 horses.

20 horses

giraffes

animals altogether



VF

Calculating Ratio

4a. Fred is catering for a large party.

For every 2 cheese pizzas, he makes 3 ham pizzas.

There are 60 people in the party, $\frac{1}{3}$ of the people want a cheese pizza.

How many pizzas does Fred need to make altogether?

How many ham pizzas will he make?



PS

5a. A florist is arranging flowers. She wants to arrange the flowers using the ratio 3 yellow flowers to every 1 red flower.

Have the flowers been arranged correctly?



Explain your answer.



R

6a. For every 4 boys in the class, there are 3 girls. There are 16 boys altogether.

Half of the boys are out of the classroom one afternoon.

What is the new ratio of boys to girls?

What is the new total number of pupils?



PS



Calculating Ratio

7a. Use the image below to complete the sentence and simplify the ratio statement.



For every ____ strawberry buns, there are ____ cherry buns and ____ raspberry buns.

: :

If there are 12 strawberry buns, how many cherry and raspberry buns will there be?



VF

8a. There are 24 goals scored during a match. For every 3 goals scored by the home team, there is 1 goal scored by the away team. Use the bar model to help you calculate:

How many home goals altogether?

How many away goals altogether?



VF

9a. What is the simplified ratio of crisps to chocolate to sweets?

There are 4 bags of crisps for every 8 chocolates and 2 sweets.

: :

Use the ratio to calculate how many treats there will be altogether if there are 12 bags of crisps.

chocolates
 sweets
 treats altogether



VF

Calculating Ratio

7a. Manjit is organising his work clothes. For every 2 ties, there are 8 shirts and 4 suits.

What is the simplified ratio of ties to shirts to suits?

He has 28 items in his work wardrobe, but decides to get rid of half of his shirts.

How many shirts does he now have?

How many ties and suits could he get rid of to keep the ratio the same?



PS

8a. A shopkeeper is organising the drinks shelf. She wants the drinks to follow the ratio 3 cherry to every 2 cola and 1 soda.

Have the drinks been arranged correctly?



Explain your answer.



R

9a. For every 12 geese on a farm, there are 6 sheep and 4 goats. There are 44 animals on the farm altogether.

One third of the geese go missing one morning.

What is the new simplified ratio of geese to sheep and goats?

What is the new total number of animals?



PS



Answers

Expected

- 4a. 4 apples, 8 bananas (accept 1 apple, 2 bananas. Ratio = 4:8 (1:2). 24 bananas.
5a. 16 strawberries, 12 raspberries
6a. 5:2. 8 giraffes, 28 animals altogether.

Greater Depth

- 7a. 4 strawberry, 6 cherry and 2 raspberry. Ratio = 2:3:1. 18 cherry and 6 raspberry.
8a. 18 home goals, 6 away goals.
9a. 2:4:1. 24 chocolates and 6 sweets, 42 treats altogether.

Expected

- 4a. 50 pizzas altogether, 30 ham pizzas.
5a. No because there are 1 too many red flowers (or not enough yellow flowers).
6a. 8:12 (accept 2:3), 20 pupils (8 boys, 12 girls).

Greater Depth

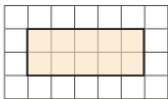
- 7a. 1:4:2, 8 shirts, 2 ties and 4 suits.
8a. No there are 1 too many sodas.
9a. 4:3:2, 36 animals (16 geese, 12 sheep, 8 goats).



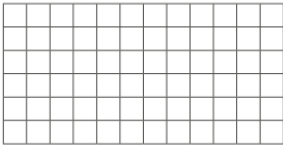
Using scale factors



1 a) Here is a rectangle.



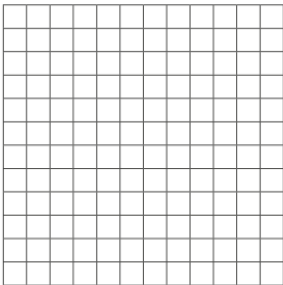
Draw another rectangle where each side is twice as big.



b) Here is a square.

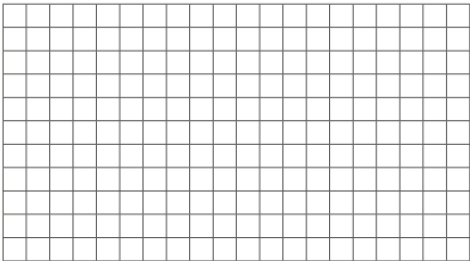
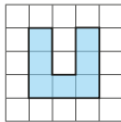
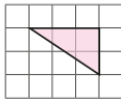


Draw another square where each side is 4 times as big.



2 a) Explain what it means for a shape to be enlarged by a scale factor of 2

b) Enlarge the shapes by a scale factor of 2



3 Complete the sentence.

A shape in which each side has tripled in size has been enlarged by a scale factor of

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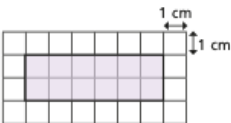
4 Here is a rectangle.



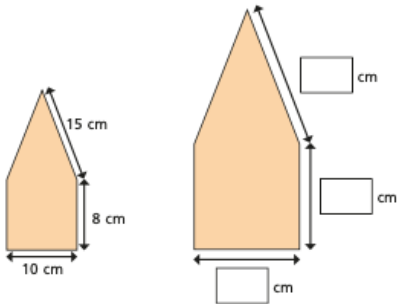
- a) Measure the side lengths of the rectangle and label them on the diagram.
- b) Enlarge the rectangle by a scale factor of 3 and label the side lengths.



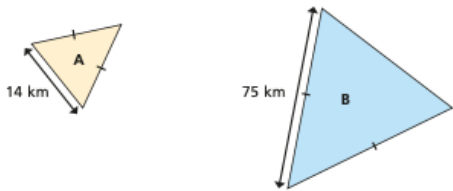
5 The sides of the rectangle are increased by a scale factor of 2
What is the perimeter of the new shape?

 cm

6 The shape has been enlarged by a scale factor of $1\frac{1}{2}$
Fill in the dimensions of the new shape.



7 Triangle A has been enlarged by a scale factor of 5 to make triangle B.
Find the perimeter of each triangle.



perimeter of A =

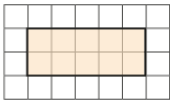
perimeter of B =



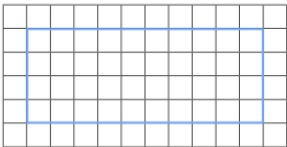
Using scale factors

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- 1 a) Here is a rectangle.



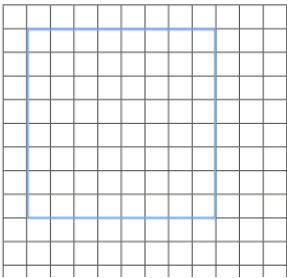
Draw another rectangle where each side is twice as big.



- b) Here is a square.



Draw another square where each side is 4 times as big.



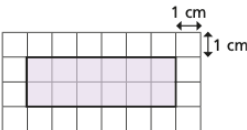
- 4 Here is a rectangle.



- a) Measure the side lengths of the rectangle and label them on the diagram.
b) Enlarge the rectangle by a scale factor of 3 and label the side lengths.



- 5 The sides of the rectangle are increased by a scale factor of 2
What is the perimeter of the new shape?

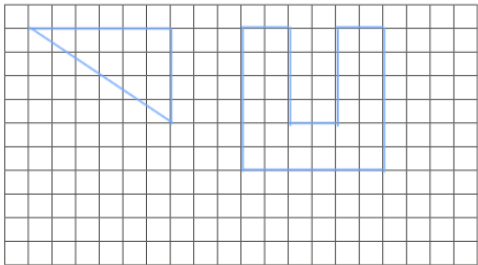
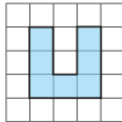
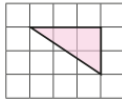


32 cm

- 2 a) Explain what it means for a shape to be enlarged by a scale factor of 2

All of the side lengths are twice as big

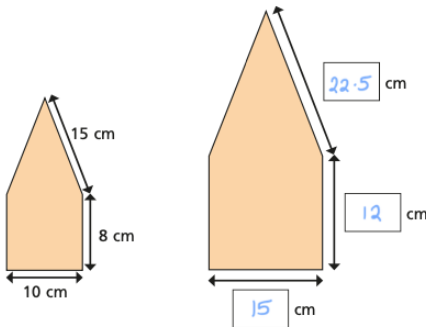
- b) Enlarge the shapes by a scale factor of 2



- 3 Complete the sentence.

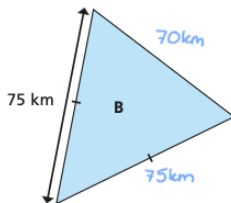
A shape in which each side has tripled in size has been enlarged by a scale factor of 3

- 6 The shape has been enlarged by a scale factor of $1\frac{1}{2}$
Fill in the dimensions of the new shape.



- 7 Triangle A has been enlarged by a scale factor of 5 to make triangle B.

Find the perimeter of each triangle.



perimeter of A = 44 km perimeter of B = 220 km



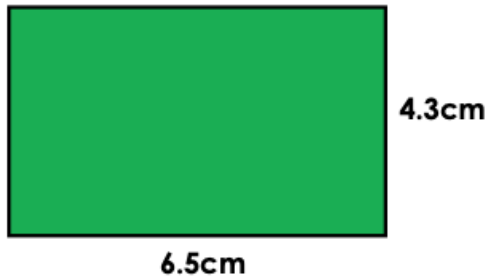
Additional task

01.07.20 Lesson 3 - Using scaling factors

Expected - fluency, problem solving & reasoning

Using Scale Factors

5a. Enlarge this shape by a scale factor of 2.



Not to scale

VF

6a. Jake says,



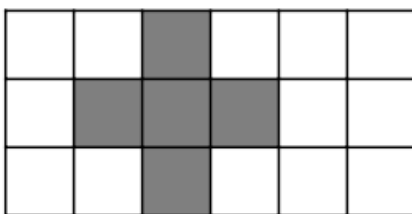
A scale factor of 3.5 means you multiply each side of the original shape by 3.5.

Is he correct?



VF

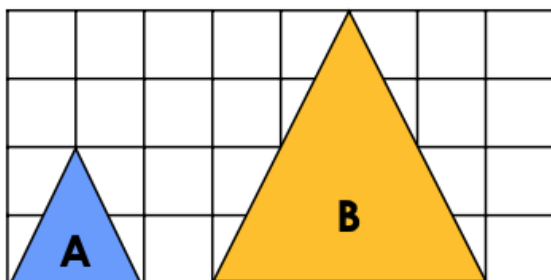
7a. Copy this shape onto squared paper. Draw it using a scale factor of 3.



VF

8a. True or false?

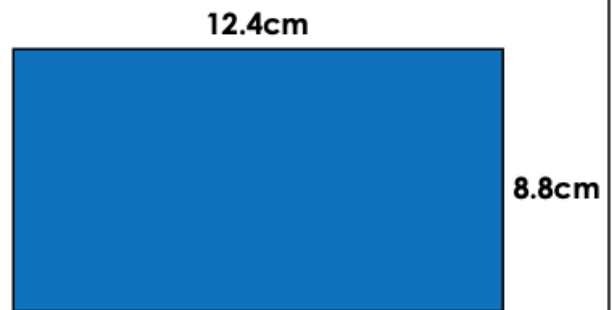
Shape A has increased by a scale factor of 2 to create shape B.



VF

Using Scale Factors

4a. This shape has been enlarged by a scale factor of 4. Find the perimeter of the original shape.



Not to scale

PS

5a. Mohammad says,



If I enlarge the shape by a scale factor of 4, the new perimeter will be 58.4cm.

4.3cm



3 cm

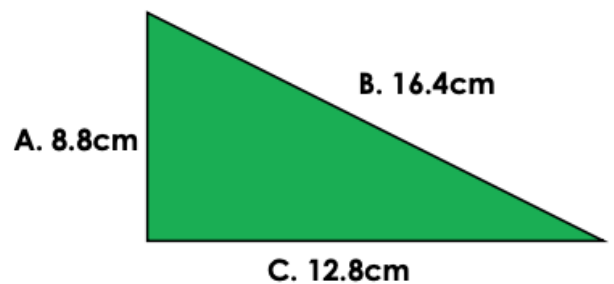
Is he correct? Explain your answer.



Not to scale

R

6a. This triangle was enlarged by a scale factor of four.



What were the measurements of the original triangle?



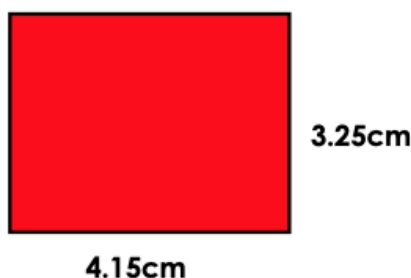
Not to scale

PS



Using Scale Factors

9a. Enlarge this shape by a scale factor of 3.



Not to scale

VF

10a. Keeley says,



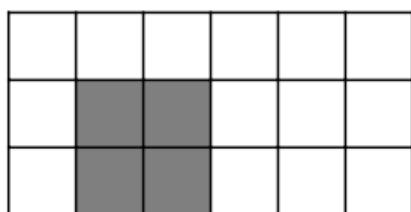
A scale of factor of 1.5 means you multiply each side of the original shape by 2.

Is she correct?



VF

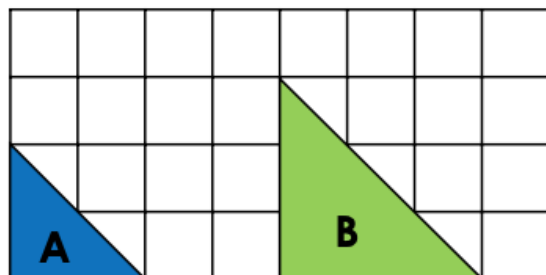
11a. Copy this shape onto squared paper. Draw it using a scale factor of a half.



VF

12a. True or false?

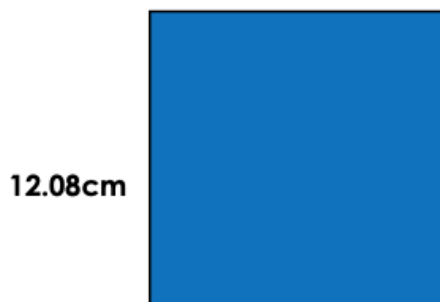
Shape A has been increased by a scale factor of 2 to create shape B.



VF

Using Scale Factors

7a. This square has been enlarged by a scale factor of 4. Find the perimeter of the original shape.



Not to scale

PS

8a. Ashleigh says,



If I enlarge the shape by a scale factor of 3.5, the new area will be 112.7cm^2 .

4.6cm



2cm

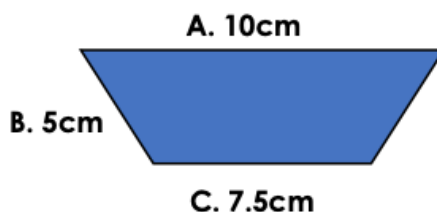
Is she correct? Explain your answer.



Not to scale

R

9a. This shape was enlarged by a scale factor of 2.5.



What were the measurements of the original shape?



Not to scale

PS



Answers

Expected

5a. A rectangle; height 8.6cm; width 13cm

6a. Yes

7a. The shape should be reproduced using a scale factor of 3. (45 squares in total)

8a. True

Greater Depth

9a. A rectangle; height 9.75cm; width 12.45cm

10a. No. A scale factor of 1.5 means each side of the original shape is multiplied by 1.5.

11a. The square should be reproduced using a scale factor of 0.5; height 1 square; width 1 square (1 square in total)

12a. False. It has been increased by a scale factor of 1.5.

Expected

4a. 10.6cm

5a. Yes because the perimeter of the original shape is 14.6cm. $14.6 \times 4 = 58.4\text{cm}$

6a. A: 2.2cm, B: 4.1cm, C: 3.2cm

Greater Depth

7a. 12.08cm

8a. Yes because the sides increase to 16.1cm and 7cm. $16.1\text{cm} \times 7\text{cm} = 112.7\text{cm}^2$

9a. A: 4cm, B: 2cm, C: 3cm



Ratio and proportion problems

1 Whitney buys 6 cans of lemonade for £3

a) How much do 12 cans cost?

b) How much do 3 cans cost?

c) How much do 15 cans cost?



2 The ratio of red to green grapes in a bowl is 3:1

a) Explain what this means.

b) There are 12 more red grapes than green grapes.
What is the total number of grapes in the bowl?



4 Dexter has some 20p and 50p coins in a jar.

For every three 20p coins he has one 50p coin.

There are 12 coins in the jar in total.

How much money is in the jar?

5 A drink is made using 3 parts orange juice to 2 parts lemonade.

Esther makes 1.2 litres of this drink.

How much orange juice does she need?

 ml

6 Two shops sell the same cereal but in different-sized boxes.

Shop A 500 g of cornflakes £2.10

Shop B 750 g of cornflakes £3.30

Which shop is better value for money? Shop

Explain why.

3 Amir is making some chocolate chip biscuits.

He has this list of ingredients to make 6 biscuits.

Chocolate chip biscuits (makes 6)
120 g butter
72 g sugar
180 g plain flour
60 g chocolate chips

a) How much of each ingredient does Amir need to make 2 biscuits?

butter g

plain flour g

sugar g

chocolate chips g

b) How much of each ingredient does Amir need to make 10 biscuits?

butter g

plain flour g

sugar g

chocolate chips g

c) Amir has 240 g of chocolate chips.

What is the maximum number of biscuits he can make?

7 Dora draws two similar rectangles.

My larger rectangle is 4 times the size of the smaller one.



The perimeter of the larger rectangle is 48 cm.

The length and width of both rectangles are even numbers.

What is the largest possible area for the small rectangle?

 cm²

8 Aisha has two boxes of sweets.

- In the first box, the ratio of red sweets to green sweets is 3:1
- In the second box, for every 2 orange sweets there are 3 yellow sweets.
- There is the same number of sweets in each box.
- There are 12 yellow sweets in the second box.

How many sweets are in the first box?



Ratio and proportion problems



1 Whitney buys 6 cans of lemonade for £3

- a) How much do 12 cans cost? £6
- b) How much do 3 cans cost? £1.50
- c) How much do 15 cans cost? £7.50



2 The ratio of red to green grapes in a bowl is 3 : 1

- a) Explain what this means.
- For every 3 red grapes there is 1 green grape.
- b) There are 12 more red grapes than green grapes.
What is the total number of grapes in the bowl?

24

4 Dexter has some 20p and 50p coins in a jar.
For every three 20p coins he has one 50p coin.
There are 12 coins in the jar in total.
How much money is in the jar?

£3.30

5 A drink is made using 3 parts orange juice to 2 parts lemonade.
Esther makes 1.2 litres of this drink.
How much orange juice does she need?

720 ml

6 Two shops sell the same cereal but in different-sized boxes.

Shop A 500 g of cornflakes £2.10	Shop B 750 g of cornflakes £3.30
---	---

Which shop is better value for money? Shop A

Explain why.

3 Amir is making some chocolate chip biscuits.
He has this list of ingredients to make 6 biscuits.

Chocolate chip biscuits (makes 6)

120 g butter

72 g sugar

180 g plain flour

60 g chocolate chips

- a) How much of each ingredient does Amir need to make 2 biscuits?
- butter 40 g plain flour 60 g
- sugar 24 g chocolate chips 20 g
- b) How much of each ingredient does Amir need to make 10 biscuits?
- butter 200 g plain flour 300 g
- sugar 120 g chocolate chips 100 g
- c) Amir has 240 g of chocolate chips.
What is the maximum number of biscuits he can make?

24

7 Dora draws two similar rectangles.

My larger rectangle is 4 times the size of the smaller one.

The perimeter of the larger rectangle is 48 cm.

The length and width of both rectangles are even numbers.
What is the largest possible area for the small rectangle?

8 cm²

8 Aisha has two boxes of sweets.

- In the first box, the ratio of red sweets to green sweets is 3 : 1
 - In the second box, for every 2 orange sweets there are 3 yellow sweets.
 - There is the same number of sweets in each box.
 - There are 12 yellow sweets in the second box.
- How many sweets are in the first box?

20



Additional task

02.07.20 Lesson 4

Ratio & Proportion Problems Expected

Ratio and Proportion Problems

5a. Shape A has been enlarged by different scale factors to make shapes B, C and D.

Shape	Length	Width
A	3cm	4cm
B		12cm
C	15cm	
D	30cm	

Calculate the missing measurements.



VF

6a. True or false?

I need 50g of flour for every 10g of sugar.

If I have 600g of ingredients, I will have 500g of flour.



VF

7a. The ratio of strawberries to grapes is 3:2.

Pippa has 25 pieces of fruit in total.

Calculate the number of strawberries and grapes.



VF

8a. Jake is buying some paint.

The ratio of white to blue to green paint is 20:50:100.

If he buys 200 litres of blue paint, how much white and green paint will he need?



VF

Ratio and Proportion Problems

4a. Millie is decorating a cake.

She needs 3 packs of blue sweets for every 2 packs of chocolate buttons.

1 pack of blue sweets costs 75p.

1 pack of chocolate buttons costs 80p.

She has spent £7.70 in total.

How many packs of each has she bought?



PS

5a. A smoothie recipe serves 2 people. It says to use 3 cherries, 5 grapes and 2 bananas.

Jaxon says,



To serve 8 people I will need 44 pieces of fruit in total.

Harry says,



To serve 8 people I will need to use 20 grapes.

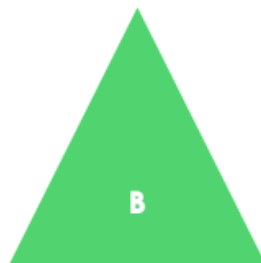
Who is correct? Explain your answer.



R

6a. Below are two equilateral triangles. Triangle B has been enlarged from triangle A by a scale factor of 5.

Calculate the perimeter of each triangle.



30cm

Not to scale



PS



Ratio and Proportion Problems

9a. Shape A has been enlarged by different scale factors to make shapes B, C and D.

Shape	Length	Height	Width
A	10.5cm	7cm	2.5cm
B	26.25cm		
C		49cm	
D	94.5cm		22.5cm

Calculate the missing measurements.



VF

10a. True or false?

I need 0.5m of ribbon for every 2m of blue and 3m of green fabric.

If I have 11m of supplies, I will have 7.5m of green fabric.



VF

11a. The ratio of cupcakes to donuts and cookies is 6:1:7

Sarah has 70 treats in total.

Calculate the number of cupcakes, donut and cookies.



VF

12a. Omar is buying baking ingredients.

The ratio of flour to sugar to butter is 125:150:90.

If he buys 750g of flour, how much sugar and butter will he need?



VF

Ratio and Proportion Problems

7a. Lucy is making photo frames using buttons. She needs 5 red buttons for every 3 blue and 4 yellow buttons.

The costs are as follows:

Red: 45p each
Blue: 90p each
Yellow: 25p each

She has spent £17.85 in total.

How many of each has she bought?



PS

8a. To create 10 cards the instructions say to use 20 straws, 50 sequins and 2 pots of glitter.

Lily says,



To make 3 cards I will need 6 straws, 15 sequins and two fifths of a pot of glitter.

Hafsa says,



To make 4 cards I will need 8 straws, 20 sequins and four fifths of a pot of glitter.

Who is correct? Explain your answer.



R

9a. Below are two isosceles triangles. Triangle B has been enlarged from triangle A by a scale factor of 2.5

Calculate the perimeter of each triangle.



A



B

17.5cm

12.5cm

Not to scale



PS



Answers

Expected

- 5a. B 9cm, C 20cm, D 40cm
- 6a. True
- 7a. 15 strawberries, 10 grapes
- 8a. 80L white, 400L green

Greater Depth

- 9a. B 17.5cm and 6.25cm, C 73.5cm and 17.5cm, D 63cm
- 10a. False. There will 6m of green fabric.
- 11a. 30 cupcakes, 5 donuts, 35 cookies
- 12a. 900g sugar, 540g butter

Expected

- 4a. 6 packs of blue sweets; 4 packs of chocolate buttons
- 5a. Harry is correct because the recipe has increased by a scale factor of 4 so there will be 12 cherries, 20 grapes and 8 bananas which is 40 pieces of fruit in total.
- 6a. A. $P = 18\text{cm}$, B. $P = 90\text{cm}$

Greater Depth

- 7a. 15 red, 9 blue and 12 yellow
- 8a. Hafsa is correct; she has found the amount needed for one card and increased this by a scale factor of 4.
- 9a. A. $P = 19\text{cm}$, B. $P = 47.5\text{cm}$

Year 6 Core Arithmetic Test 6

1	$3456 \times 0 =$
2	$189 \div 1 =$
3	$692 + 10 =$
4	$299 + 1 =$
5	$6 \times 8 =$
6	$805 - 49 =$
7	$99 \div 6 =$

Year 6 Core Arithmetic Test 6

8	$\begin{array}{r} 8647 \\ + 4755 \\ \hline \end{array}$
9	$8^2 =$
10	$\begin{array}{r} 258 \\ \times \quad 5 \\ \hline \end{array}$
11	$8 \times 5 \times 4 =$
12	$5.014 \times 10 =$
13	$3054 - 817 - 44 =$
14	$\frac{3}{5} = \frac{18}{?}$

Year 6 Core Arithmetic Test 6

15	$\begin{array}{r} 319 \\ \times 72 \\ \hline \end{array}$
16	$\frac{1}{7}$ of 602 =
17	$7.62 \times 7 =$
18	$0.03 \times 7 =$
19	5% of 4200 =
20	$343.1 \div 1000 =$
21	$0.2 = \frac{?}{50}$

Year 6 Core Arithmetic Test 6

22	$\frac{1}{6} \times \frac{1}{2} =$
23	$36 \overline{)869} =$
24	$\frac{5}{6} \times 24 =$
25	$87.34 - 7.8$
26	$\frac{1}{8} \div \frac{3}{4} =$
27	$6\frac{1}{6} - 2\frac{1}{7} =$
28	$\frac{1}{5} \div 2 =$



Year 6 Core Arithmetic Test 6

testbase

Mark scheme

1.	0	[1]	16.	86	[1]
2.	189	[1]	17.	53.34	[1]
3.	702	[1]	18.	0.21	[1]
4.	300	[1]	19.	210	[1]
5.	48	[1]	20.	0.3431	[1]
6.	756	[1]	21.	10	[1]
7.	16 r3 or 16.5 or $16\frac{3}{6}$ or $16\frac{1}{2}$	[1]	22.	$\frac{1}{12}$	[1]
8.	13 402	[1]	23.	For 2 marks:	[2]
9.	64	[1]		24 r5 or $24\frac{5}{36}$ or 24.1(38...)	
10.	1290	[1]		For 1 mark:	
11.	160	[1]		24 or evidence of either a long division method or short division method with only one error (carry figures must be seen in a short division method)	
12.	50.14	[1]	24.	20	[1]
13.	2193	[1]	25.	79.54	[1]
14.	30	[1]	26.	$\frac{7}{8}$	[1]
15.	For 2 marks: 22 968	[2]	27.	$4\frac{1}{42}$	[1]
			28.	$\frac{1}{10}$	[1]

For 1 mark:

$$\begin{array}{r}
 319 \\
 \times 72 \\
 \hline
 638 \\
 22330 \\
 \hline
 22968
 \end{array}$$

An error in one row, then added correctly, **or** an error in the addition

Year 6 Extension Arithmetic Test 6

1	$-9 + 15 =$
2	$301,900 - 1,000 - 1,000 =$
3	$888,777 + 55,555 =$
4	$\begin{array}{r} 780,003 \\ - 279,154 \\ \hline \end{array}$
5	$\begin{array}{r} 3092 \\ \times 7 \\ \hline \end{array}$
6	$? + 58,100 = 63,000$
7	$6,789 \div 7 =$
8	$40 \times 800 =$

Year 6 Extension Arithmetic Test 6

9	$440,000 + 95,000 =$
10	$9,900 - 2 =$
11	$50 \times 120 =$
12	$32,000 \div 80 =$
13	$50 + 20 \times 33 =$
14	$3,600 \div 4 + 90 =$
15	$5,869.1 \times 100 =$
16	$48,000 \div 400 =$

Year 6 Extension Arithmetic Test 6

17	$1^3 + 9^2 - 3^2 =$
18	$45.6 \div 1000 =$
19	$0.03 \times 7 =$
20	$178.6 + 1.512 =$
21	$\begin{array}{r} 93.78 \\ \times \quad 5 \\ \hline \end{array}$
22	$\frac{1}{8} \times \frac{1}{6} =$
23	$\frac{3}{4} - \frac{5}{12} =$
24	$40 - 36 \div 3 + 5 =$

Year 6 Extension Arithmetic Test 6

25	$385.1 - 8.112 =$
26	$\begin{array}{r} 497 \\ \times 83 \\ \hline \end{array}$
27	$0.2 = \frac{?}{50}$
28	$12\% = \frac{?}{25}$
29	$\frac{5}{6} \times 8 =$
30	$\begin{array}{r} 1,298 \\ \times \quad 47 \\ \hline \end{array}$
31	$98.8 \div 8 =$
32	$34\% \text{ of } 460 =$



Year 6 Extension Arithmetic Test 6

33	$\frac{1}{5} \div 2 =$
34	$\frac{2}{3} + \frac{3}{4} =$
35	$34 \overline{)5869} =$
36	$3\frac{5}{6} \times 4 =$
37	$6\frac{1}{6} - 2\frac{1}{7} =$



Year 6 Extension Arithmetic Test 6

Mark scheme

- | | | | | | |
|-----|-------------------------|-----|-----|--|-----|
| 1. | 6 | [1] | 21. | 468.9 | [1] |
| 2. | 299,900 | [1] | 22. | $\frac{1}{48}$ | [1] |
| 3. | 944,332 | [1] | 23. | $\frac{1}{3}$ or equivalent | [1] |
| 4. | 500,849 | [1] | | e.g. $\frac{4}{12}$ | |
| 5. | 21,644 | [1] | 24. | 33 | [1] |
| 6. | 4,900 | [1] | 25. | 376.988 | [1] |
| 7. | 969 rem 6 or equivalent | [1] | 26. | For 2 marks: 41,251 | [2] |
| | e.g. $969\frac{6}{7}$ | | | For 1 mark: | |
| 8. | 32,000 | [1] | | $\begin{array}{r} 497 \\ \times 83 \\ \hline 1491 \\ 39760 \\ \hline 41251 \end{array}$ | |
| 9. | 535,000 | [1] | | An error in one row, then added correctly, or an error in the addition | |
| 10. | 9,898 | [1] | 27. | $\frac{10}{50}$ | [1] |
| 11. | 6,000 | [1] | 28. | $\frac{3}{25}$ | [1] |
| 12. | 400 | [1] | 29. | $6\frac{2}{3}$ or equivalent | [1] |
| 13. | 710 | [1] | | e.g. $\frac{40}{6}$, $6\frac{4}{6}$ | |
| 14. | 990 | [1] | 30. | For 2 marks: 61,006 | [2] |
| 15. | 586,910 | [1] | | For 1 mark: | |
| 16. | 120 | [1] | | $\begin{array}{r} 1298 \\ \times 47 \\ \hline 9086 \\ 51920 \\ \hline 61006 \end{array}$ | |
| 17. | 73 | [1] | | An error in one row, then added correctly, or an error in the addition | |
| 18. | 0.0456 | [1] | | | |
| 19. | 0.21 | [1] | | | |
| 20. | 180.112 | [1] | | | |



Year 6 Extension Arithmetic Test 6

testbase

31. 12.35 [1]

32. 156.4 [1]

33. $\frac{1}{10}$ or equivalent [1]

34. $1\frac{5}{12}$ or equivalent [1]
e.g. $\frac{17}{12}$

35. For 2 marks: [2]
172 rem 21 or equivalent

For 1 mark:

Evidence of either long division or short division method with only one error (carry figures must be seen in a short division method).

36. $15\frac{1}{3}$ or equivalent [1]

e.g. $15\frac{2}{6}$

Do not accept unconventional mixed numbers e.g. $12\frac{20}{6}$

37. $4\frac{1}{42}$ or equivalent [1]

Do not accept unconventional mixed numbers e.g. $3\frac{43}{42}$