Name:

# Parts of a Number

## Additional Tasks

# Contents

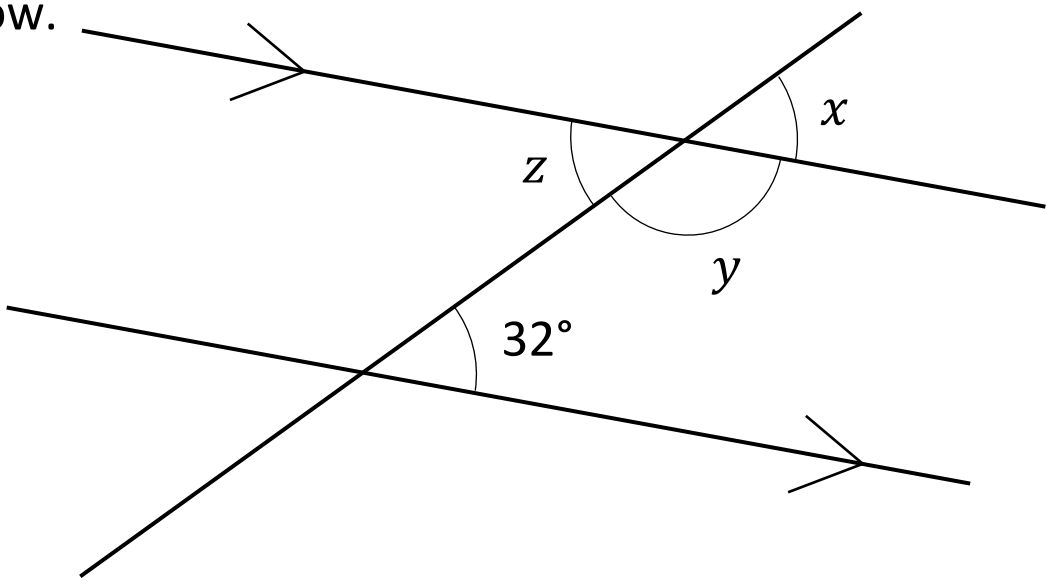
# Quiz 1

| | | | | |
|---|---|---|---|---|
| $4 \times 9 =$ | $2 \times 7 =$ | $1 \times 14 =$ | $4 \times 5 =$ | $8 \times 4 =$ |
| $9 \times 5 =$ | $2 \times 4 =$ | $11 \times 10 =$ | $7 \times 8 =$ | $9 \times 6 =$ |
| $2 \times 9 =$ | $8 \times 3 =$ | $12 \times 3 =$ | $11 \times 4 =$ | $6 \times 6 =$ |
| $11 \times 12 =$ | $0 \times 4 =$ | $7 \times 5 =$ | $9 \times 9 =$ | $13 \times 4 =$ |
| $1 \times 8 =$ | $3 \times 9 =$ | $4 \times 7 =$ | $5 \times 3 =$ | $7 \times 9 =$ |

____ out of 25

# Example 1

Calculate the size of the angles $x$, $y$ and $z$ in the diagram below.




$x = 32^\circ$ (corresponding angles)

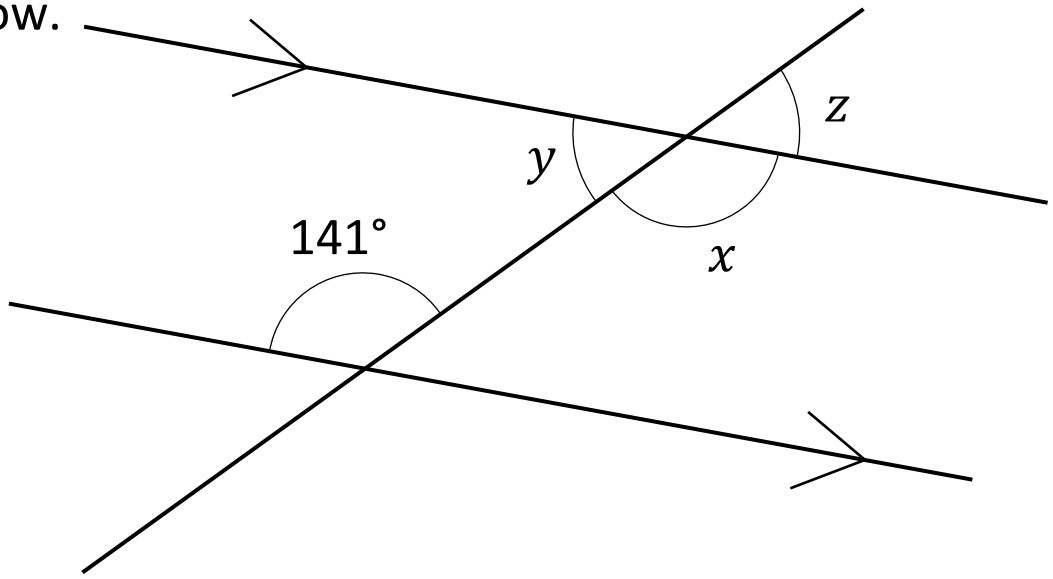
$180 - 32 = 148$

$z = 32^\circ$ (alternate angles)

$y = 148^\circ$ (internal angles)

# Exercise 1

Calculate the size of the angles $x$, $y$ and $z$ in the diagram below.



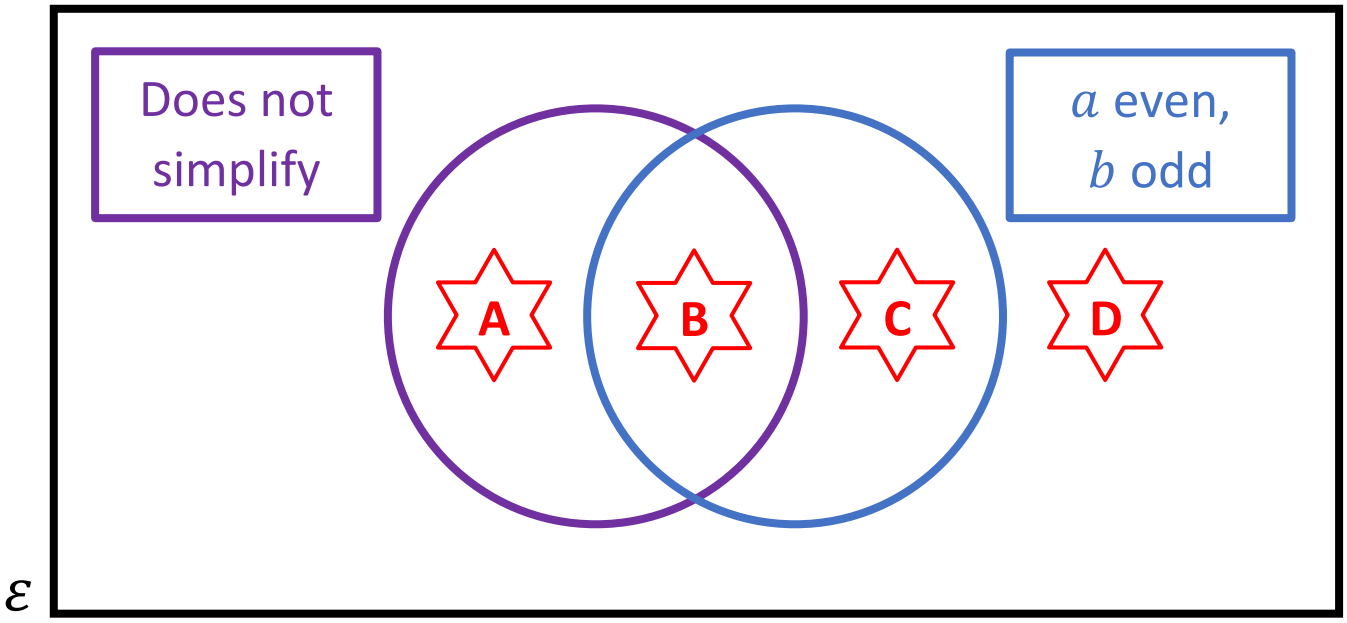

___ out of 3

# Quiz 2

| | | |
|---|---|---|
| 1) $8 - 4 =$ | 2) $4 - 8 =$ | 3) $-4 - 8 =$ |
| 4) $4 - -8$ | 5) $8 \div 4 =$ | 6) $4 \div 8 =$ |
| 7) $8 \times 4 =$ | 8) $8 \times -4 =$ | 9) $-4 \times -8 =$ |

___ out of 9

# Venn Diagram Challenge 1




Think of a ratio of the form $a : b$ that could fit into each region.
If you think a region is impossible to fill, explain why!

A

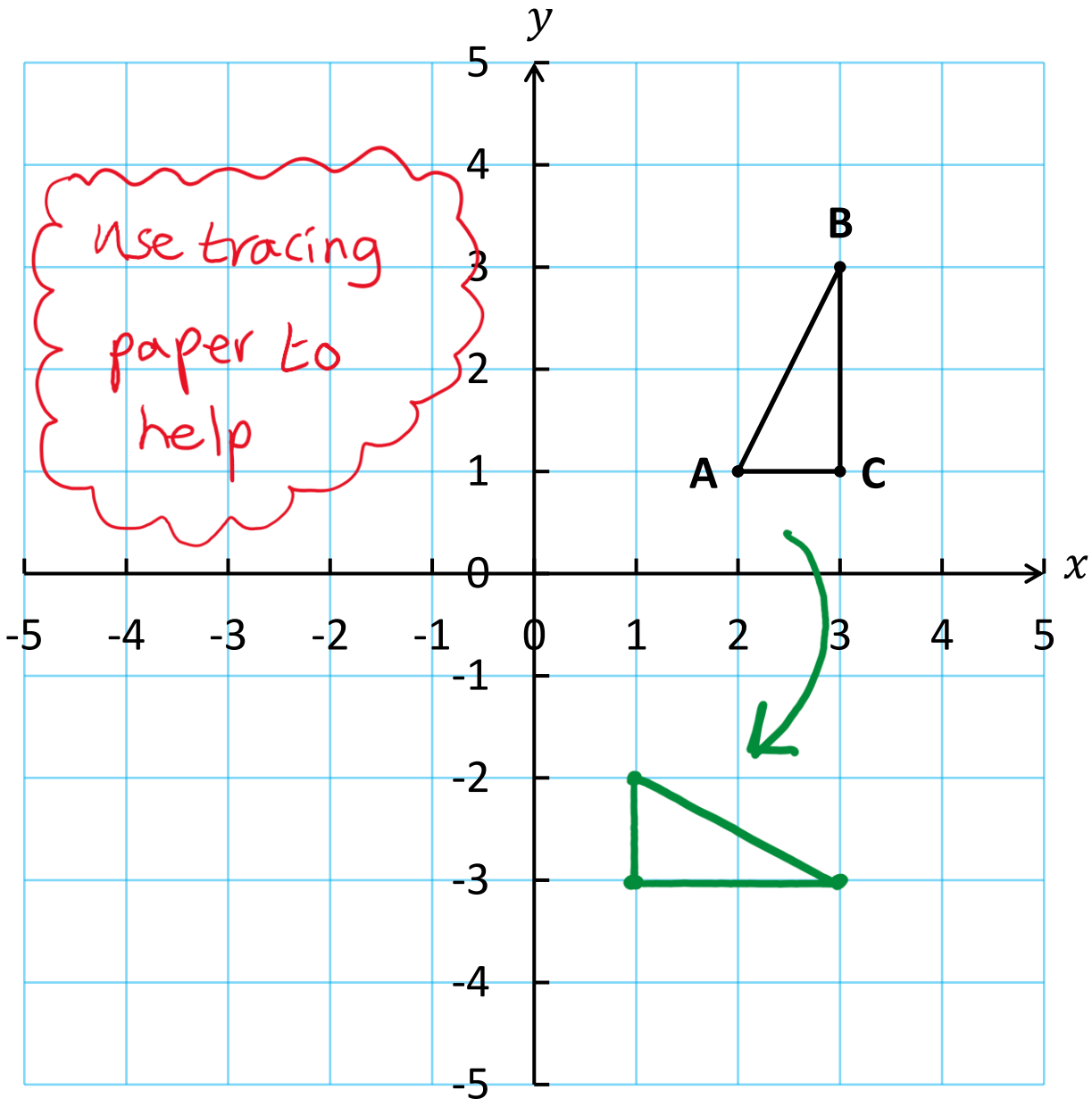
B

C

D

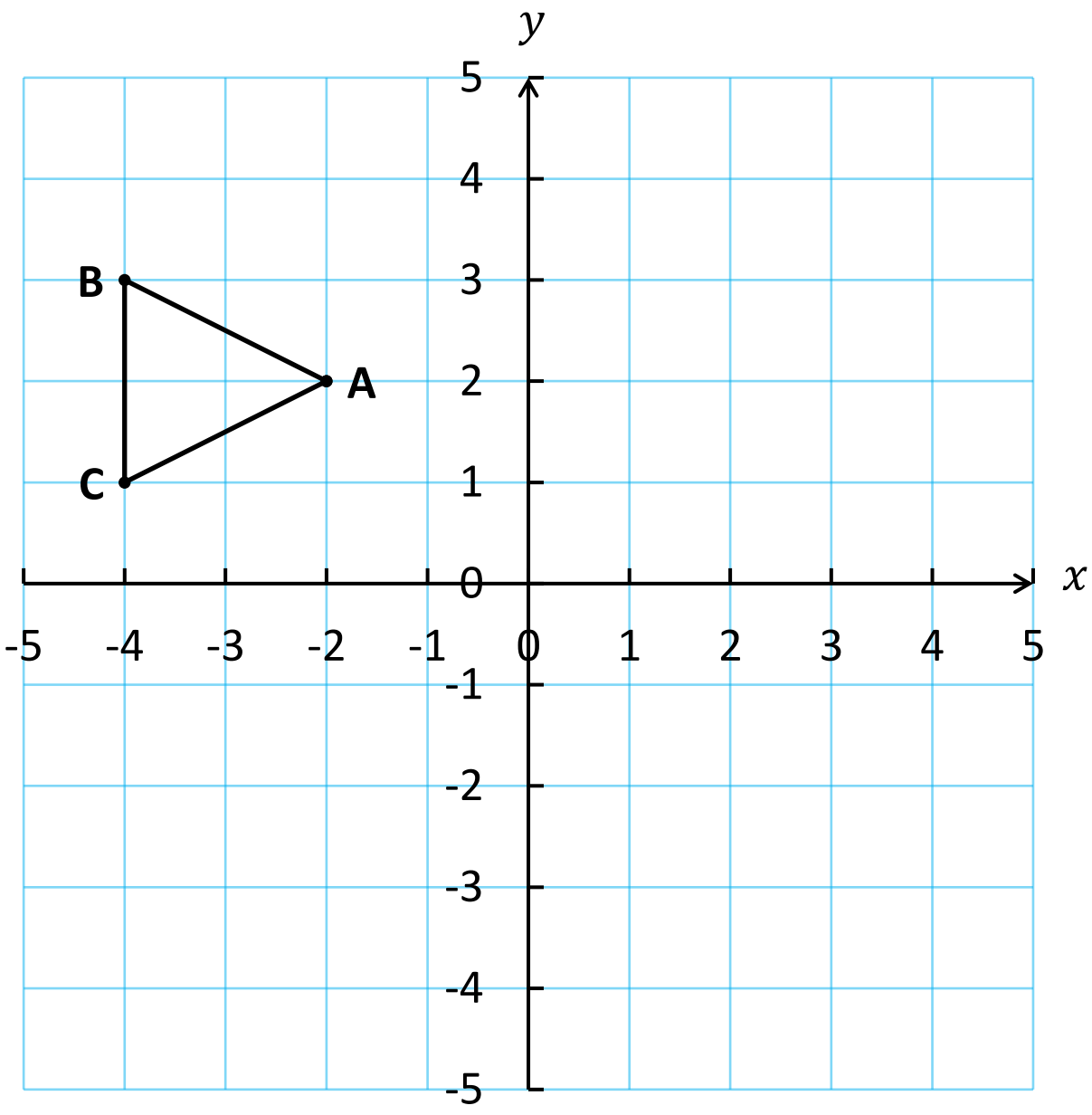
# Example 2

Rotate the triangle **ABC** by 90° clockwise around the origin.



# Exercise 2

Rotate the triangle **ABC** by 90° clockwise around the origin.




___ out of 2

# Quiz 3

| | | |
|---|---|---|
| 1) $\sqrt{49}$ | 2) List all the factors of 20. | 3) Solve the equation $3x - 4 = 20$ |
| 4) 4.6 m = _____ cm | 5) What is the formula for calculating the area of any triangle? | 6) How many vertices does a square based pyramid have? |
| 7) The mode of 2, 7, 4, 3, 5, 8, 4, 5 | 8) 10 ÷ –2 | 9) 4.3 × 7 |

___ out of 9

# The Sock Drawer

1) What fraction of the socks are yellow? Give your answer in its simplest form.

2) Write the socks as a ratio yellow : blue : green, in its simplest form.

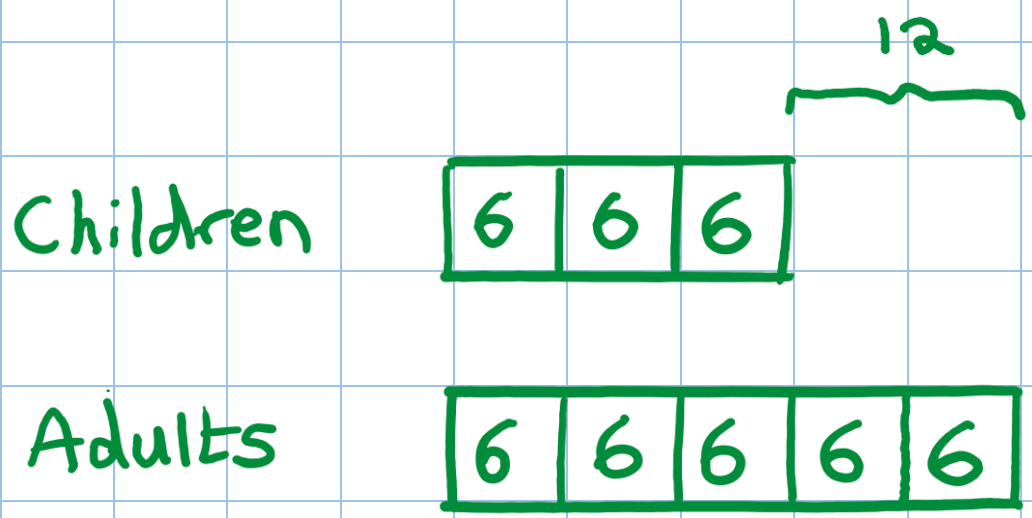
3) What percentage of the socks are blue?

4) Two more blue socks are added to the drawer. What percentage of the socks are now blue?

___ out of 6

# Example 3

The ratio of the number of children to adults on a bus is 3 : 5. There are 12 less children than adults on the bus. How many people are on the bus in total?




$12 \div 2 = 6$

$3 + 5 = 8$

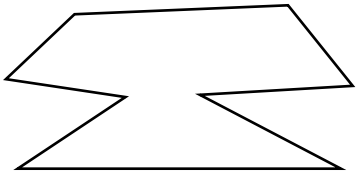
$6 \times 8 = 48$

# Exercise 3

The ratio of the number of children to adults on a train is 2 : 5. There are 21 more adults than children on the train. How many people are on the train in total?

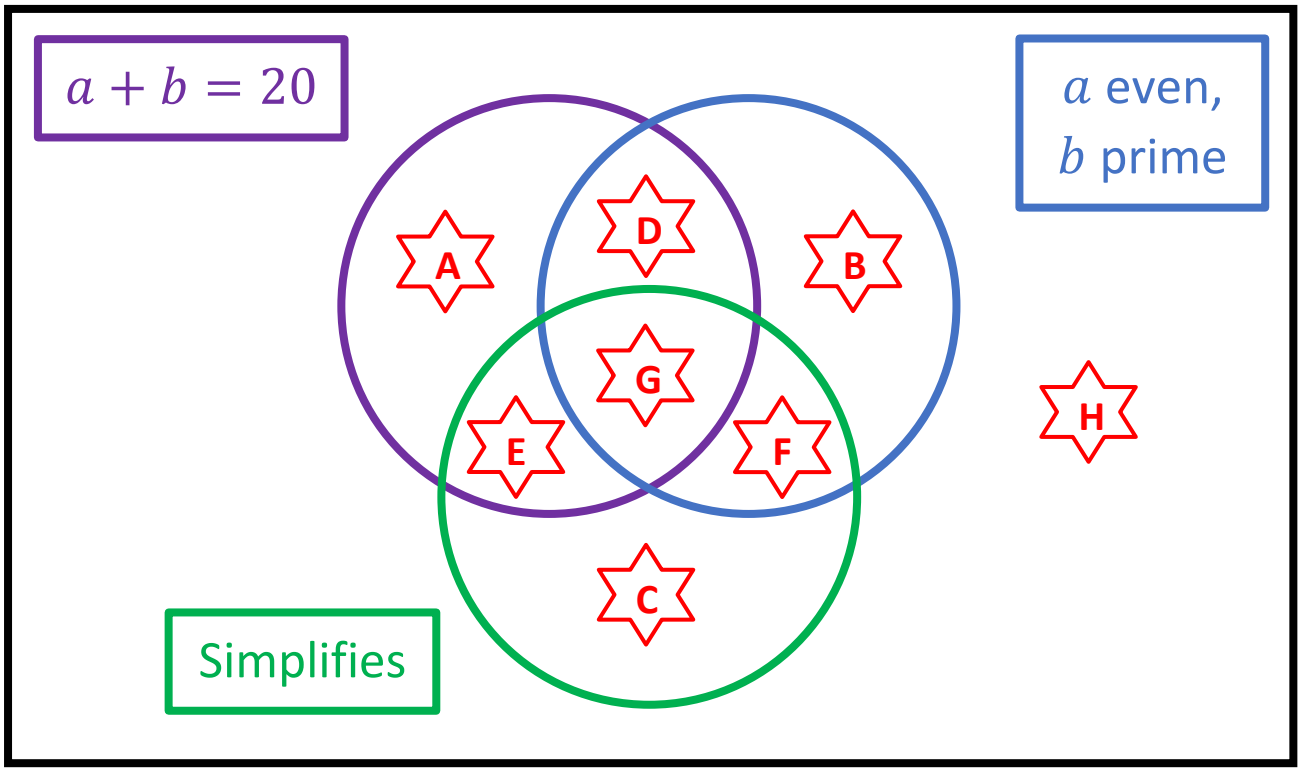
___ out of 3

# Quiz 4

| | | |
|---|---|---|
| 1) Circle all the multiples of 5.<br><br>825 253 180<br><br>554 1,425 6,530 | 2) Name this polygon.<br><br>  | 3) How many minutes are there in a single day? |
| 4) What type of angle is the angle 95°? | 5) What is the total internal angles of any triangle? | 6) 20% of £30 |
| 7) The mean of 1, 2, 3, 4 | 8) The mode of 1, 2, 3, 4 | 9) The range of 1, 2, 3, 4 |

___ out of 9

# Venn Diagram Challenge 2




Think of a ratio of the form $a : b$ that could fit into each region.
If you think a region is impossible to fill, explain why!

A

B

C

D

E

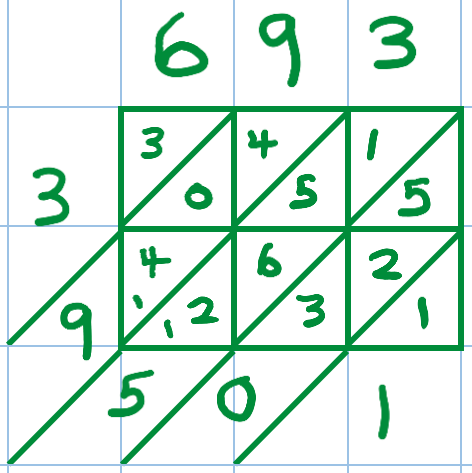
F

G

H

# Example 4

Calculate (a) 693 × 57 (b) 693 ÷ 57




Answer: 39,501

57 ) 6 9 3
− 5 7 0
0 1 2 3
− 5 7
5 6
5 7
9

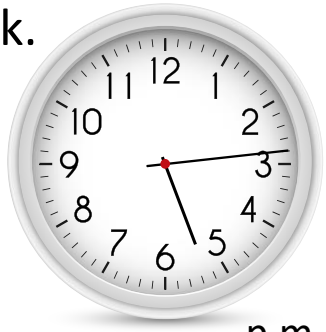
Answer: 12 remainder 9

# Exercise 4

Calculate (a) 617 × 26 (b) 617 ÷ 26

___ out of 6

# Quiz 5

| | | |
|---|---|---|
| 1) Write the time in the 24-hour clock.  p.m. | 2) Dewi's score in a test was 21 out of 25. What was his percentage in the test? | 3) $\frac{2}{7} + \frac{3}{7}$ |
| 4) 2.7 × 100 | 5) Write one billion in figures. | 6) $\frac{2}{7} \times \frac{3}{7}$ |
| 7) 13 × 12 | 8) £8 – £2.75 | 9) $\frac{2}{7} \div \frac{3}{7}$ |

___ out of 9

# The Band

Sara and Ryan sing in the same band. One night the band plays for 80 minutes. Sara sings for 65% of the 80 minutes. Ryan sings for $\frac{5}{8}$ of the 80 minutes.

What can you calculate from this information?

# Evaluating the Workbook

# Notes

Name:

# Measuring Shapes 2

## Additional Tasks

# Contents

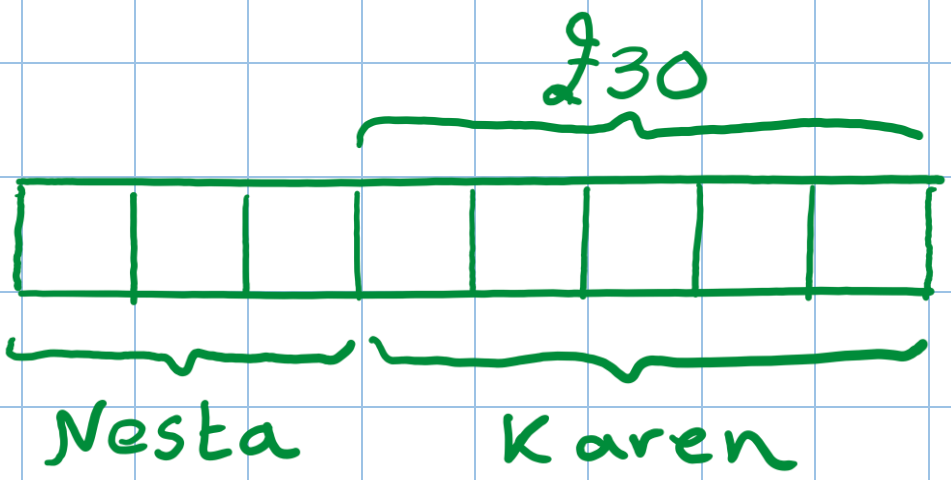
# Quiz 1

| | | | | |
|---|---|---|---|---|
| $3 \times \square = 15$ | $\square \times 6 = 18$ | $2 \times \square = 8$ | $5 \times \square = 40$ | $\square \times 4 = 28$ |
| $8 \times \square = 48$ | $3 \times \square = 27$ | $\square \times 7 = 49$ | $\square \times 2 = 30$ | $6 \times \square = 54$ |
| $\square \times 4 = 32$ | $3 \times \square = 12$ | $\square \times 1 = 16$ | $9 \times \square = 45$ | $\square \times 7 = 35$ |
| $2 \times \square = 16$ | $\square \times 9 = 54$ | $6 \times \square = 42$ | $\square \times 6 = 66$ | $3 \times \square = 36$ |
| $9 \times \square = 72$ | $\square \times 5 = 60$ | $2 \times \square = 50$ | $5 \times \square = 5$ | $\square \times 8 = 24$ |

____ out of 25

# Example 1

A sum of money was shared between Nesta and Karen according to the ratio 3 : 5. If Karen received £30, how much did Nesta receive?




£30 ÷ 5 = £6

Nesta: 3 × 6

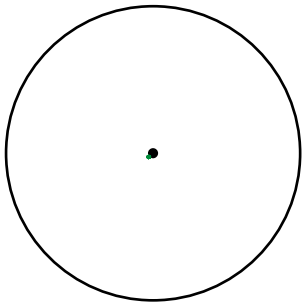
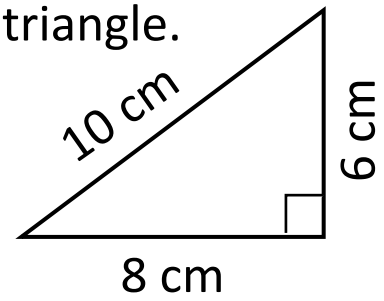
= £18

# Exercise 1

A sum of money was shared between Cai and Siôn according to the ratio 4 : 3. If Cai received £28, how much did Siôn receive?

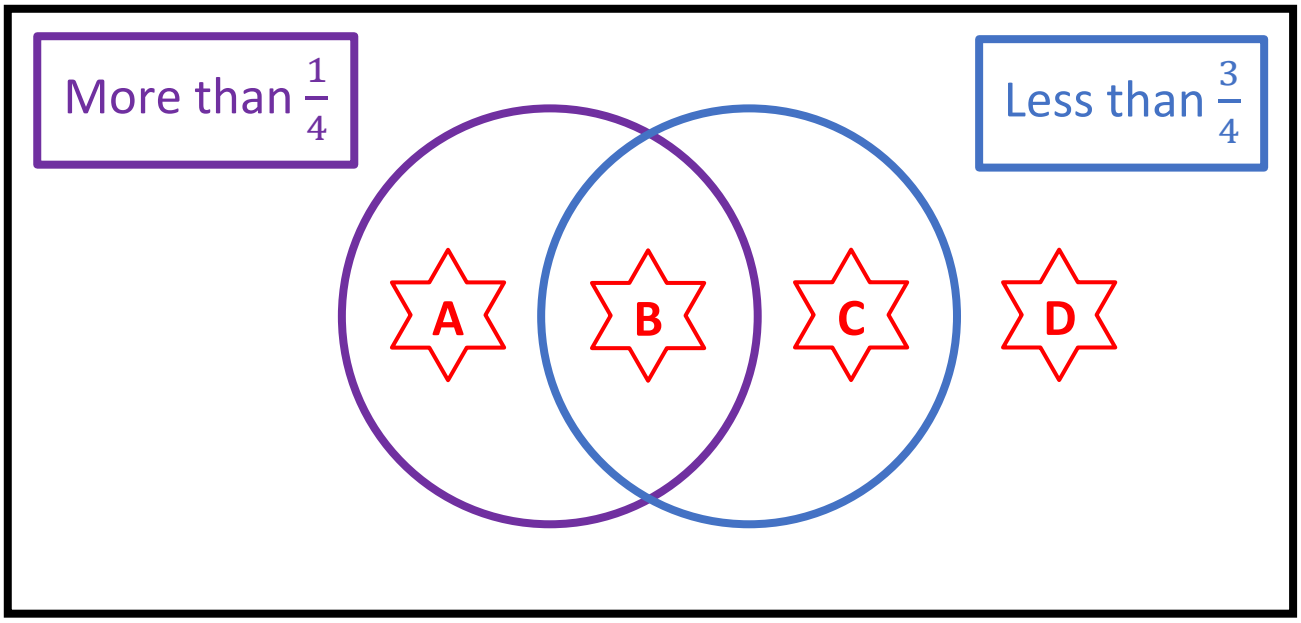
___ out of 3

# Quiz 2

| | | |
|---|---|---|
| 1) Add a sector to the circle.  | 2) $3.14 \times 8$ | 3) $9^2$ |
| 4) Sketch a cuboid. | 5) Draw a horizontal line. | 6) Calculate the area of the triangle.   |
| 7) $\frac{2}{7} + \frac{3}{7}$ | 8) $\frac{2}{7}$ of £42 | 9) What is the reciprocal of $\frac{2}{7}$? |

___ out of 9

# Venn Diagram Challenge 1




Think of a fraction that could fit into each region.
If you think a region is impossible to fill, explain why!

A

B

C

D

# Example 2

Calculate $\frac{3}{4} + \frac{5}{12}$. Write your answer as a mixed number.

$$\frac{3}{4} + \frac{5}{12} = \frac{9}{12} + \frac{5}{12}$$

The traditional method

$$= \frac{14}{12}$$

$$= 1\frac{2}{12}$$

$$= 1\frac{1}{6}$$

The peanut method

| | 3 | 4 |
|---|---|---|
| 5 | X | 20 |
| 12 | 36 | 48 |

Answer:

$$\frac{56}{48} = \frac{28}{24} = \frac{14}{12} = \frac{7}{6}$$

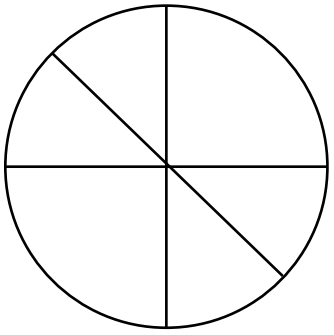
$$= 1\frac{1}{6}$$

# Exercise 2

Calculate $\frac{5}{6} + \frac{2}{3}$. Write your answer as a mixed number.

___ out of 2

# Quiz 3

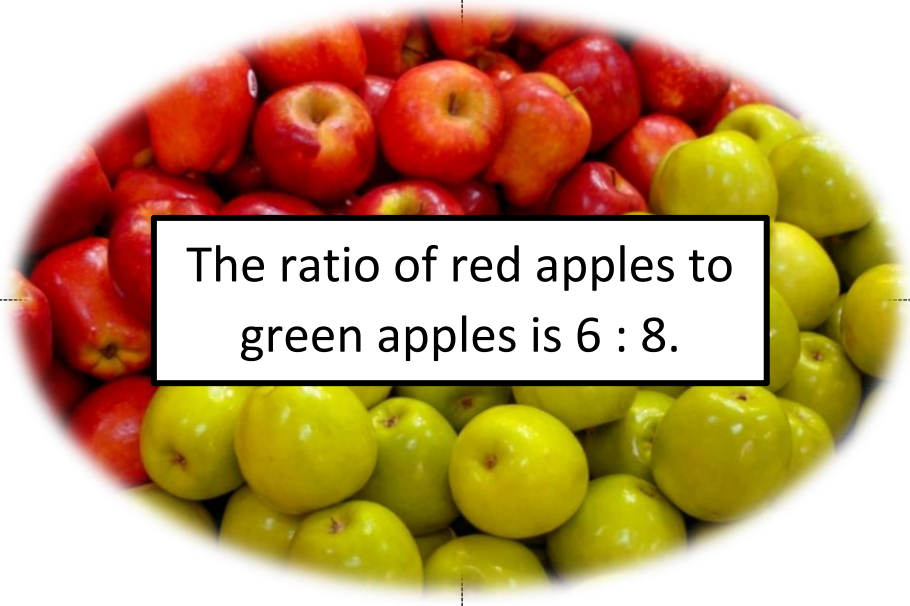
| | | |
|---|---|---|
| 1) Simplify the ratio 24 : 36. | 2) Simplify the fraction $\frac{24}{36}$. | 3) 24 × 36 |
| 4) 10% of £24 | 5) $\frac{1}{10}$ of £24 | 6) 0.1 × £24 |
| 7) What is the reciprocal of 7? | 8) Change $2\frac{1}{3}$ to be an improper fraction. | 9) Shade $\frac{3}{4}$ of the shape below.  |

___ out of 9

# The Apples

1) Simplify the ratio 6 : 8.

2) There are 42 apples in total. How many are red?



The ratio of red apples to green apples is 6 : 8.

3) A $\frac{1}{6}$ of the red apples are rotten and are thrown away. What fraction of the apples are now red?

4) What is the name of the solid that is most like the shape of an apple?

___ out of 8

# Example 3

Which is the best bargain?

250 ml £1.80


450 ml £2.99


250 ml : £1.80 → ÷250 → 1 ml : £0.0072

450 ml : £2.99 → ÷450 → 1 ml : £0.00664

Conclusion: Each 1ml costs less in the large bottle. So, this is the best bargain.

Alternative Method

250 ml : £1.80 → ÷1.80 → 138.8 ml : £1

450 ml : £2.99 → ÷2.99 → 150.50... ml : £1

Conclusion: Each £1 buys more tomato ketchup in the large bottle. So, this is the best bargain.

# Exercise 3

Which is the best bargain?

433 ml

£0.95

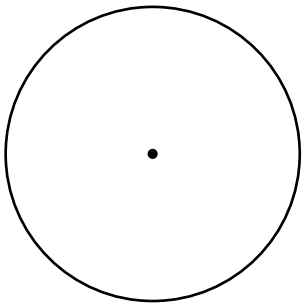

820 ml

£1.79


___ out of 3

# Quiz 4

1) Add a chord to the circle.

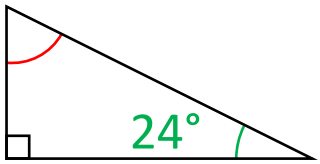


2) $\sqrt{100}$

3) $\frac{1}{2} \times \frac{3}{4}$

4) 50% of $60

5) Calculate the size of the red angle.




6) How many days are there in March?

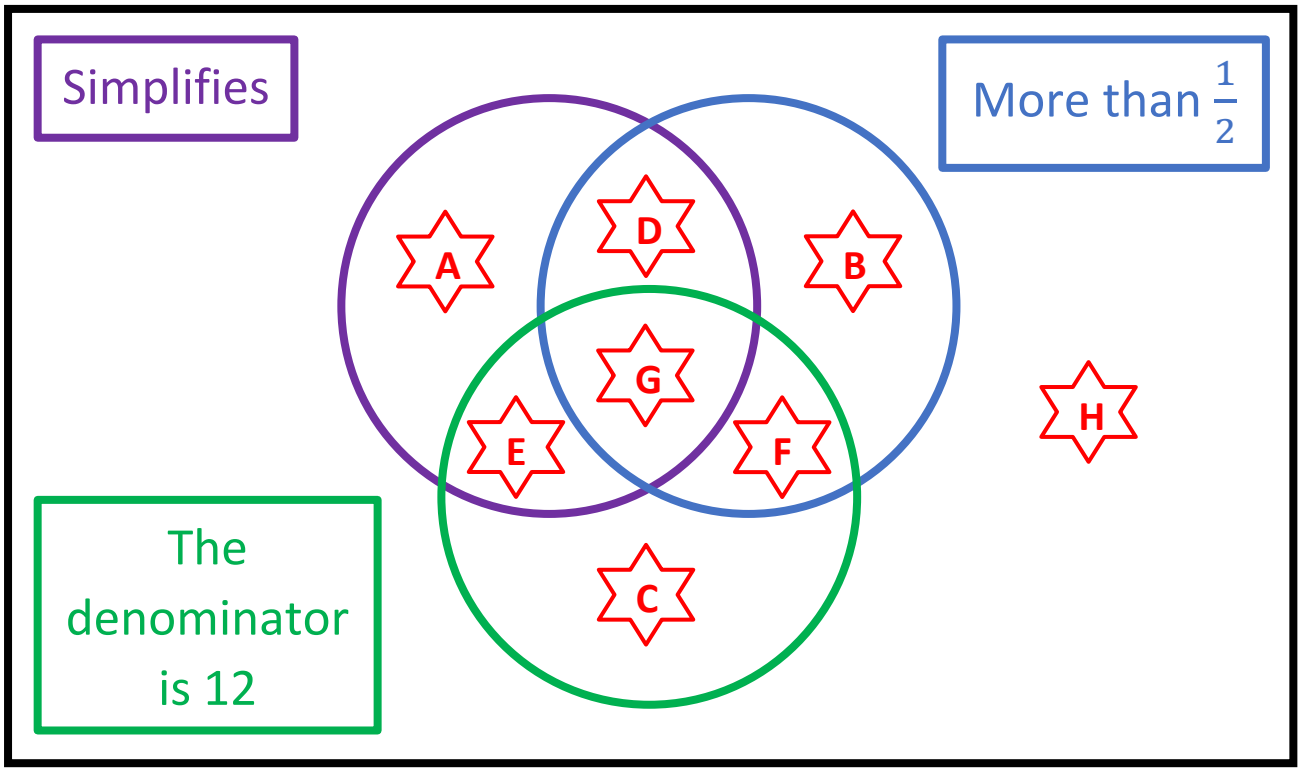
7) The mean of 1, 4, 2, 5, 3

8) 3.4 + 9.78

9) 9.8 ÷ 100

___ out of 9

# Venn Diagram Challenge 2




Think of a fraction that could go into each region.
If you think a region is impossible to fill, explain why!

A

B

C

D

E

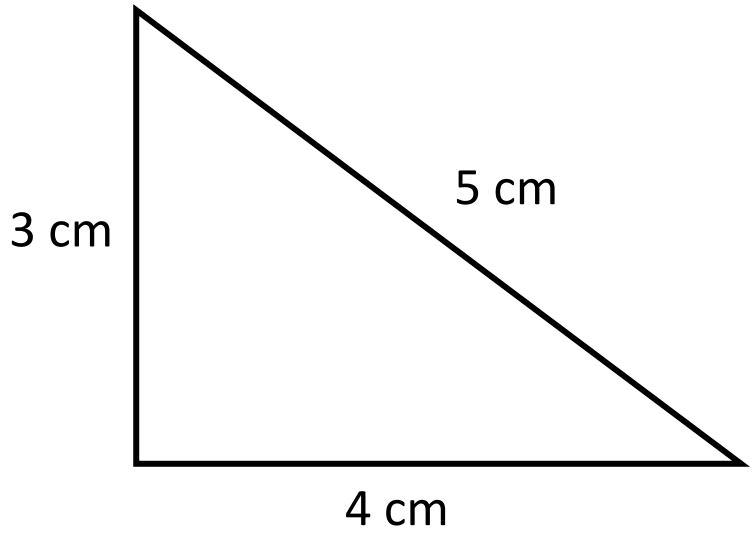
F

G

H

# Example 4

What is the perimeter and area of the triangle below?




Perimeter: $3 + 4 + 5$

$= 12$ cm

Area: $4 \times 3 = 12$

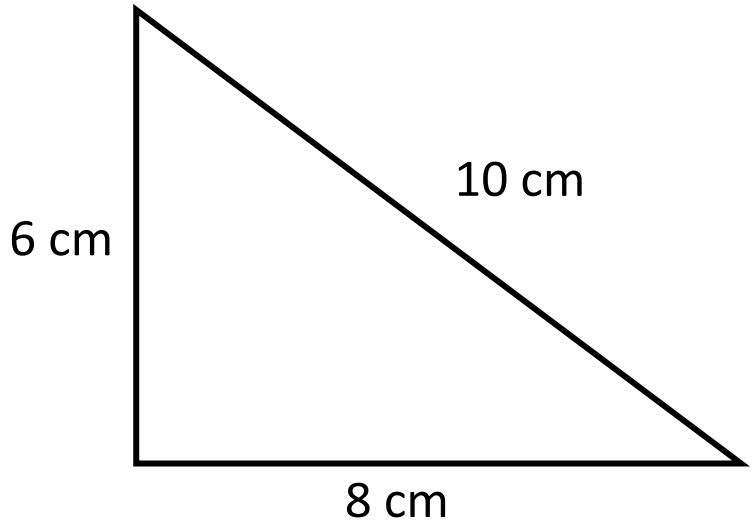
$12 \div 2$

$= 6\text{ cm}^2$

$$\frac{\text{Base} \times \text{Height}}{2}$$

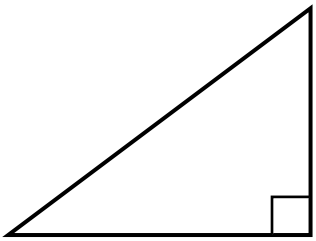
# Exercise 4

What is the perimeter and area of the triangle below?

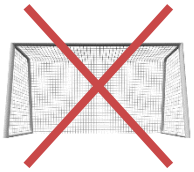



___ out of 6

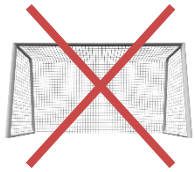
# Quiz 5

| | | |
|---|---|---|
| 1) What is the formula for calculating the area of a circle? | 2) Label the hypotenuse using "H".  | 3) Calculate $\frac{2}{5}$ of £15. |
| 4) 10% of 68 cm. | 5) $8^2$ | 6) Name the shape below.  |
| 7) Write the time 10:00 pm in the 24-hour clock. | 8) $6 \times -2$ | 9) Is 17 a prime number? |

____ out of 9



# Ashley and Aaron's Money



Ashley and Aaron share a sum of money according to the ratio 2 : 5. Aaron receives £45 more than Ashley.
What can you calculate from this information?

# Evaluating the Workbook

# Notes

Name:

# Developing Algebra

## Additional Tasks

# Contents

# Quiz 1

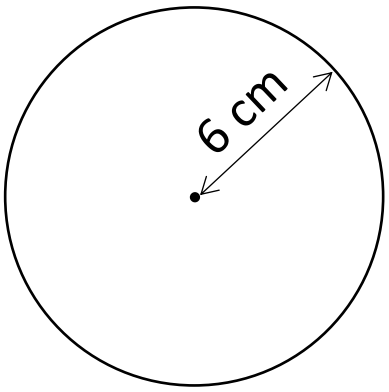
Solve the following equations.

| | | |
|---|---|---|
| 1) $x + 6 = 8$ | 2) $x - 3 = 6$ | 3) $3x = 12$ |
| 4) $\frac{x}{2} = 6$ | 5) $x + 1 = -5$ | 6) $x - 2 = -8$ |
| 7) $2x + 1 = 15$ | 8) $3x - 2 = 19$ | 9) $\frac{x}{3} + 1 = 7$ |

___ out of 9

# Example 1

Calculate the circumference and area of the circle on the right.




Circumference = $\pi$ x diameter

= $\pi \times 12$

= 37.699111184

= 37.70 cm to 2 d.p.

Area = $\pi$ x radius$^2$

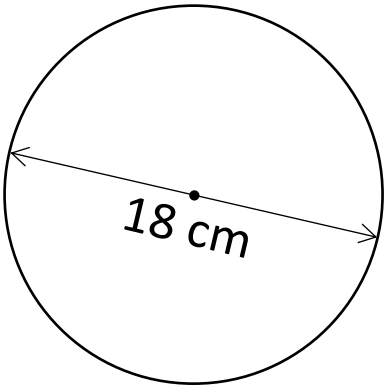
= $\pi \times 6^2$

= 113.0973355

= 113.10 cm$^2$ to 2 d.p.

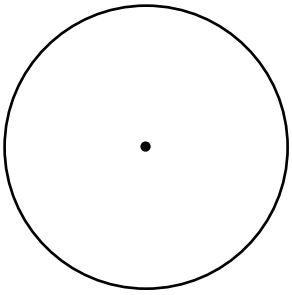
# Exercise 1

Calculate the circumference and area of the circle on the right.



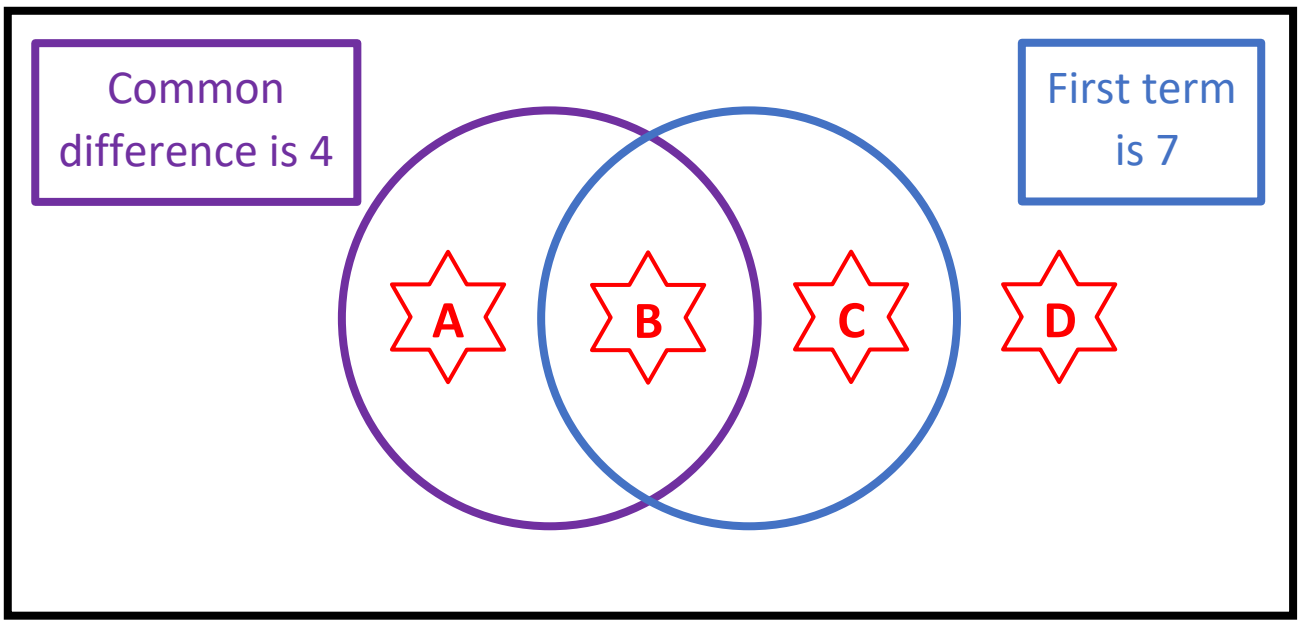

___ out of 6

# Quiz 2

| | | |
|---|---|---|
| 1) $\frac{2}{5}$ of £40 | 2) 30% of £40 | 3) 0.1 × £40 |
| 4) Add a segment to the circle below.  | 5) What type of angle is the angle 137°? | 6) 6 – 2.4 |
| 7)<br>2 kg = _____ g<br>3 feet = _____ inches<br>3.5 m = _____ cm | 8) 8 × –4 | 9) 8 – –4 |

___ out of 11

# Venn Diagram Challenge 1




Think of the $n$th term of a sequence that could fit into each region. If you think a region is impossible to fill, explain why!

**A**

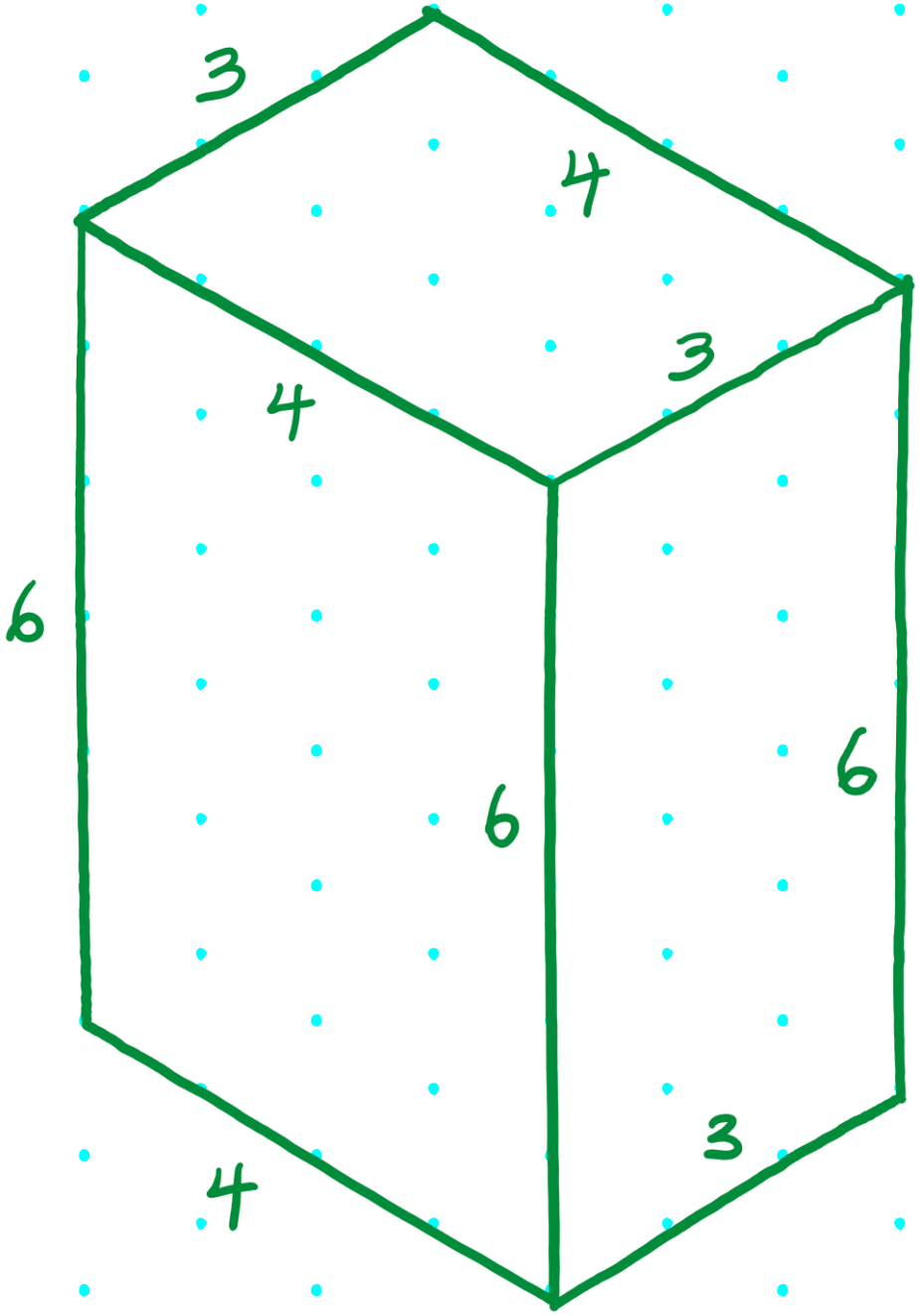
**B**

**C**

**D**

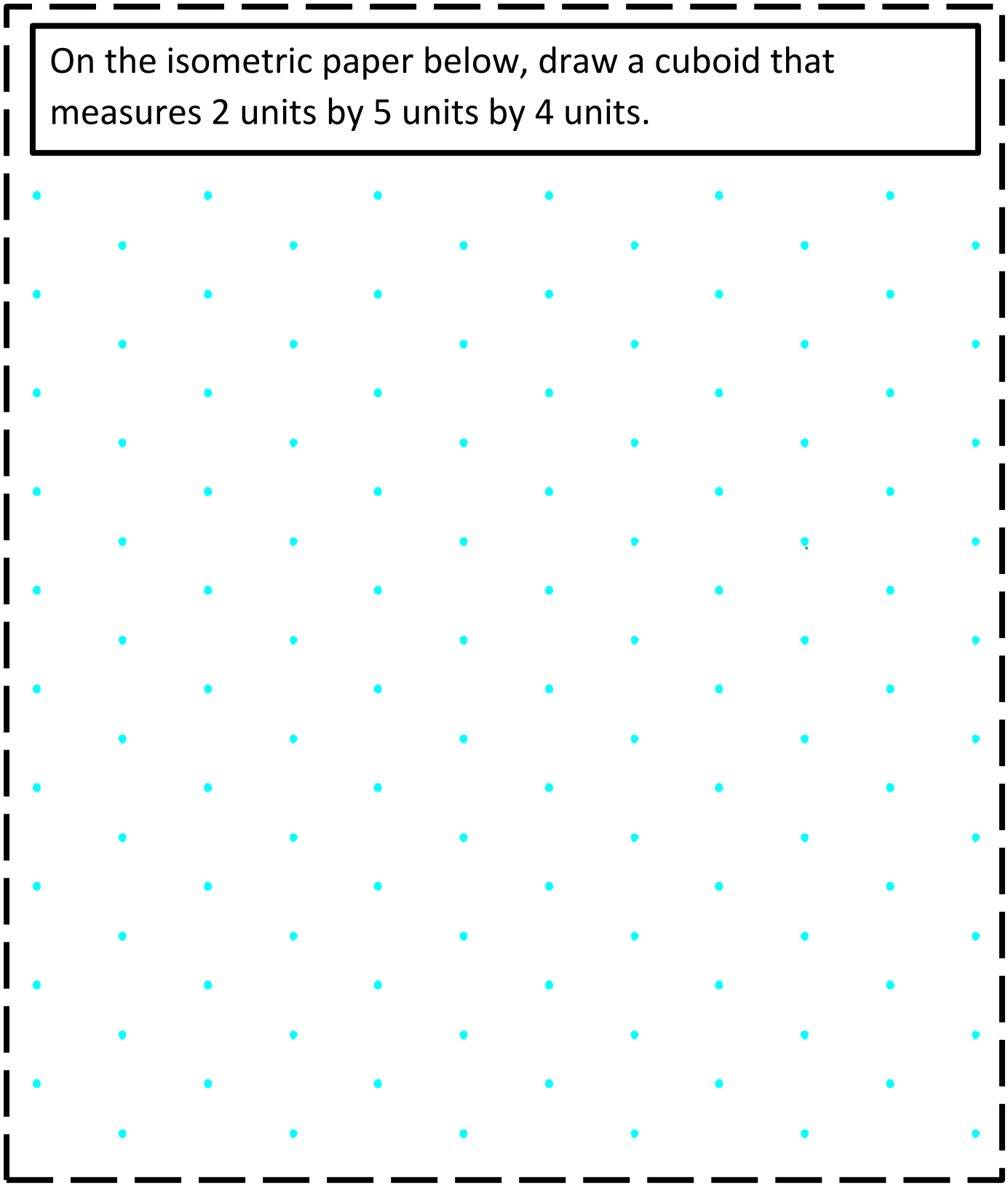
# Example 2

On the isometric paper below, draw a cuboid that measures 3 units by 4 units by 6 units.



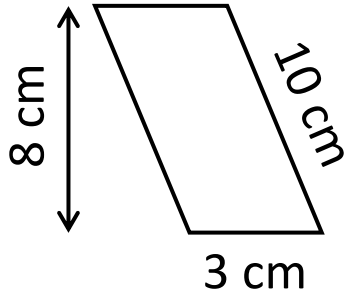
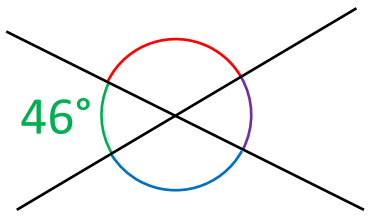
# Exercise 2

On the isometric paper below, draw a cuboid that measures 2 units by 5 units by 4 units.



___ out of 3

# Quiz 3

| | | |
|---|---|---|
| 1) What is the $n$th term of the sequence 6, 10, 14, 18, ....? | 2) Solve the equation $4x = 28$. | 3) Simplify $5d + 2u - 3d + 4u$ |
| 4) Calculate the area of the following shape.   | 5) Sketch a triangular prism. | 6) Was 1744 a leap year? |
| 7) What is the name of a polygon with 6 edges? | 8) What is the size of the purple angle?   | 9) $6^2$ |

___ out of 9

# The Pepperoni Pizza

1) What is the circumference of a pizza with diameter 12 inches?

2) What is the area of a pizza with diameter 12 inches?

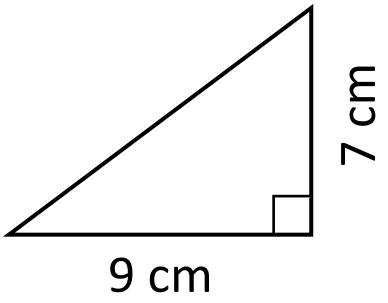
3) Which is the best bargain? One 12-inch pizza for £10 or two 8-inch pizzas for £10?

4) Seren cuts the above 12-inch pizza into 8 equal pieces (sectors). What is the perimeter of each of these pieces?

___ out of 8

# Example 3

Calculate the perimeter of the right-angled triangle shown on the right.




Pythagoras' Theorem to calculate the length of the hypotenuse

$9^2 = 81$

$7^2 = +\ 49$

$130$

Add as we want to find the hypotenuse

$\sqrt{130} = 11.40$cm to 2 decimal places

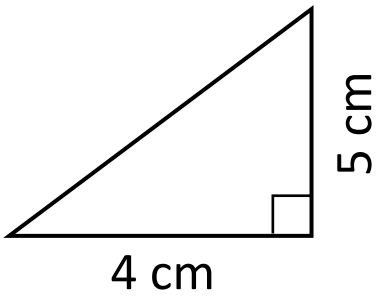
Perimeter of the triangle ← The distance around the outside of the triangle

$= 11.40 + 9 + 7$

$= 27.40$cm to 2 decimal places

# Exercise 3

Calculate the perimeter of the right-angled triangle shown on the right.



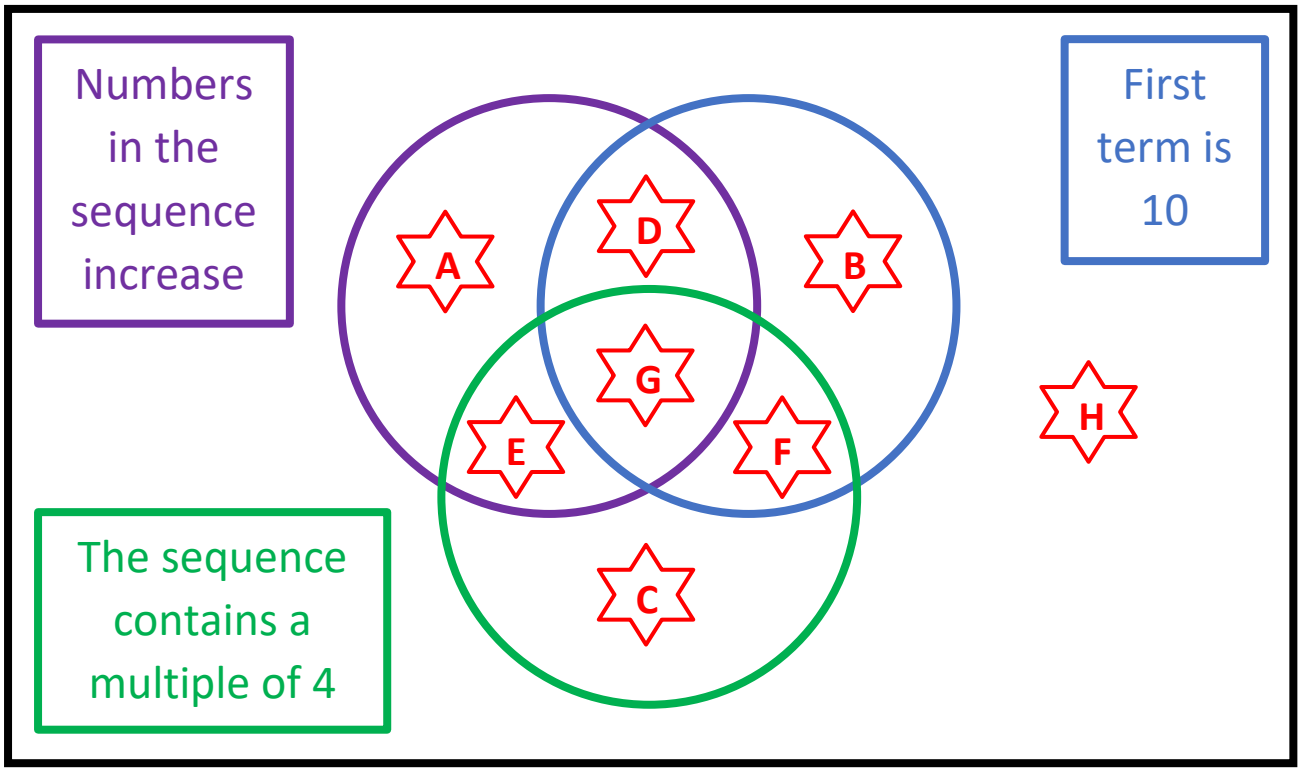

___ out of 5

# Quiz 4

| | | |
|---|---|---|
| 1) Expand $5(x-2)$ | 2) Solve the equation $2x-4=18$ | 3) Expand $(x+3)(x+2)$ |
| 4) Which number comes next? 14, 11, 8, 5, 2, ___ | 5) Substitute $x=4$ into the expression $5x+2$ | 6) Simplify $-3f+g-2f+4g$ |
| 7) Solve the equation $\frac{y}{2}-4=8$ | 8) What is the $n$th term of the sequence from question 4? | 9) What is the 20th term of the sequence from question 4? |

___ out of 9

# Venn Diagram Challenge 2




Think of the $n$th term of a sequence that could fit into each region. If you think a region is impossible to fill, explain why!

A

B

C

D

E

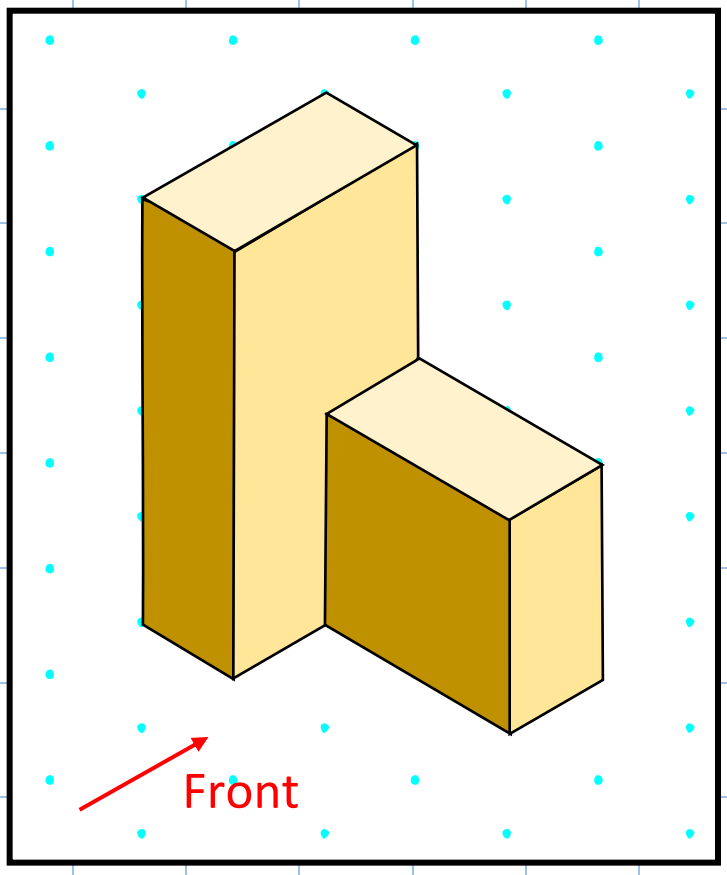
F

G

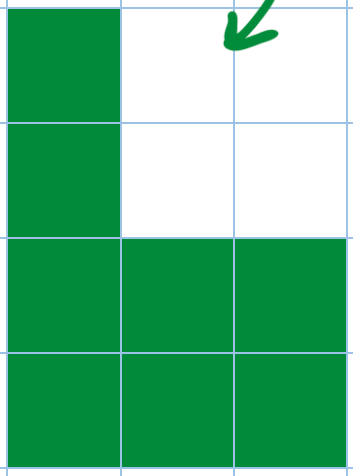
H

# Example 4

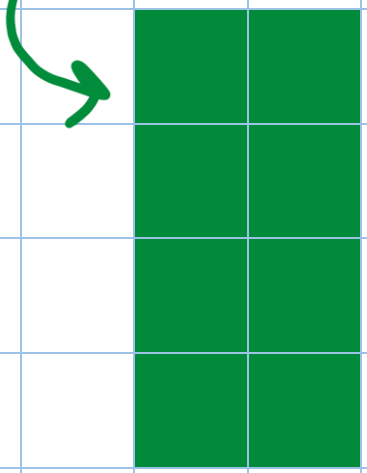
Draw a front elevation, plan view and right-side elevation for the following solid.



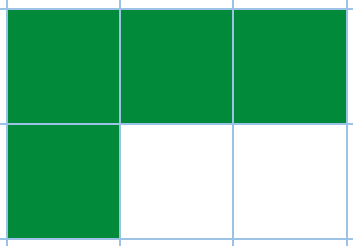

Front elevation



Right-side elevation

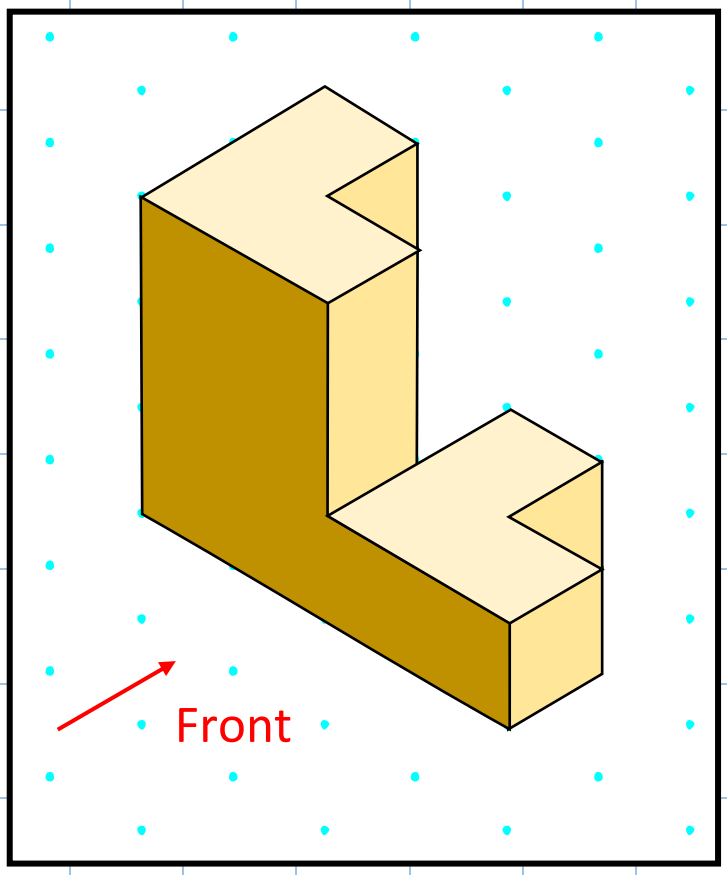


Plan view



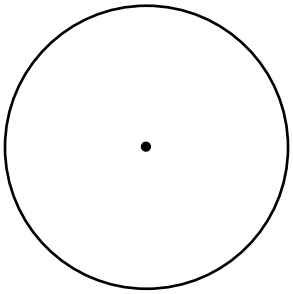
# Exercise 4

Draw a front elevation, plan view and right-side elevation for the following solid.




___ out of 3

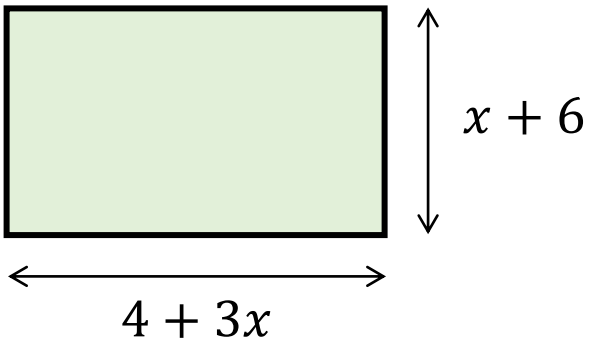
# Quiz 5

| | | |
|---|---|---|
| 1) Solve $4x + 1 = -7$ | 2) $\sqrt{25}$ | 3) List all the factors of 25. |
| 4) 6.7 – 2.89 | 5) 10% of €65 | 6) What is the perimeter of a 5 cm by 3 cm rectangle? |
| 7) Add a tangent to the circle below.  | 8) What is the total internal angles of any triangle? | 9) Write $\pi$ correct to 2 decimal places. |

___ out of 9

# Perimeter of the Garden

The rectangle shows a garden in the shape of a rectangle.




The perimeter of the garden is 32 metres.

What can you calculate from this information?

# Evaluating the Workbook

# Notes

Name:

# Data Handling and Statistics 3

## Additional Tasks

# Contents

# Quiz 1

| | | |
|---|---|---|
| 1) Solve the equation $3x = 27$ | 2) $\frac{4}{5}$ of £20 | 3) 20% of £20 |
| 4) Expand $5(x + 3)$ | 5) What is the formula for calculating the circumference of a circle? | 6) Sketch a cone. |
| 7) 5 + –2 | 8) 5 – –2 | 9) 5 × –2 |

___ out of 9

# Example 1

What is the 100th term of the following sequence?

15, 23, 31, 39, 47, 55, 63, ....

7 15, 23, 31, 39, 47, 55, 63 ....

-8 +8 +8 +8 +8 +8 +8

Nth term: $8n + 7$

100th term: $8 \times 100 + 7$

$= 800 + 7$

$= \underline{807}$

# Exercise 1

What is the 200th term of the following sequence?

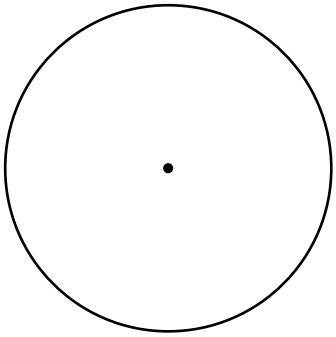
5, 9, 13, 17, 21, 25, 29, ....

___ out of 4

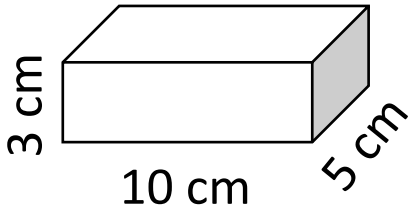
# Quiz 2

1) Expand $(x + 6)(x - 2)$

2) Add a sector to the circle below.

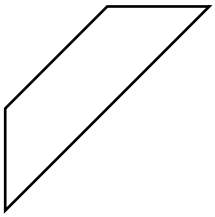


3) What is the volume?

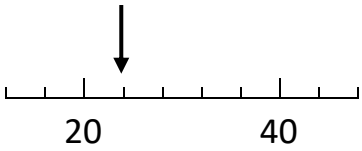



4) List all the factors of 24.

5) Add symmetry lines to the shape below.



6) The arrow points towards...



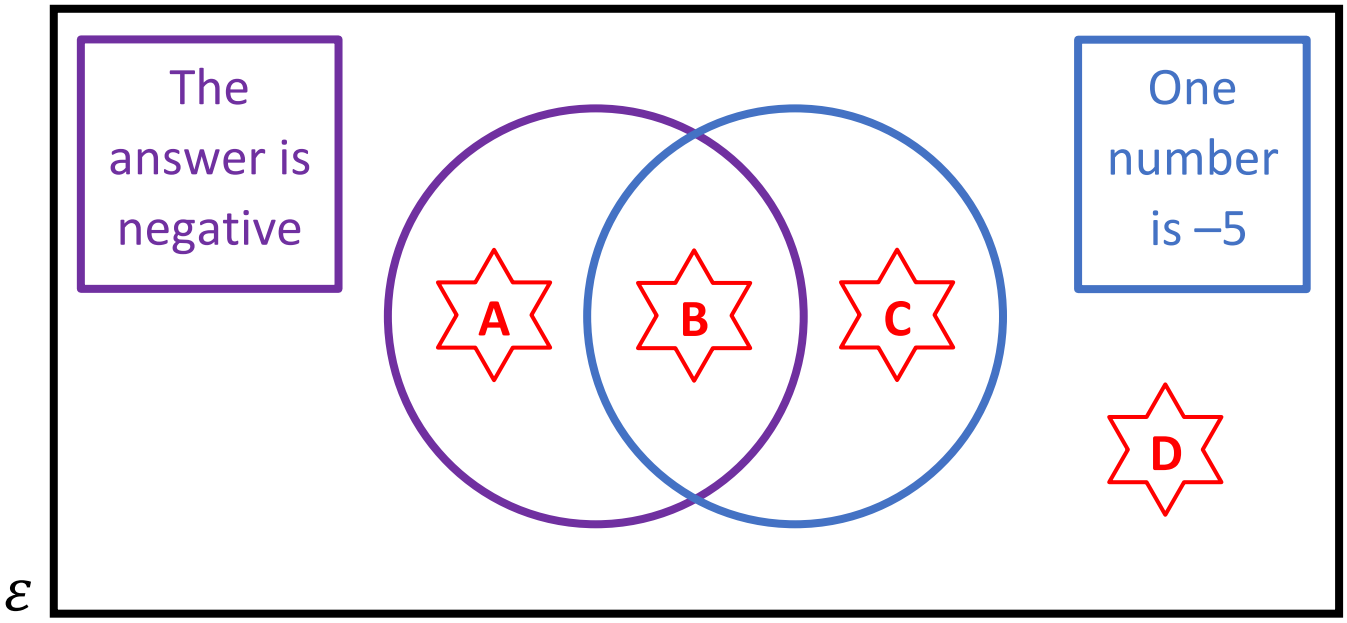

7) 2.5 × 9

8) Solve the equation $4x - 3 = 41$

9) Which is longer?
1 metre or
1 yard?

___ out of 9

# Venn Diagram Challenge 1




Think of a multiplication sum $a \times b$ that could fit into each region. If you think a region is impossible to fill, explain why!

A

B

C

D

# Example 2

Expand and simplify the following expression.

$$(x+5)(x+3)-(x+7)(x-2)$$

$(x+5)(x+3)-(x+7)(x-2)$

$= (x^2+3x+5x+15)-(x^2-2x+7x-14)$ (F O I L)

$= (x^2+8x+15)-(x^2+5x-14)$

$= x^2+8x+15-x^2-5x+14$

$= 3x+29$

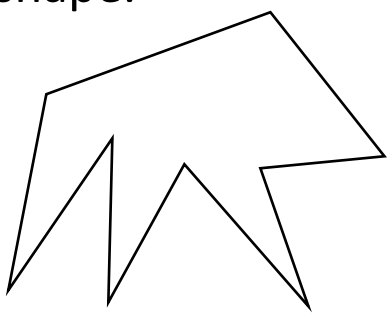
# Exercise 2

Expand and simplify the following expression.

$$(x + 7)(x - 2) - (x + 3)(x + 4)$$

___ out of 5

# Quiz 3

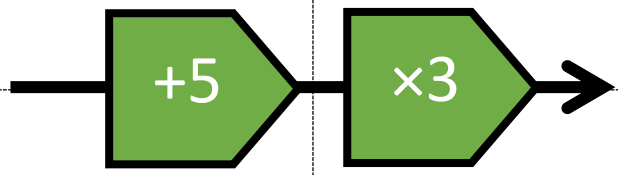
| | | |
|---|---|---|
| 1) $\sqrt[3]{27}$ | 2) Circle all the multiples of 3.<br><br>54 76 81 94<br><br>105 145 187 | 3) Name this shape.<br>  |
| 4) Solve the equation $\frac{x+2}{3} = 5$. | 5) Write the reciprocal of $\frac{4}{5}$ as a mixed number. | 6) Simplify the ratio 21 : 28. |
| 7) Write 65% as a decimal. | 8) Write 65% as a fraction. | 9) Simplify your answer to question 8. |

___ out of 9

# The Function Machine

1) What is the output if the input is 2.5?

2) What is the input if the output is 24?




3) The input is a prime number and the output is a square number. What is the input and output?

4) What is the $n$th term of the sequence generated by this function machine?

___ out of 6

# Example 3

Solve the equation $\frac{4x+2}{2} = \frac{2x-5}{3}$.

$$\frac{4x+2}{2} = \frac{2x-5}{3}$$

$$4x+2 = \frac{2(2x-5)}{3} \quad \text{[Multiply by 2]}$$

$$3(4x+2) = 2(2x-5) \quad \text{[Multiply by 3]}$$

$$12x+6 = 4x-10 \quad \text{[Expand]}$$

$$8x+6 = -10 \quad \text{[Subtract 4x]}$$

$$8x = -16 \quad \text{[Subtract 6]}$$

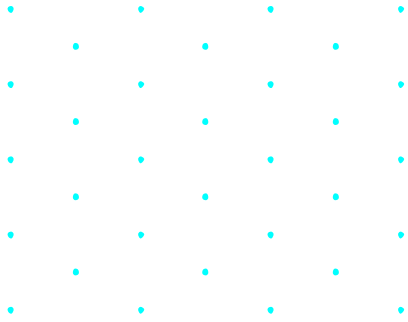
$$x = -2 \quad \text{[Divide by 8]}$$

# Exercise 3

Solve the equation $\frac{3x+1}{4} = \frac{2x-4}{5}$.

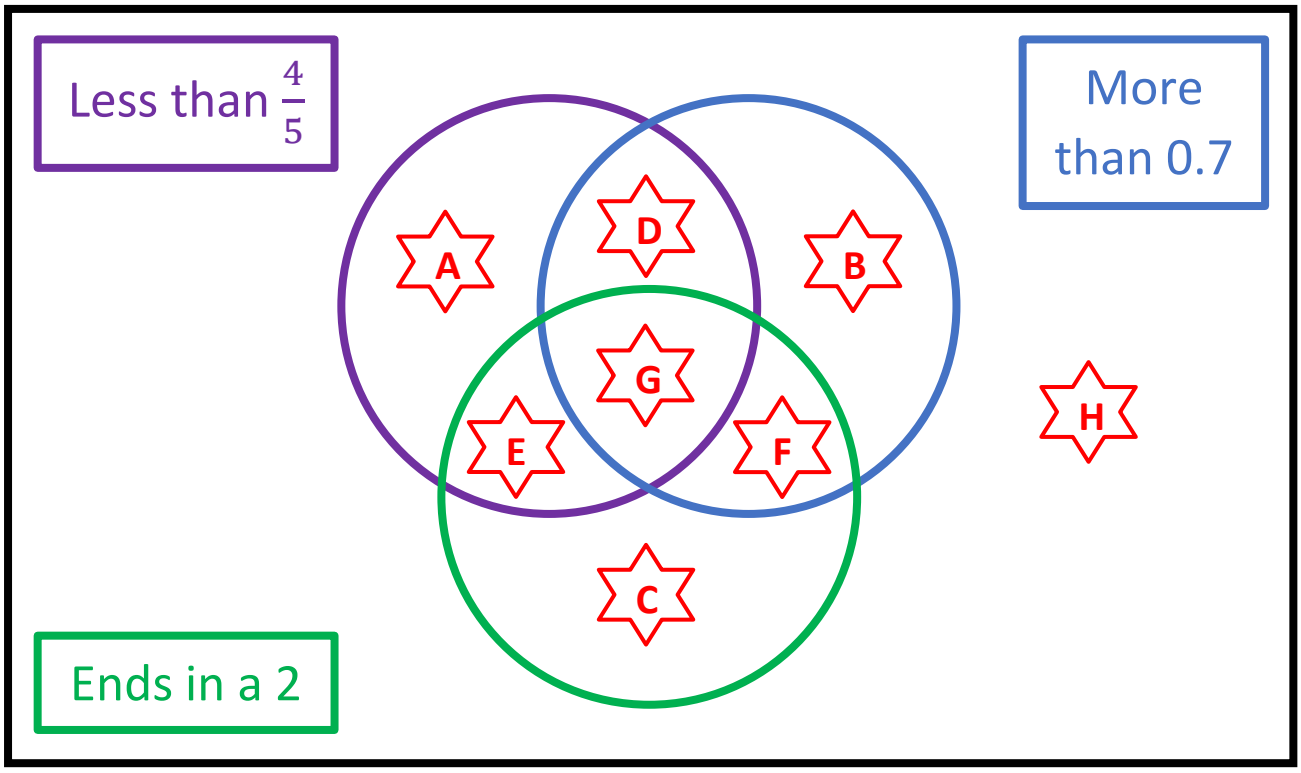
___ out of 5

# Quiz 4

| | | |
|---|---|---|
| 1) Change $3\frac{2}{5}$ to be an improper fraction. | 2) The diameter of a circle is 9 cm. What is the radius of the circle? | 3) Expand $-2(x-4)$. |
| 4) Draw a cube on the isometric paper below.  | 5) $5^3$ | 6) 8.2 – 1.65 |
| 7) Write the time 12:45 am in the 24-hour clock. | 8) Write 0.4 as a percentage. | 9) $\frac{2}{3}+\frac{3}{5}$ |

___ out of 9

# Venn Diagram Challenge 2




Think of a percentage that could fit into each region.
If you think a region is impossible to fill, explain why!

A

B

C

D

E

F

G

H

# Example 4

9C's favourite colour: Red 7, Blue 5, Pink 6, Yellow 4, Green 2. Draw a pie chart for this data.

$7+5+6+4+2=24$

$360^\circ \div 24 = 15^\circ$

Red

$7 \times 15^\circ = 105^\circ$

Blue

$5 \times 150 = 750$

Pink

$6 \times 15^\circ = 90^\circ$

Yellow

$4 \times 15^\circ = 60^\circ$

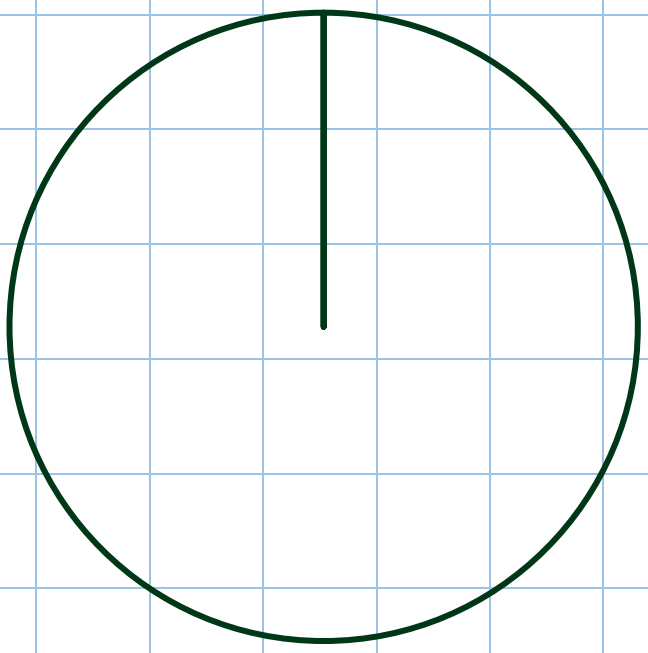
Green

$2 \times 15^\circ = 30^\circ$

A piechart to show 9C's favourite colour

# Exercise 4

9R's favourite colour: Blue 6, Red 5, Pink 4, Green 3, Orange 2. Draw a pie chart for this data.



___ out of 4

# Quiz 5

| | | |
|---|---|---|
| 1) Simplify the ratio 4 : 20. | 2) $\frac{4}{5} \times \frac{3}{4}$ | 3) $\frac{4}{5} - \frac{3}{4}$ |
| 4) What is the $n$th term of the sequence 17, 15, 13, 11, ...? | 5) Expand $6(2 - x)$. | 6) Change the fraction $\frac{7}{2}$ to be a mixed number. |
| 7) How many days are in April? | 8) $2^2 + 2^3$ | 9) The median of 6, 2, 1, 7, 5. |

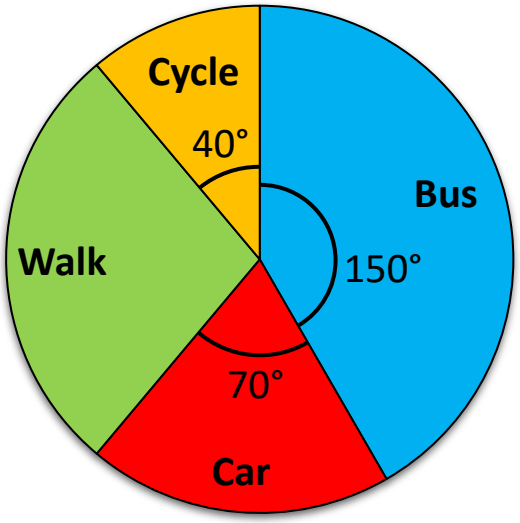
___ out of 9

# Travelling to School

The pie chart shows how learners in year 11 travel to school.

50 learners in year 11 walk to school.

What can you calculate from this information?



# Evaluating the Workbook

# Notes

Name:

# Working with Money

## Additional Tasks

# Contents

# Quiz 1

| | | |
|---|---|---|
| 1) $\frac{2}{3}$ of \$18 | 2) Share £20 between Arwyn and Carys according to the ratio 2 : 3. | 3) Change $\frac{7}{3}$ to be a mixed number. |
| 4) Simplify the fraction $\frac{48}{60}$. | 5) The reciprocal of 7 = | 6) $\frac{4}{7} + \frac{2}{7}$ |
| 7) $\frac{3}{4} + \frac{3}{8}$ | 8) $\frac{3}{4} \times \frac{3}{8}$ | 9) $\frac{3}{4} \div \frac{3}{8}$ |

___ out of 9

# Example 1

Find the median class for the following data that shows the height of plants in a garden.

| Height, $h$ cm | Frequency | Cumulative Frequency |
|---|---|---|
| $0 \leqslant h < 10$ | 3 | 3 |
| $10 \leqslant h < 20$ | 5 | 8 |
| $20 \leqslant h < 30$ | 7 | 15 |
| $30 \leqslant h < 40$ | 3 | 18 |

$3 + 5 + 7 + 3 = 18$

18 is an even number so there are 2 data items in the middle of the data.

$18 \div 2 = 9$.

$9 + 1 = 10$

} Data items 9 and 10 are in the middle.

8 is less than 9, and
15 is greater than 10

Looking at the cumulative frequency column, we see that the median class is $20 \leqslant h < 30$.

# Exercise 1

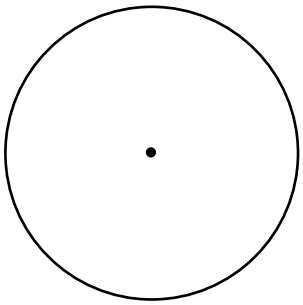
Find the median class for the following data that shows the height of plants in a garden.

| Height, $h$ cm | Frequency |
|---|---|
| $0 \leqslant h < 10$ | 6 |
| $10 \leqslant h < 20$ | 18 |
| $20 \leqslant h < 30$ | 11 |
| $30 \leqslant h < 40$ | 5 |

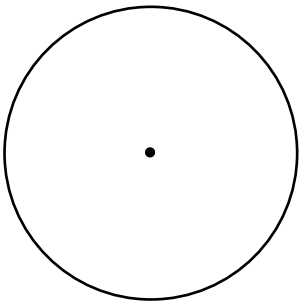
___ out of 3

# Quiz 2

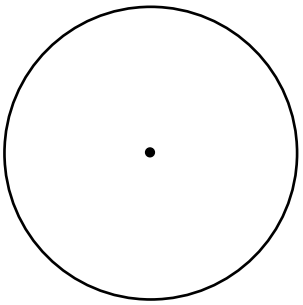
1) Add a radius to the circle below.



2) Add a segment to the circle below.



3) Add a tangent to the circle below.

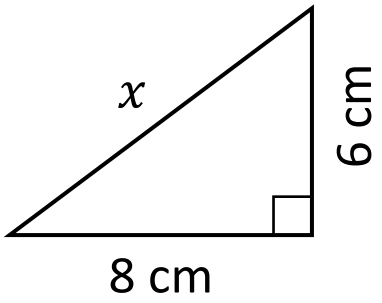


4) Calculate the circumference of a circle with diameter 7.3 cm.

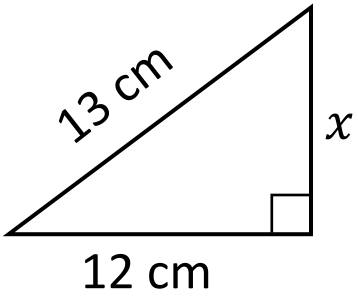
5) Calculate the area of a circle with radius 2.5 m.

6) Calculate the radius of a circle with area 42 cm².

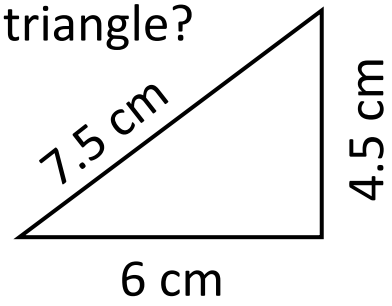
7) Calculate $x$.




8) Calculate $x$.

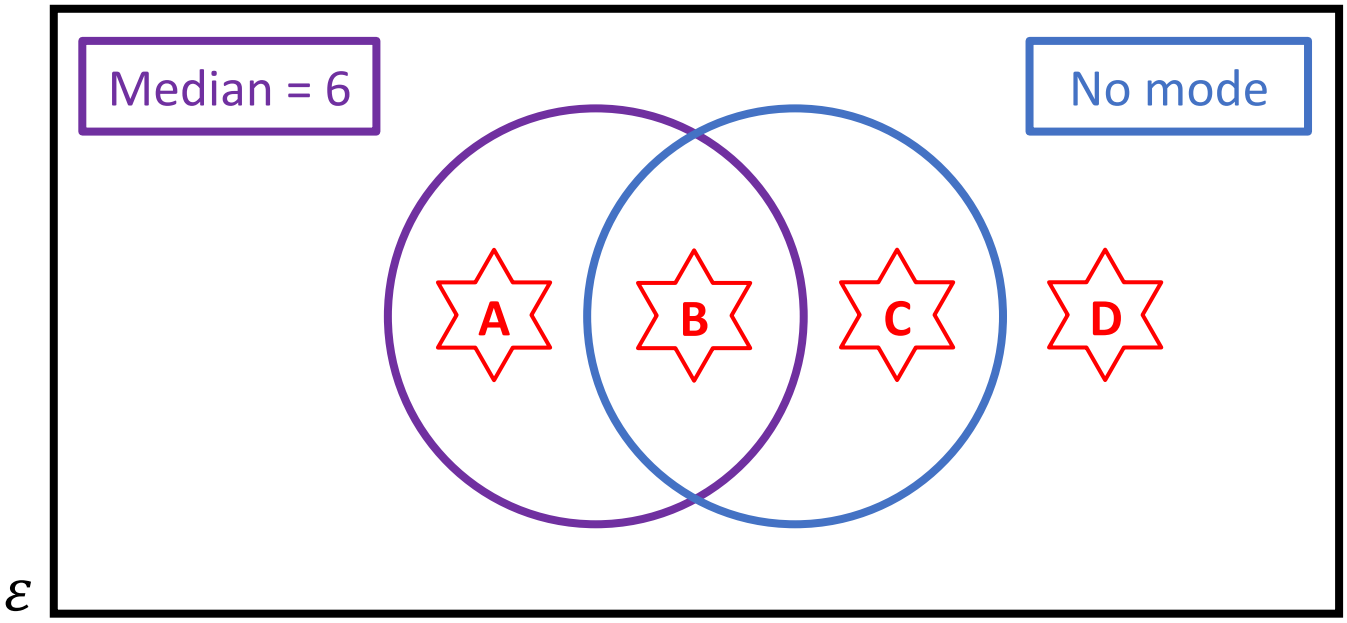



9) Is this triangle a right-angled triangle?




___ out of 9

# Venn Diagram Challenge 1




Think of **4** numbers that could fit into each region.
If you think a region is impossible to fill, explain why!

A

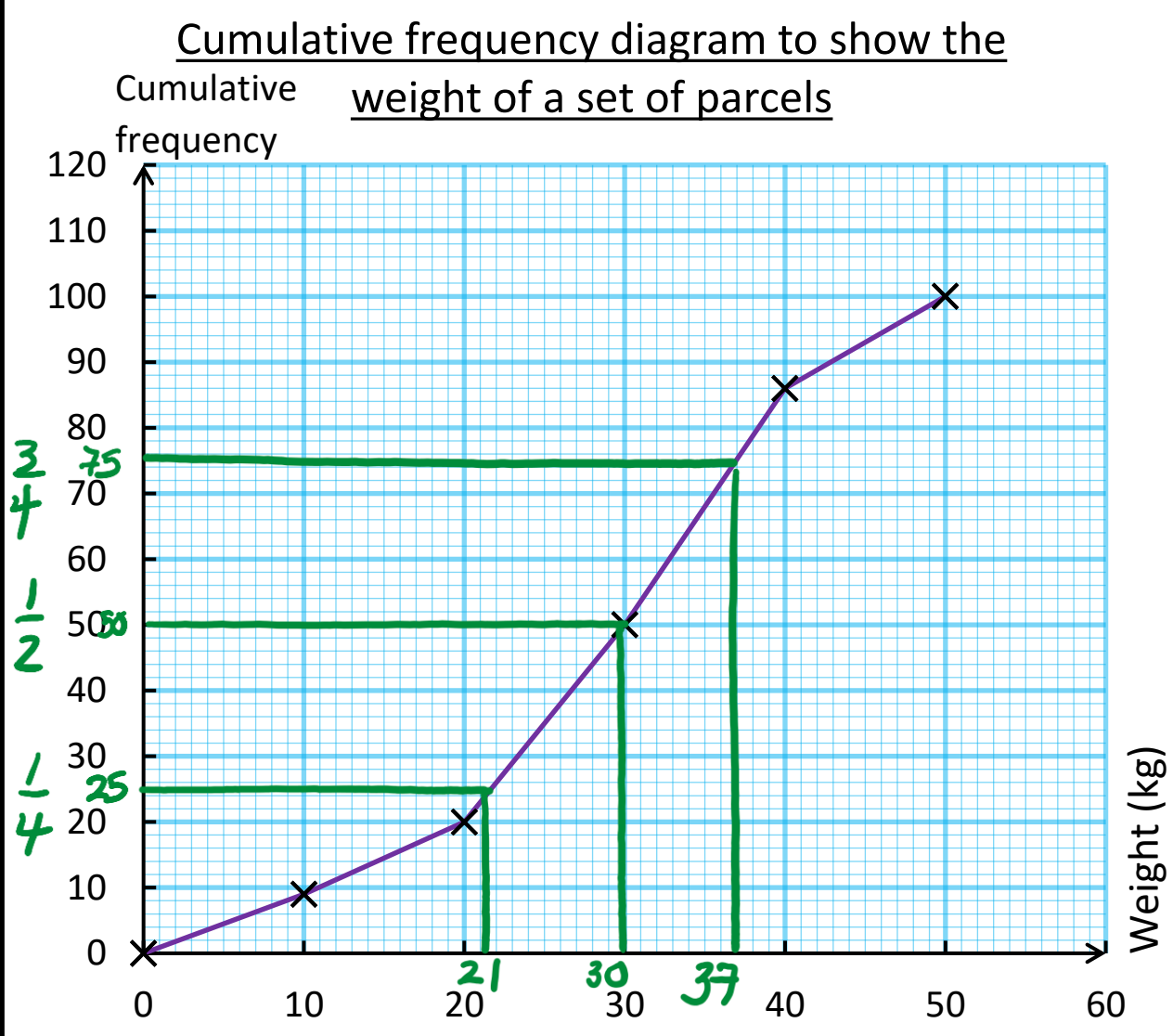
B

C

D

# Example 2

Use the cumulative frequency diagram to estimate the median and interquartile range of the following data.



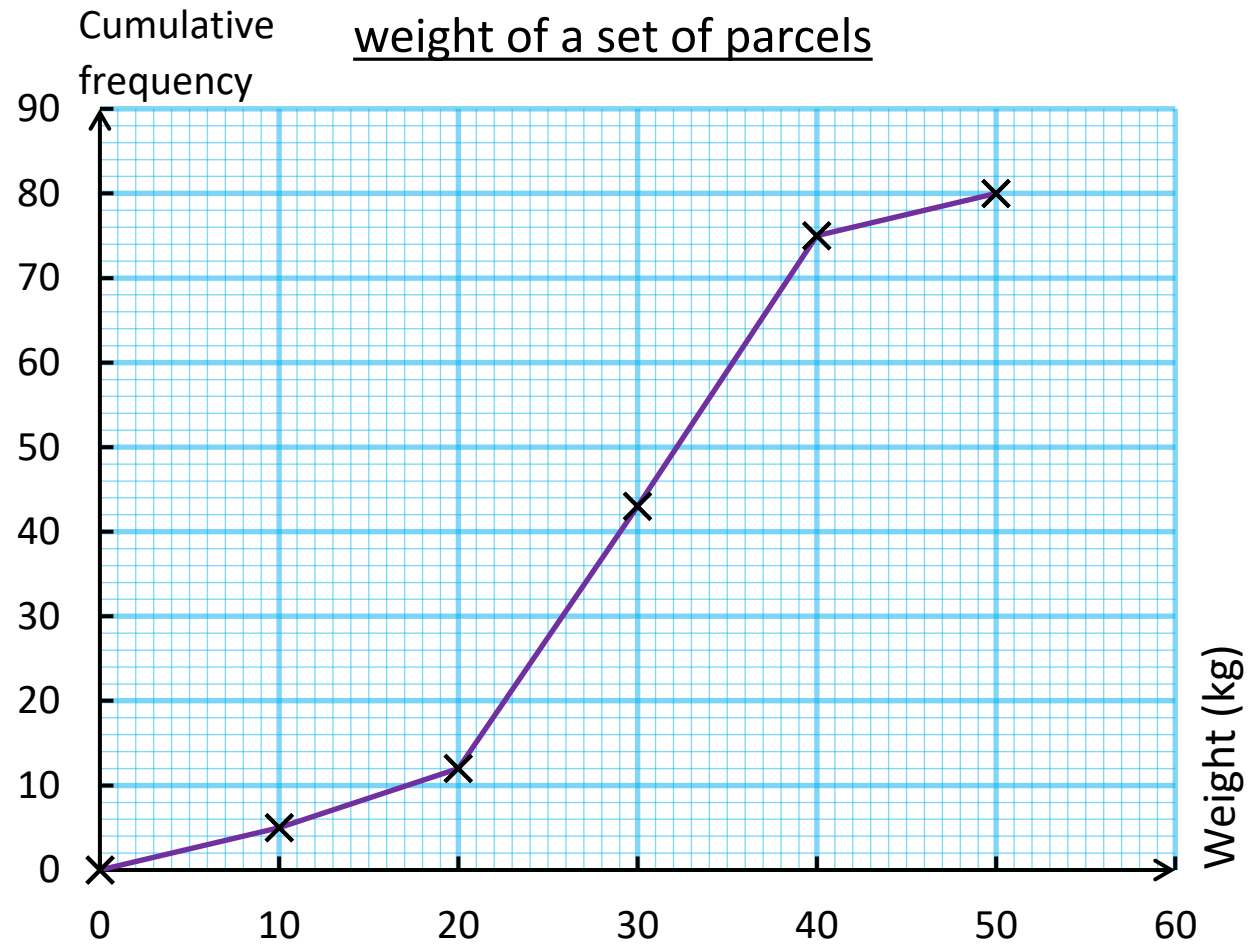

Estimate of the median = 30Kg

Estimate of the interquartile range:

37 - 21 = 16Kg

# Exercise 2

Use the cumulative frequency diagram to estimate the median and interquartile range of the following data.




___ out of 4

# Quiz 3

| | | |
|---|---|---|
| 1) What is the $n$th term of the sequence 54, 57, 60, 63, ...? | 2) What is the 100th term of the sequence 54, 57, 60, 63, ...? | 3) Does the number 456 belong to the sequence 54, 57, 60, 63, ...? |
| 4) Expand $5(x + 7)$ | 5) Expand $-3y(y - 4)$ | 6) Expand $(x + 7)(x - 2)$ |
| 7) Solve $\frac{x}{2} - 3 = 4$ | 8) Solve $\frac{y+2}{3} = 6$ | 9) Solve $(x - 4)(x + 1) = 0$ |

____ out of 9


1) Which value for $x$ would make the mode of the data set 8?

2) Which value for $x$ would make the range of the data set 11?

**10, 8, 3, 2, 5, $x$**

3) Which value for $x$ would make the median of the data set 6?

4) Which value for $x$ would make the mean of the data set 6?

___ out of 5

# Example 3

Two fair dice are rolled. The two numbers that are shown are **multiplied** together to obtain the score.

(a) Complete the following table to show all the possible scores.

| | | Second die | | | | | |
|---|---|---|---|---|---|---|---|
| | × | 1 | 2 | 3 | 4 | 5 | 6 |
| First die | 1 | 1 | 2 | 3 | 4 | 5 | 6 |
| | 2 | 2 | 4 | 6 | 8 | 10 | 12 |
| | 3 | 3 | 6 | 9 | 12 | 15 | 18 |
| | 4 | 4 | 8 | 12 | 16 | 20 | 24 |
| | 5 | 5 | 10 | 15 | 20 | 25 | 30 |
| | 6 | 6 | 12 | 18 | 24 | 30 | 36 |

(b) What is the probability of obtaining a score of 15 or more?

(c) If the two dice were rolled 360 times, how many times would you expect to obtain a score of 15 or more?

(b) $\frac{13}{36}$ (c) $\frac{13}{36} \times 360 = 13 \times 10$

$= 130$ times.

# Exercise 3

Two fair dice are rolled. The two numbers that are shown are **added** together to obtain the score.

(a) Complete the following table to show all the possible scores.

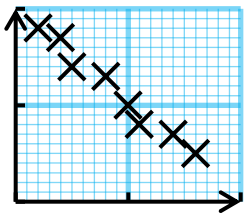
| | | Second die | | | | | |
|---|---|---|---|---|---|---|---|
| | + | 1 | 2 | 3 | 4 | 5 | 6 |
| First die | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |

(b) What is the probability of obtaining a score of 4 or less?

(c) If the two dice were rolled 144 times, how many times would you expect to obtain a score of 4 or less?

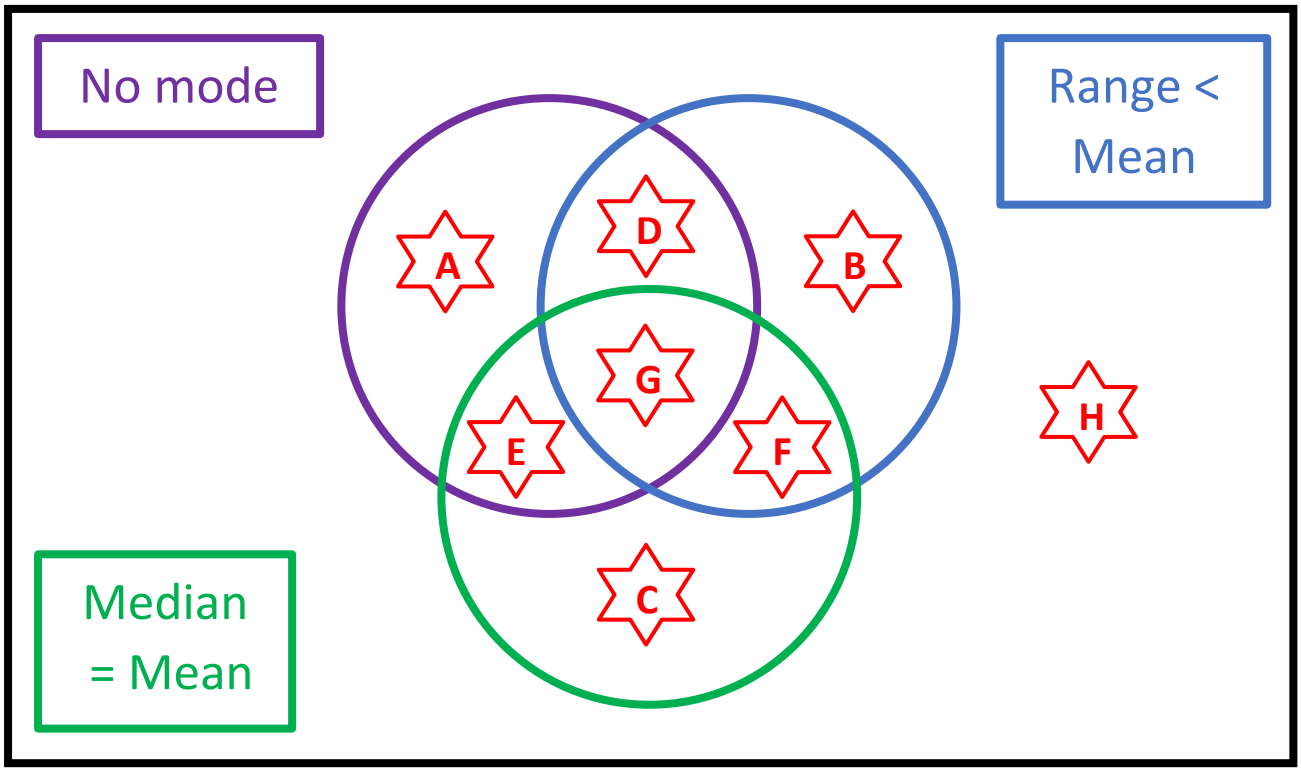
___ out of 5

# Quiz 4

| | | |
|---|---|---|
| 1) The median of 8, 2, 7, 5, 8 | 2) The median of 8, 2, 6, 5 | 3) The median of 6, 2, 8, 6 |
| 4) The interquartile range of 1, 4, 5, 5, 6, 7, 9 | 5) The interquartile range of 1, 4, 5, 6, 7, 7, 8, 9 | 6) What type of correlation is shown?  |
| 7) What is the probability of rolling an even number on a normal fair die? | 8) What is the probability of rolling a prime number on a normal fair die? | 9) What is the probability of choosing a king from a standard deck of playing cards? |

___ out of 9

# Venn Diagram Challenge 2




Think of **5** numbers that could fit into each region.
If you think a region is impossible to fill, explain why!

A

B

C

D

E

F

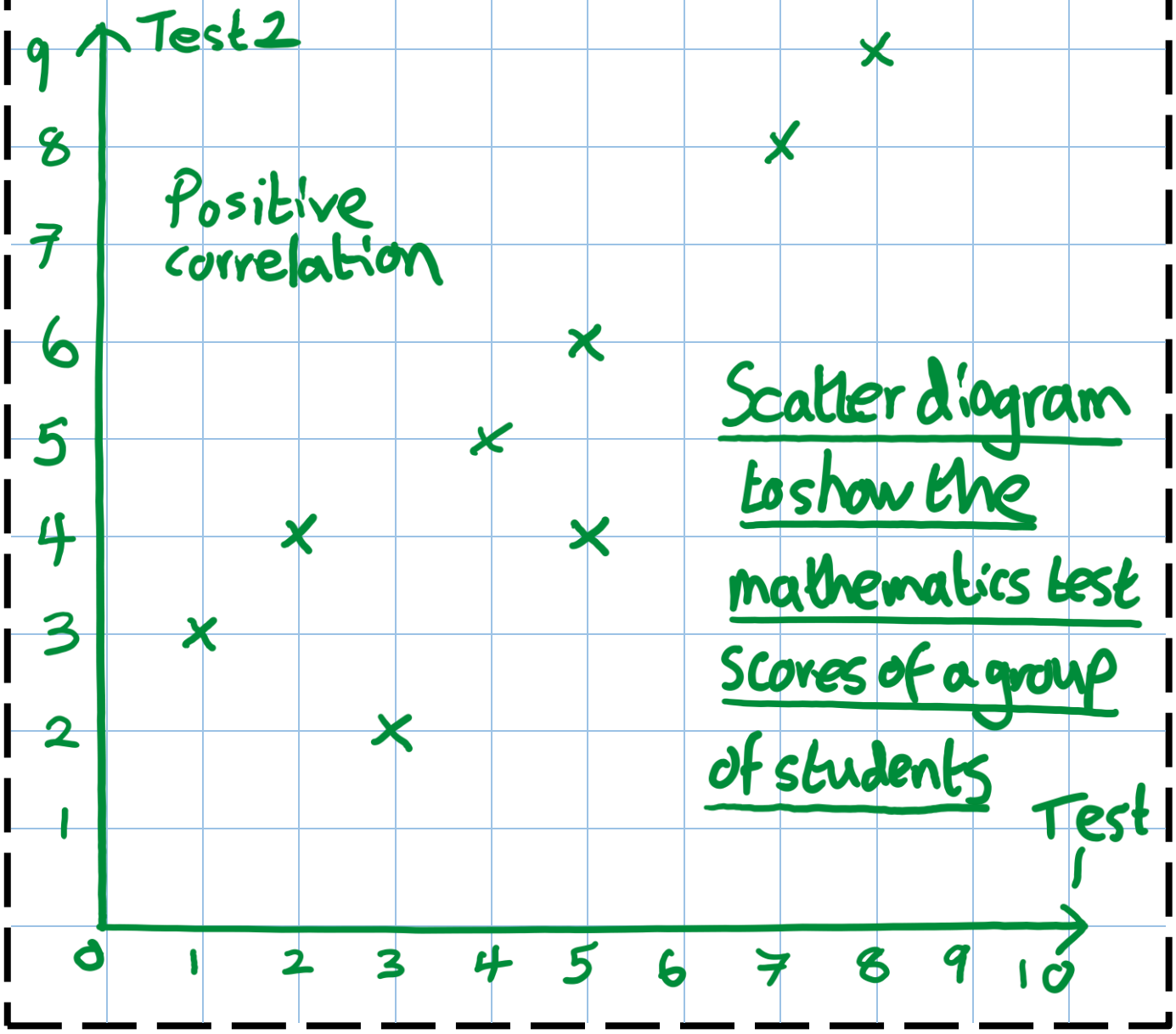
G

H

# Example 4

The following data shows the marks (out of 10) for a group of students in two mathematics tests.
Draw a scatter diagram for the data, noting which type of correlation is shown.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Test 1 | 5 | 8 | 1 | 3 | 7 | 5 | 2 | 4 |
| Test 2 | 4 | 9 | 3 | 2 | 8 | 6 | 4 | 5 |



# Exercise 4

The following data shows the marks (out of 10) for a group of students in art and science tests.
Draw a scatter diagram for the data, noting which type of correlation is shown.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Art | 8 | 2 | 5 | 9 | 1 | 3 | 2 | 7 |
| Science | 2 | 4 | 7 | 3 | 4 | 7 | 1 | 3 |

___ out of 5

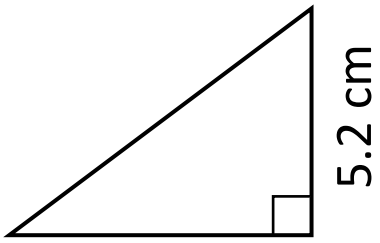
# Quiz 5

| | | |
|---|---|---|
| 1) $\frac{4}{5} - \frac{1}{2}$ | 2) Change $3\frac{2}{7}$ to be an improper fraction. | 3) What is the reciprocal of $\frac{3}{7}$? |
| 4) Calculate the circumference of a circle with radius 7.6 mm. | 5) Write an estimate for the height of a 30 year old woman. | 6) What is the $n$th term of the sequence 15, 12, 9, 6, 3, ...? |
| 7) Expand $2(5 - y)$ | 8) Solve the equation $\frac{8}{x+2} = 4$ | 9) The median of 9, 2, 5, 6 |

___ out of 9

# The Right-Angled Triangle

What can you calculate for the following right-angled triangle?



# Evaluating the Workbook

# Notes

Name:

# Straight Line Graphs

## Additional Tasks

# Contents

# Quiz 1

| | | |
|---|---|---|
| 1) Circle the square numbers.<br><br>1 2 3 4 5<br><br>6 7 8 9 10 | 2) Circle the cube numbers.<br><br>1 2 3 4 5<br><br>6 7 8 9 10 | 3) Circle the prime numbers.<br><br>1 2 3 4 5<br><br>6 7 8 9 10 |
| 4) Sketch an isosceles triangle. | 5) Sketch an equilateral triangle. | 6) Sketch a scalene triangle. |
| 7) Calculate 20% of £40. | 8) Write 20% as a decimal. | 9) Write 20% as a fraction, in its simplest form. |

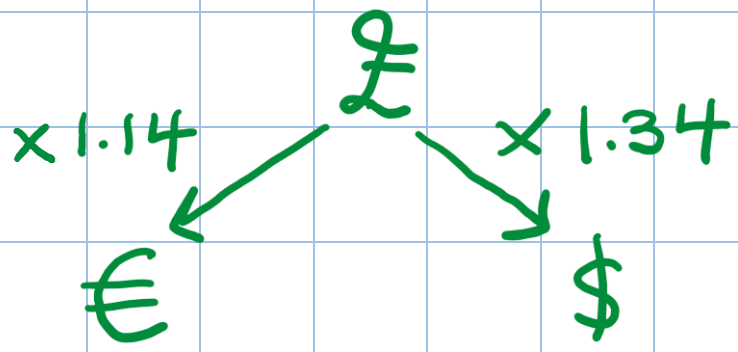
___ out of 9

# Example 1

Catrin sees the following sign in a currency exchange shop.

£1 = €1.14
£1 = $1.34

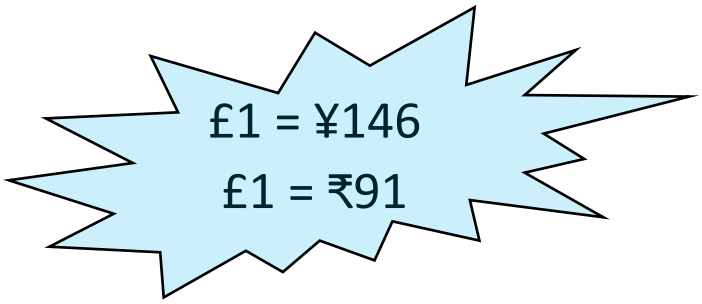
Use the above information to calculate how many dollars Catrin can exchange €150 for.




€150 ÷ 1.14 × 1.34
= $176.31578 95
= $176.32 to the nearest cent.

# Exercise 1

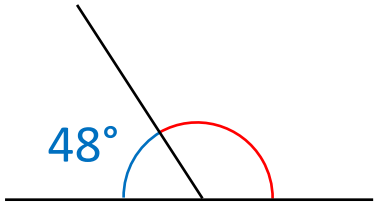
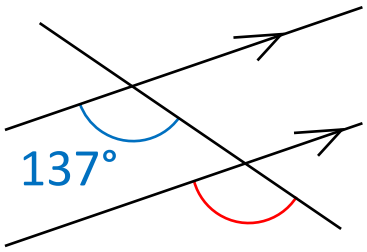
Robin sees the following sign in a currency exchange shop.




Use the above information to calculate how many Indian rupee Robin can exchange ¥2,000 for.

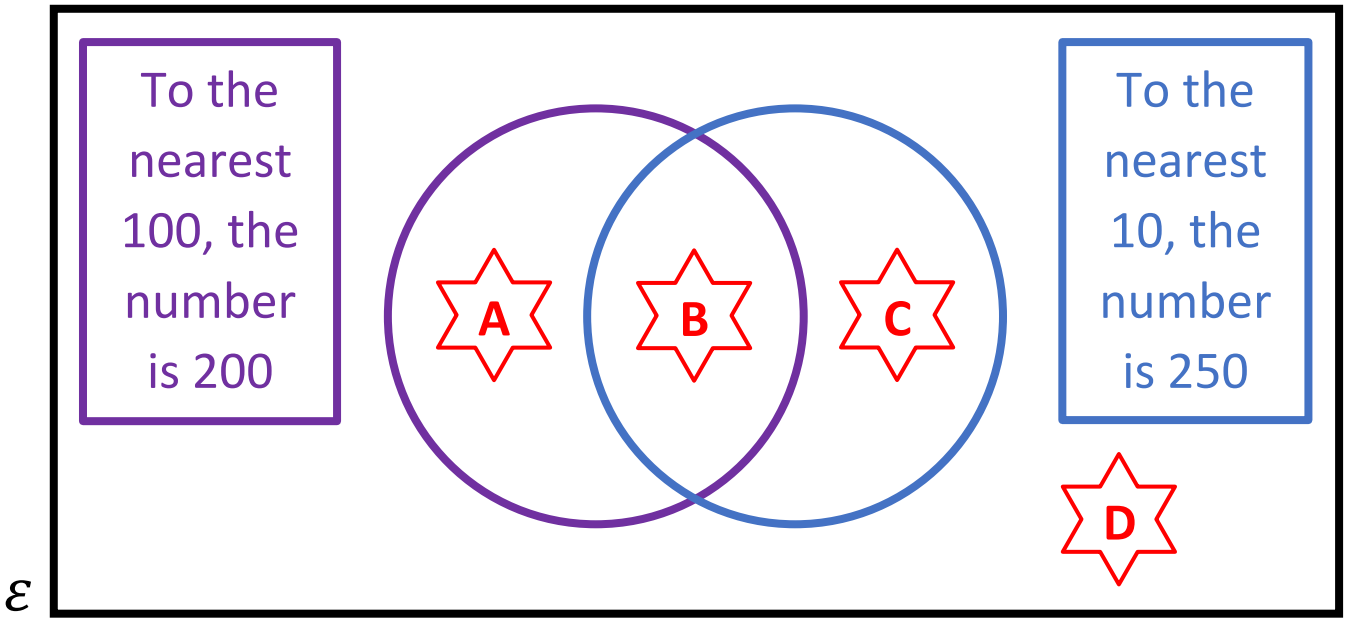
___ out of 3

# Quiz 2

| | | |
|---|---|---|
| 1) What type of angle is the angle 96°? | 2) Calculate the size of the red angle.   | 3) Calculate the size of the red angle.   |
| 4) The mean of 9, 2, 4, 2, 3. | 5) The median of 9, 2, 4, 2, 3. | 6) The mode of 9, 2, 4, 2, 3. |
| 7) 3.4 – 1.8 | 8) 3.4 × 7 | 9) 3.4 ÷ 100 |

___ out of 9

# Venn Diagram Challenge 1




Think of a number that could fit into each region.
If you think a region is impossible to fill, explain why!

A

B

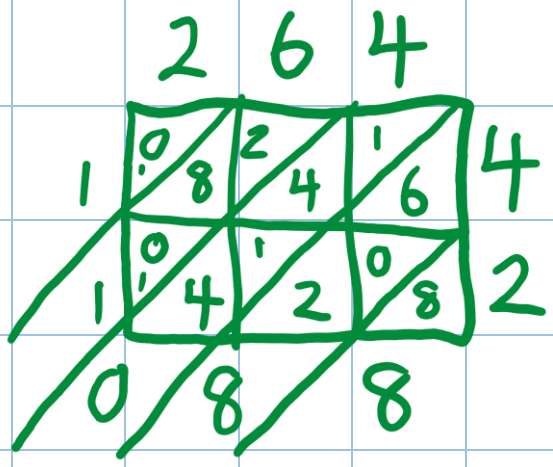
C

D

# Example 2

Calculate 264 × 42.

## Method ①




Answer : 11,088

## Method ②

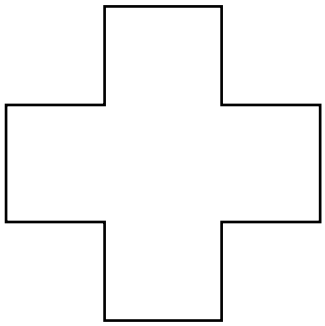
$$\begin{array}{r} 264 \\ \times\ 42 \\ \hline 528 \\ 10560 \\ \hline 11088 \\ \hline \end{array}$$

# Exercise 2

Calculate 429 × 65.

___ out of 2

# Quiz 3

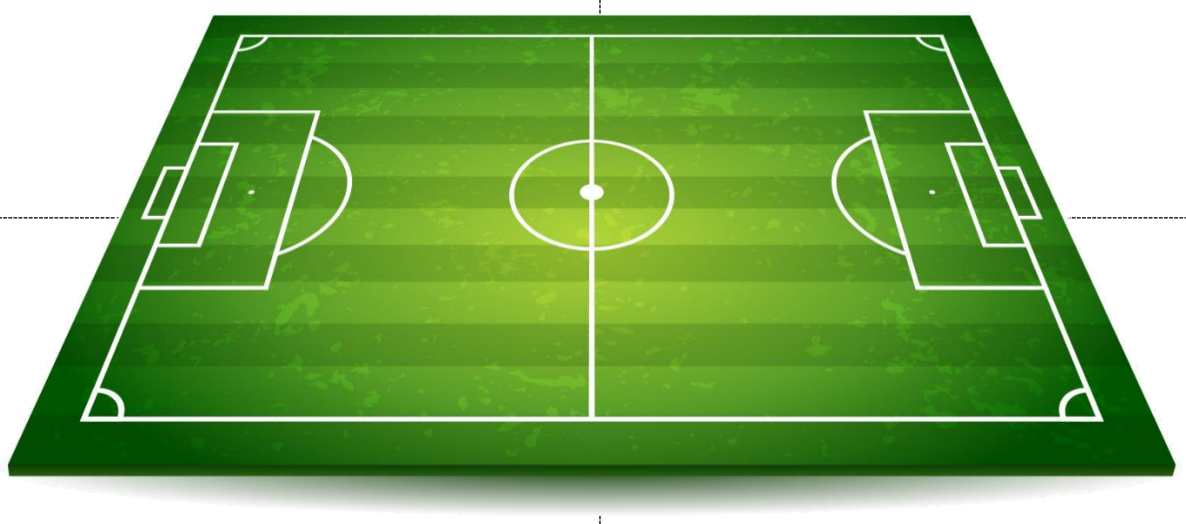
| | | |
|---|---|---|
| 1) Write the time 12:00 am in the 24-hour clock. | 2) How many days are in November? | 3) Will the year 2432 be a leap year? |
| 4) Shade 25% of the shape below.  | 5) Calculate $\frac{3}{7}$ of £35. | 6) 54 + 4.72 + 0.8 |
| 7) 7 × –3 | 8) 7 + –3 | 9) 7 – –3 |

___ out of 9

# The Football Field

1) The length and width of the football field is 90 m and 50 m. What is the perimeter of the field?

2) On the day of the game the stadium was 80% full. If the stadium's capacity is 100,000, how many supporters were watching the game?



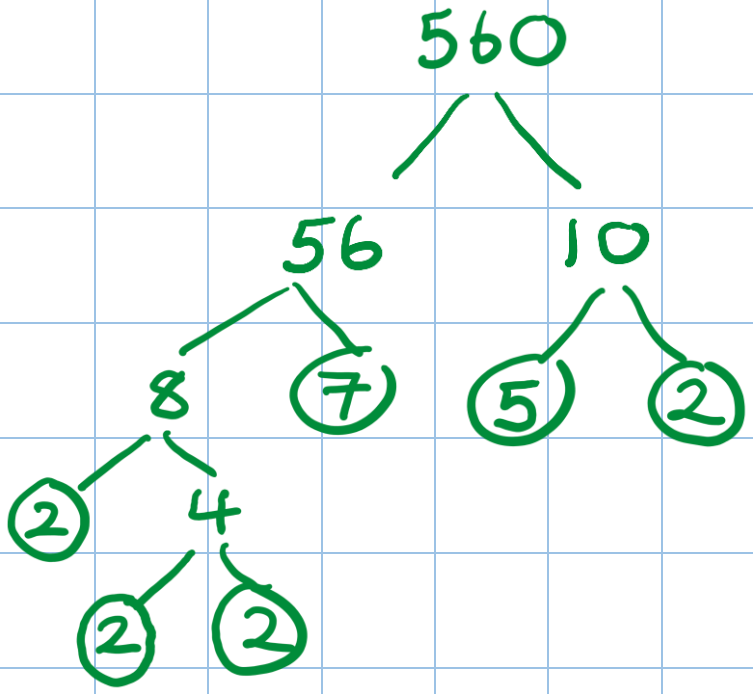
3) How many arcs can be seen on a football field?

4) What is the distance from the centre of the field to one of the corners?

___ out of 4

# Example 3

What is the smallest number you can divide 560 by in order to change it to be a square number?




$560 = 2 \times 2 \times 2 \times 2 \times 5 \times 7$

$560 = 2^4 \times 5^1 \times 7^1$

560 is not a square number as the indices 1 and 1 are odd numbers.

We must divide 560 by $5 \times 7 = \underline{35}$ to change it to be a square number.

# Exercise 3

What is the smallest number you can divide 336 by in order to change it to be a square number?

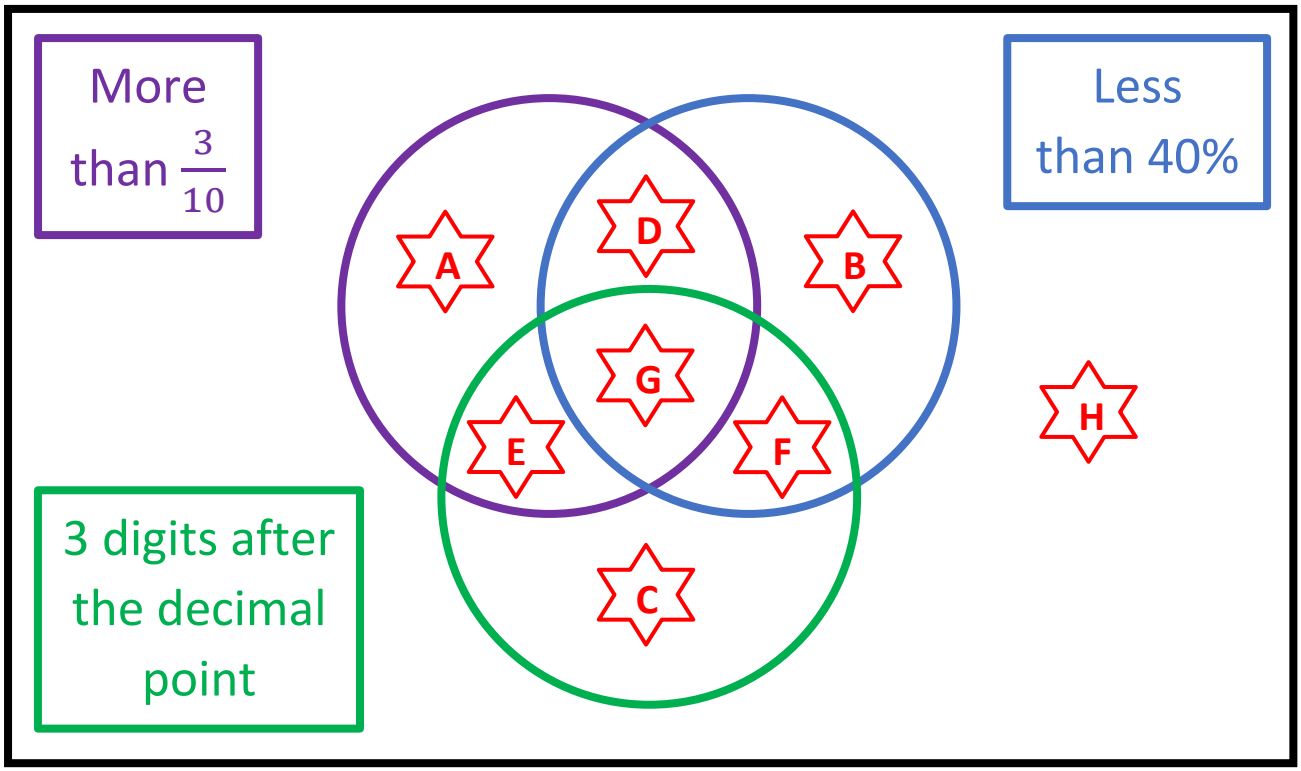
___ out of 4

# Quiz 4

| | | |
|---|---|---|
| 1) $6 \times 12$ | 2) $6 - 12$ | 3) $6 \div 12$ |
| 4) $6^2$ | 5) 6% of 500 | 6) Simplify the fraction $\frac{6}{24}$. |
| 7) Write 6% as a decimal. | 8) $6 \div 10$ | 9) What is the name of a polygon with 6 edges? |

___ out of 9

# Venn Diagram Challenge 2




Think of a decimal that could fit into region.

If you think a region is impossible to fill, explain why!

A

B

C

D

E

F

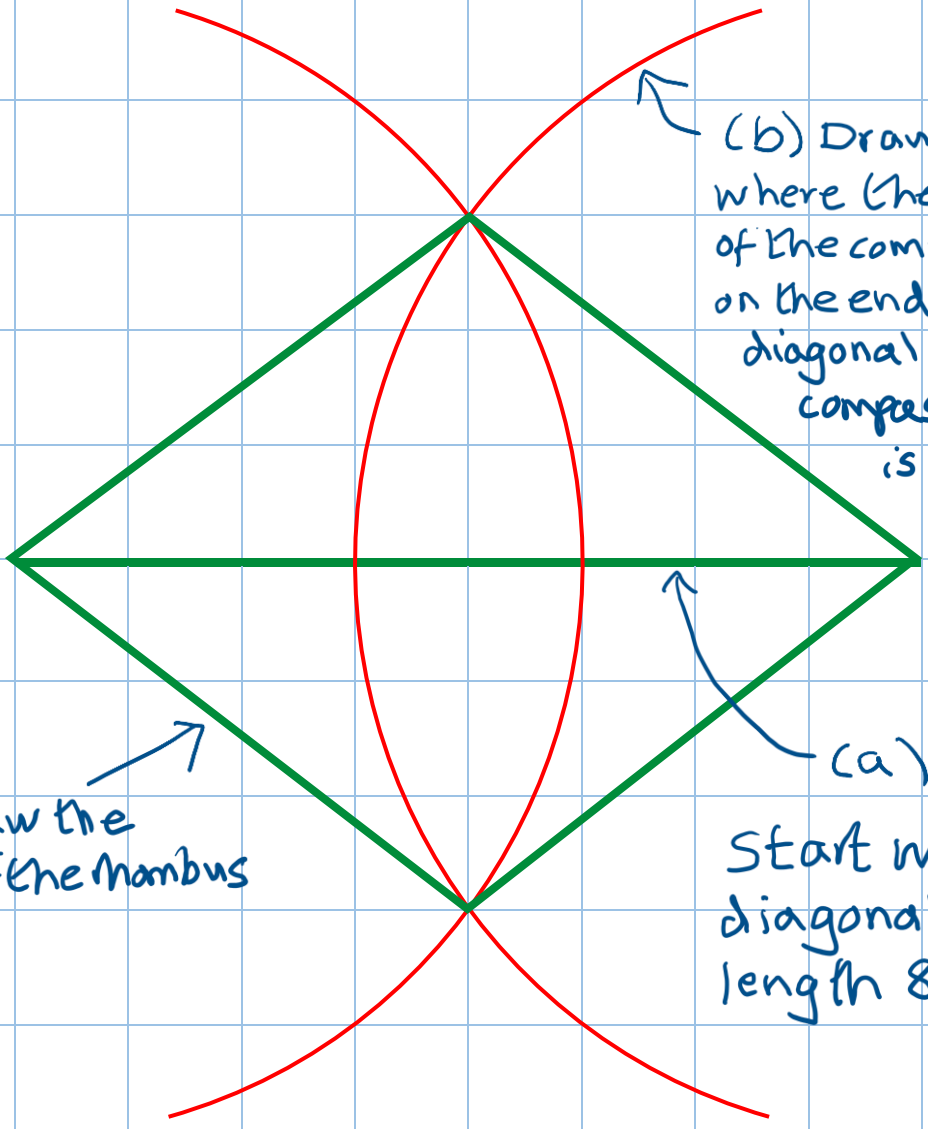
G

H

# Example 4

Using the grid below, draw a rhombus where

- the length of the longest diagonal is 8 units;
- the rhombus has edges of length 5 units.



# Exercise 4

Using the grid below, draw a rhombus where

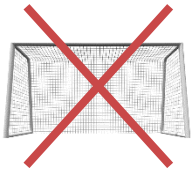
- the length of the longest diagonal is 7 units;
- the rhombus has edges of length 4 units.

___ out of 3

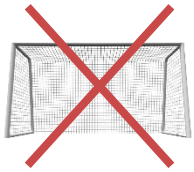
# Quiz 5

| | | |
|---|---|---|
| 1) $\sqrt{64}$ | 2) What is the $n$th term of the sequence –25, –23, –21, –19, –17, ... | 3) Solve the equation $2x = 36$ |
| 4) Simplify the ratio 40 : 60. | 5) 20 – 4.59 | 6) List all the factors of 42. |
| 7) How many pennies are in £2.40? | 8)<br>5 cm = _____ mm<br>4 kg = _____ g<br>1 stone = _____ pounds<br>1 inch ≈ _____ cm | 9) 43 minutes before 3:24 pm. |

___ out of 12



# Cost of the Shoes



The same pair of shoes are sold in London, Paris and Geneva. The cost of the shoes is

£136 in London, €174 in Paris, and 189 Swiss francs in Geneva.

The exchange rates are £1 = €1.27 and £1 = 1.39 Swiss francs. What can you calculate from this information?

# Evaluating the Workbook

# Notes

Name:

# Movement with Sphero

## Additional Tasks

# Contents

# Quiz 1

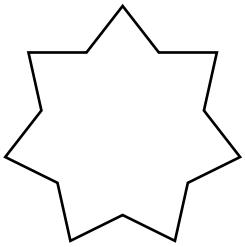
1) $\sqrt{25}$

2) Circle the prime numbers.

41 42 43 44 45

46 47 48 49 50

3) What is the order of rotational symmetry of the shape below?



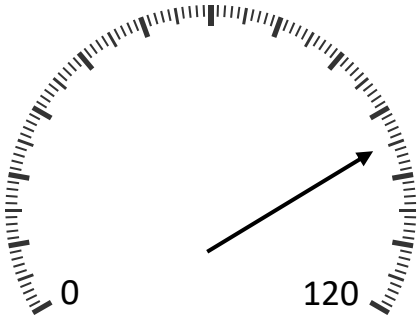
4) Simplify $7x - 2y + 3x - 5y$

5) Substitute $x = 5$ into the expression $4x + 9$.

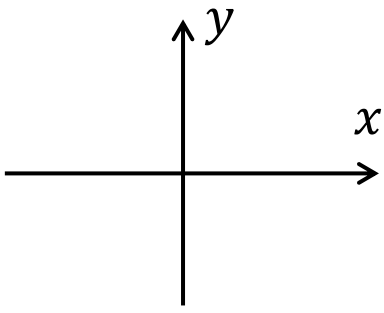
6) Solve the equation $6x - 3 = 21$

7) What is the formula for calculating the area of a triangle?

8) The arrow points towards...



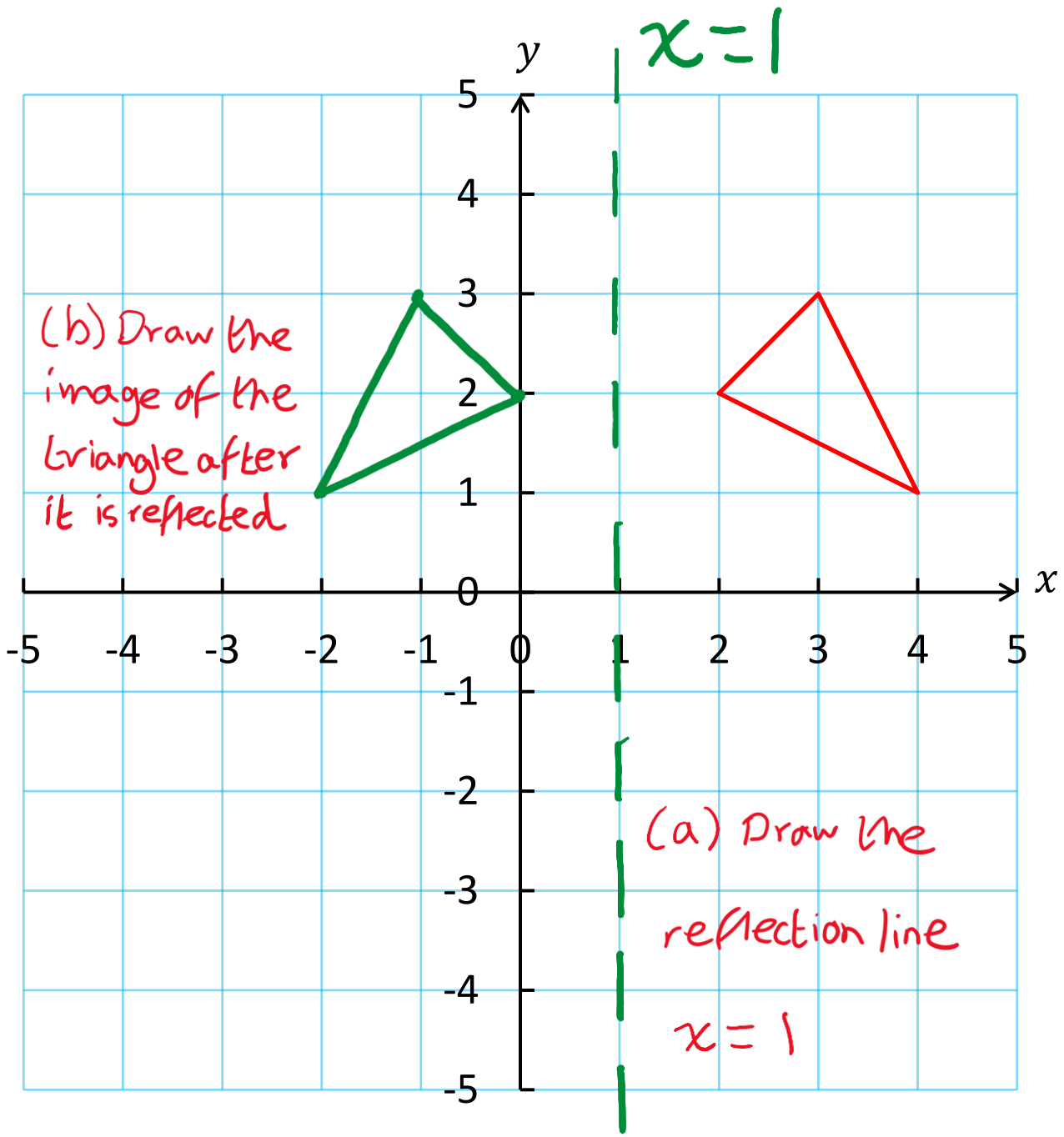

9) Label the quadrants.




___ out of 9

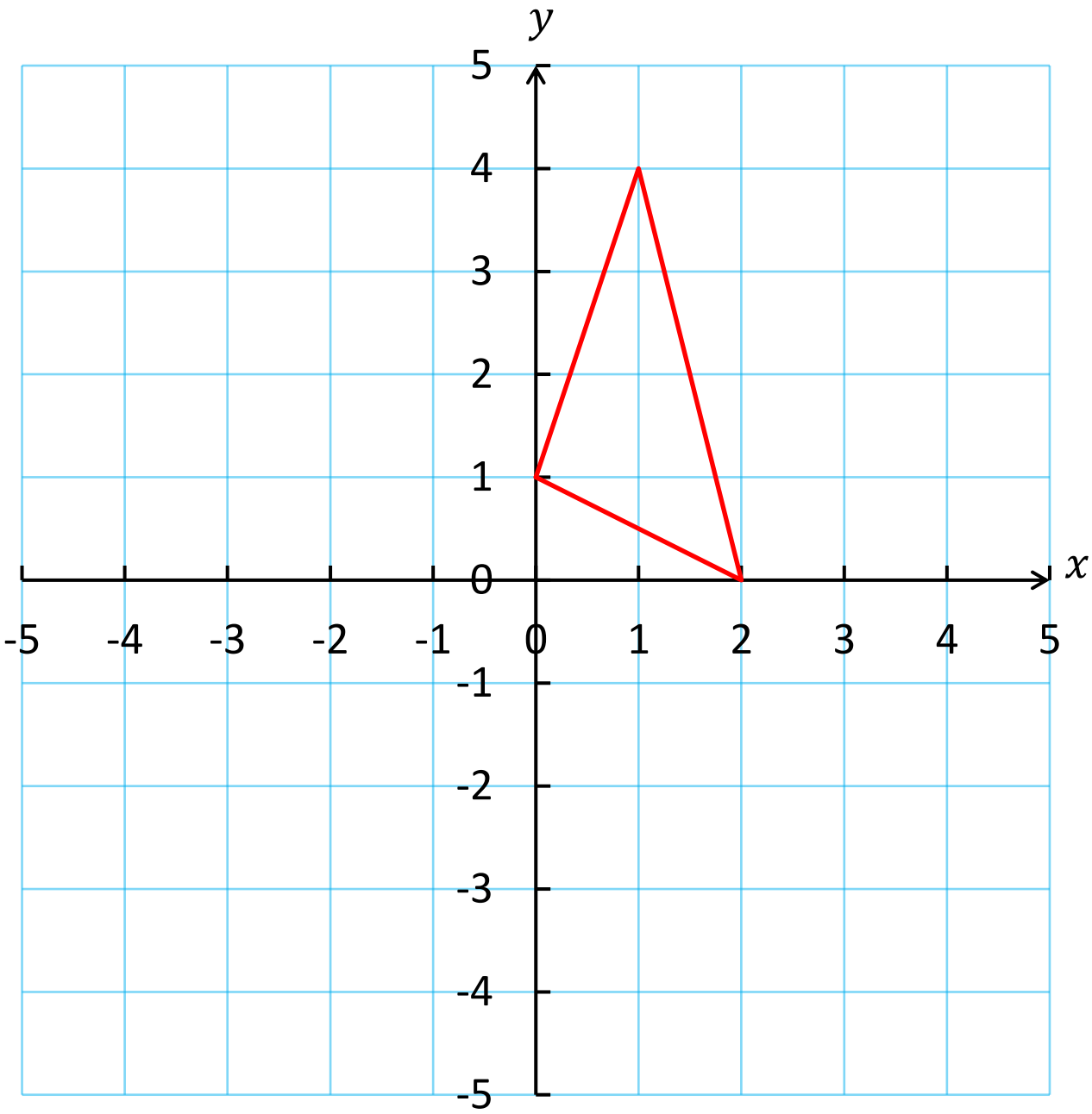
# Example 1

Reflect the triangle below in the line $x = 1$.



# Exercise 1

Reflect the triangle below in the line $x = -1$.



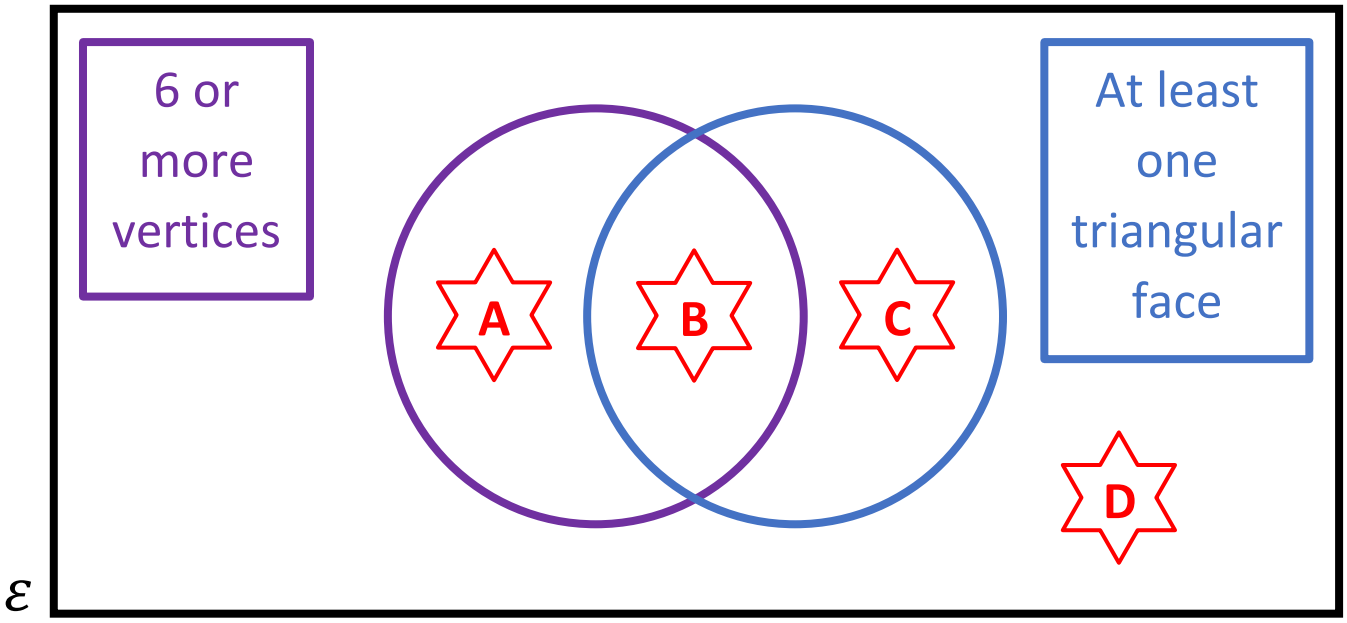

___ out of 2

# Quiz 2

| | | |
|---|---|---|
| 1) Sketch a rhombus. | 2) Sketch a trapezium. | 3) Sketch an arrowhead. |
| 4) The mode of 9, 3, 5, 2, 3, 2 | 5) The range of 9, 3, 5, 2, 3, 2 | 6) The median of 9, 3, 5, 2, 3, 2 |
| 7) $4^2 + 2^3$ | 8) 40% of £90 | 9) $\frac{5}{6} - \frac{1}{4}$ |

___ out of 9

# Venn Diagram Challenge 1




Think of a 3-D shape that could fit into each region.
If you think a region is impossible to fill, explain why!

A

B

C

D

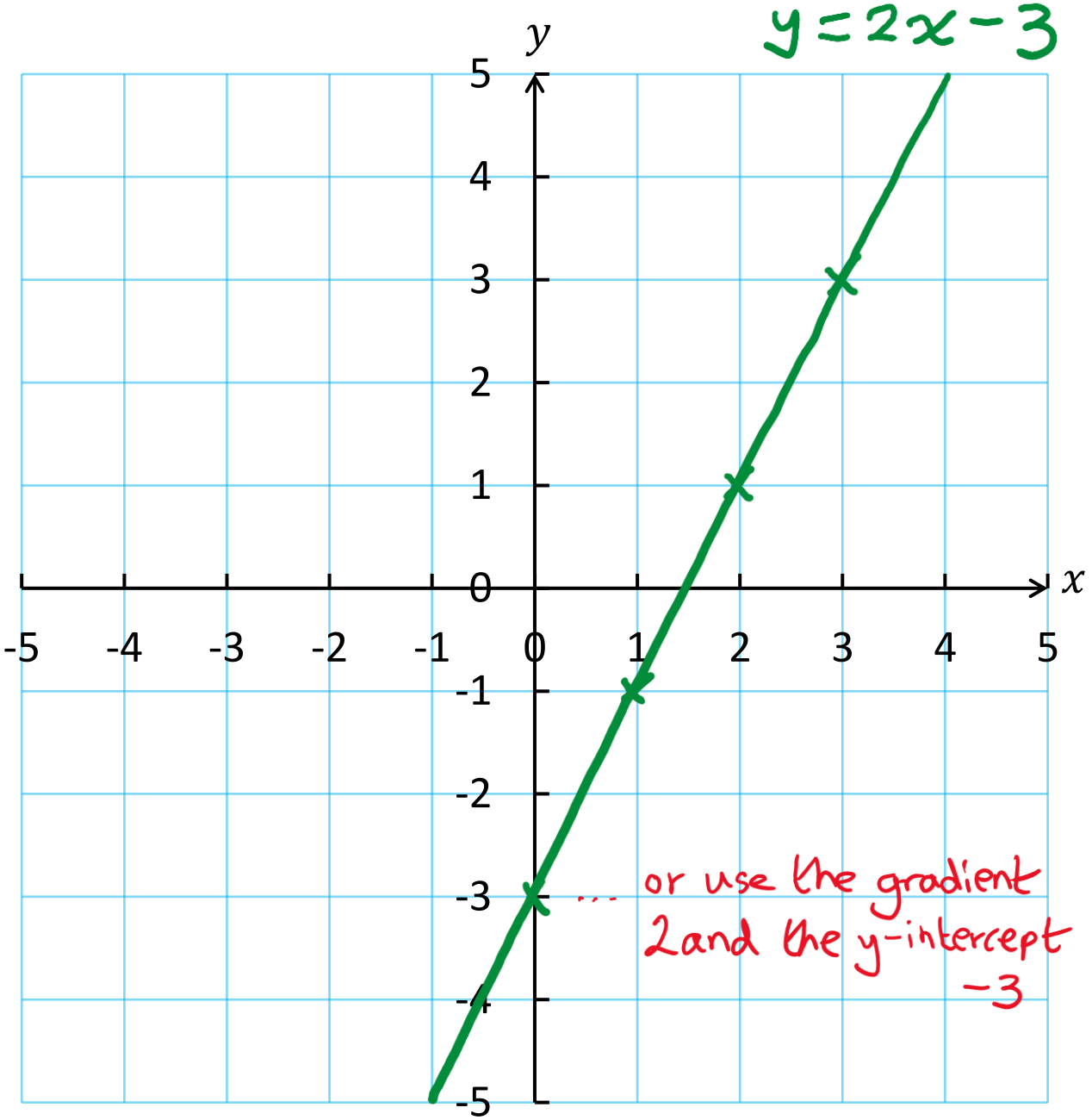
# Example 2

On the graph paper below, plot the line $y = 2x - 3$.

| $x$ | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| $y$ | -3 | -1 | 1 | 3 |

← You can form a table of values to be plotted...

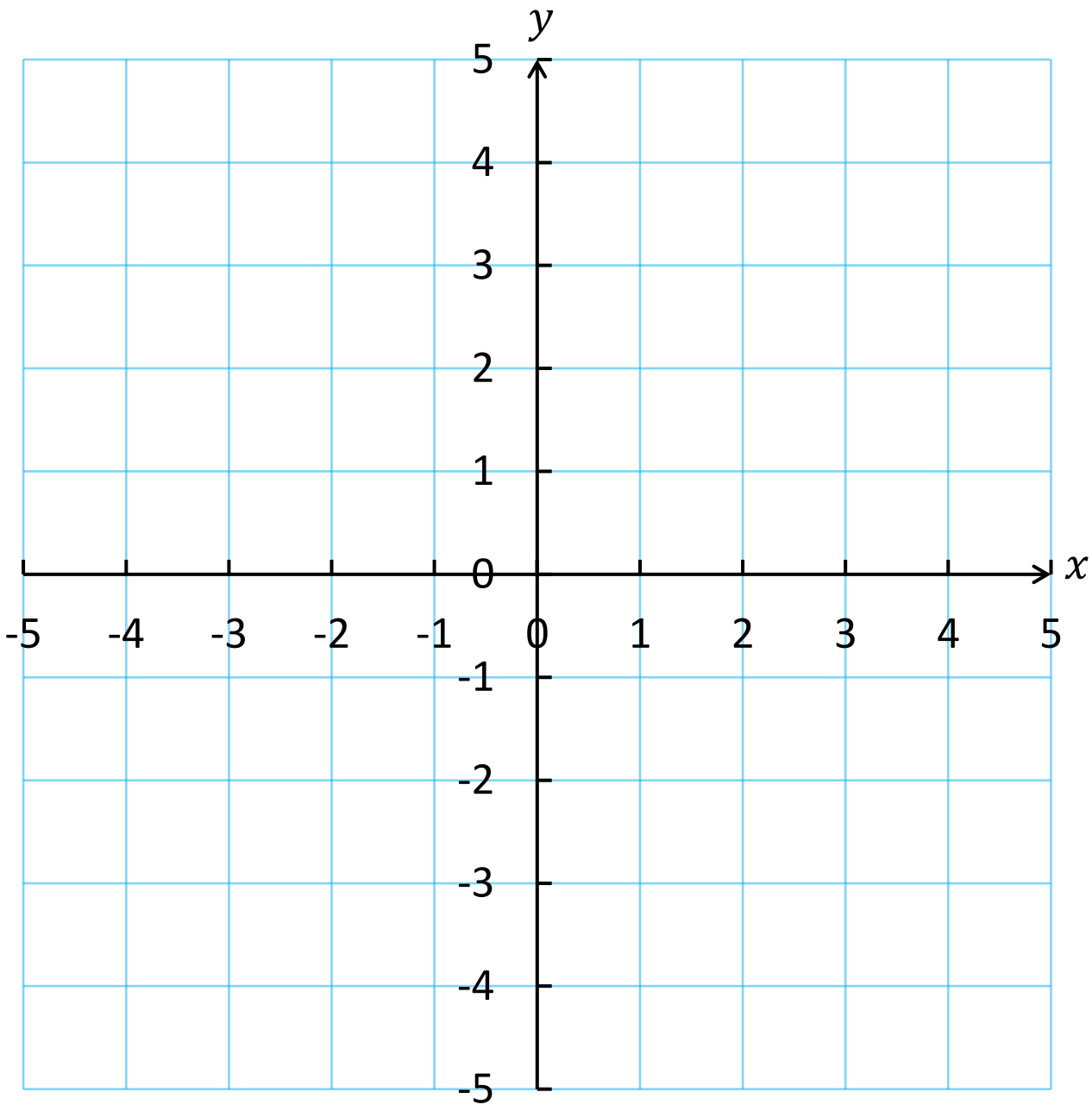
$y = 2x - 3$




... or use the gradient 2 and the y-intercept -3

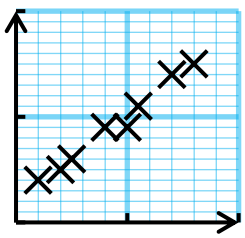
# Exercise 2

On the graph paper below, plot the line $y = -3x + 4$.




___ out of 2

# Quiz 3

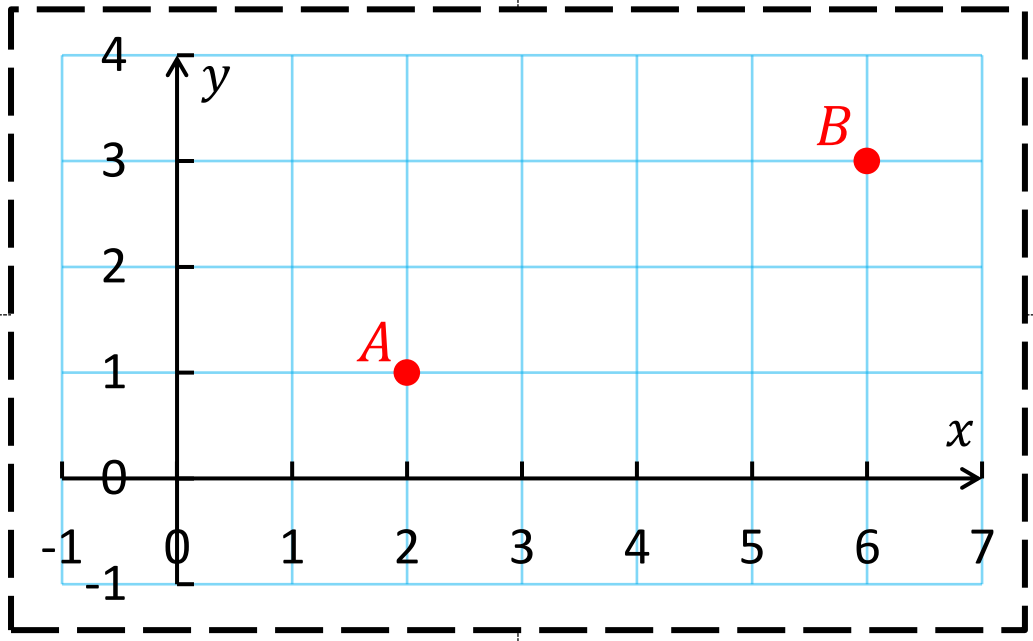
| | | |
|---|---|---|
| 1) Write $3\frac{2}{7}$ as an improper fraction. | 2) $\frac{2}{9}+\frac{4}{9}$ | 3) Write down the reciprocal of $\frac{2}{3}$ |
| 4) What is the formula for calculating the area of a circle? | 5) Expand $4(x-2)$ | 6) Expand $(y+4)(y-1)$ |
| 7) What type of correlation is shown?  | 8) $3\frac{1}{2}\times 2$ | 9) $-7\times -6$ |

___ out of 9

# Co-ordinates

1) What are the co-ordinates of $A$ and $B$?

2) What is the co-ordinate of the mid-point of the line $AB$?



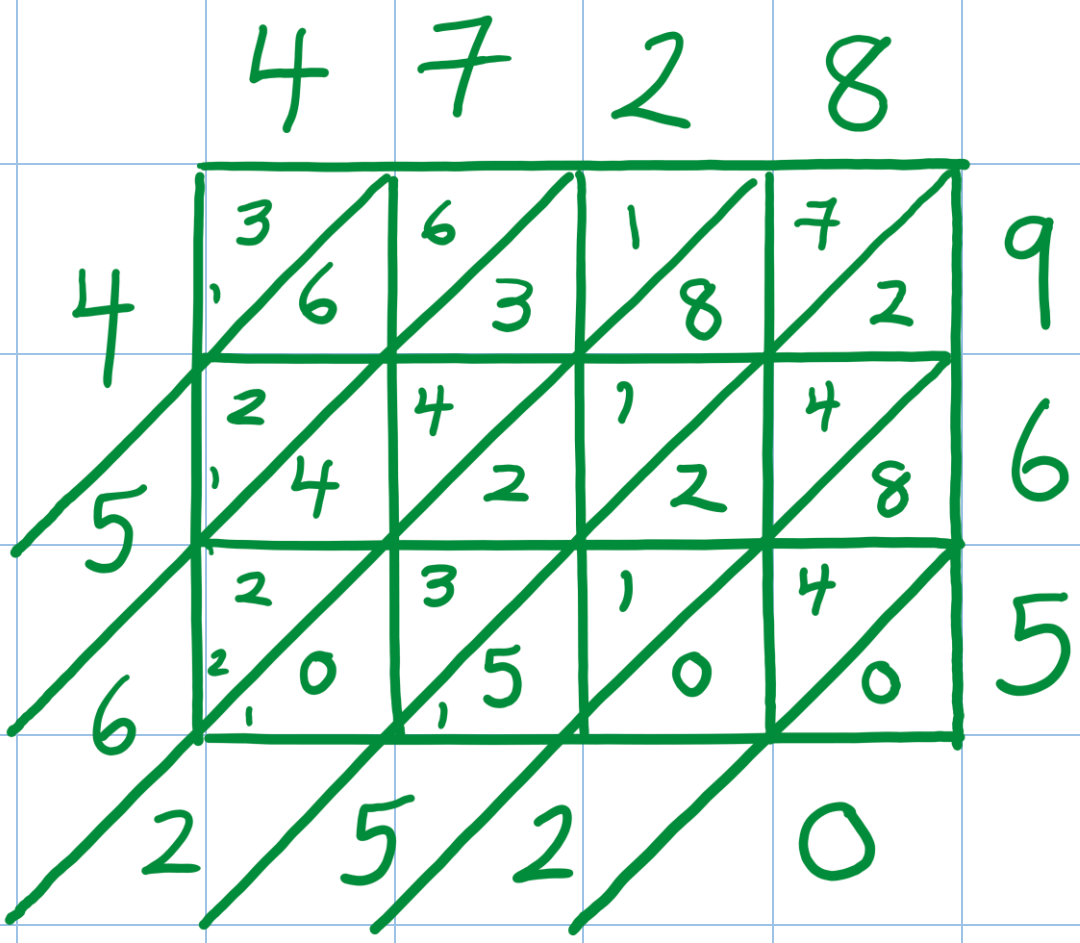

3) What is the gradient of the line $AB$?

4) What is the distance between $A$ and $B$?

___ out of 4

# Example 3

Calculate 4728 × 965.



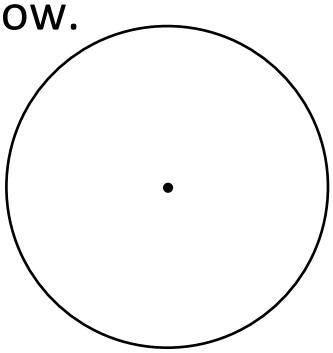
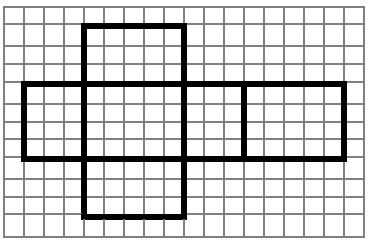

Answer: 4,562,520

# Exercise 3

Calculate 5384 × 726.

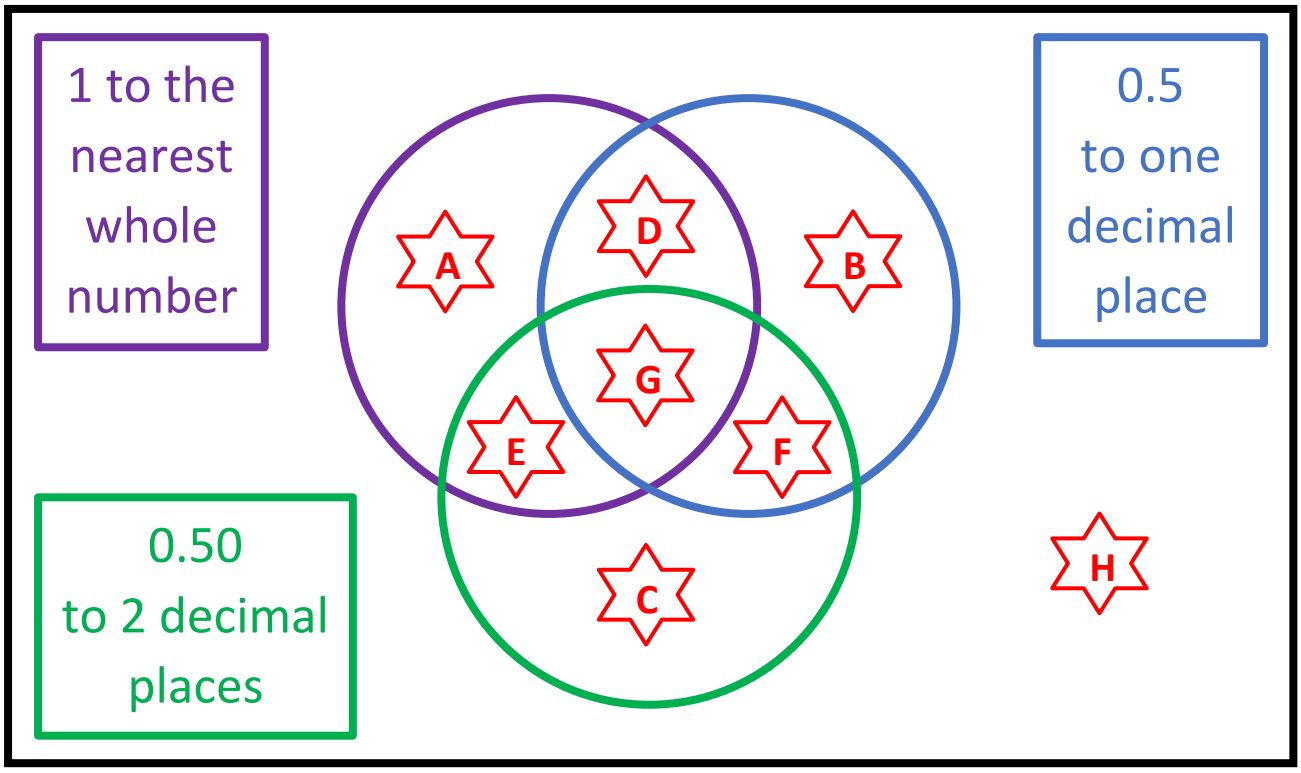
___ out of 3

# Quiz 4

| | | |
|---|---|---|
| 1) Add a segment to the circle below.  | 2) $28 \div -4$ | 3) Which fraction is the greatest: $\frac{2}{3}$ or $\frac{7}{10}$? |
| 4) The following net folds to give which solid?  | 5) How many minutes are in 3 hours and a half? | 6) Solve the equation $\frac{x}{2} = 8$ |
| 7) $7.4 - 2.68$ | 8) 10% of £25 | 9) Round off 23.5467 to two decimal places. |

___ out of 9

# Venn Diagram Challenge 2




Think of a decimal with **3 digits after the decimal point** that could fit into each region. If you think a region is impossible to fill, explain why!

A

B

C

D

E

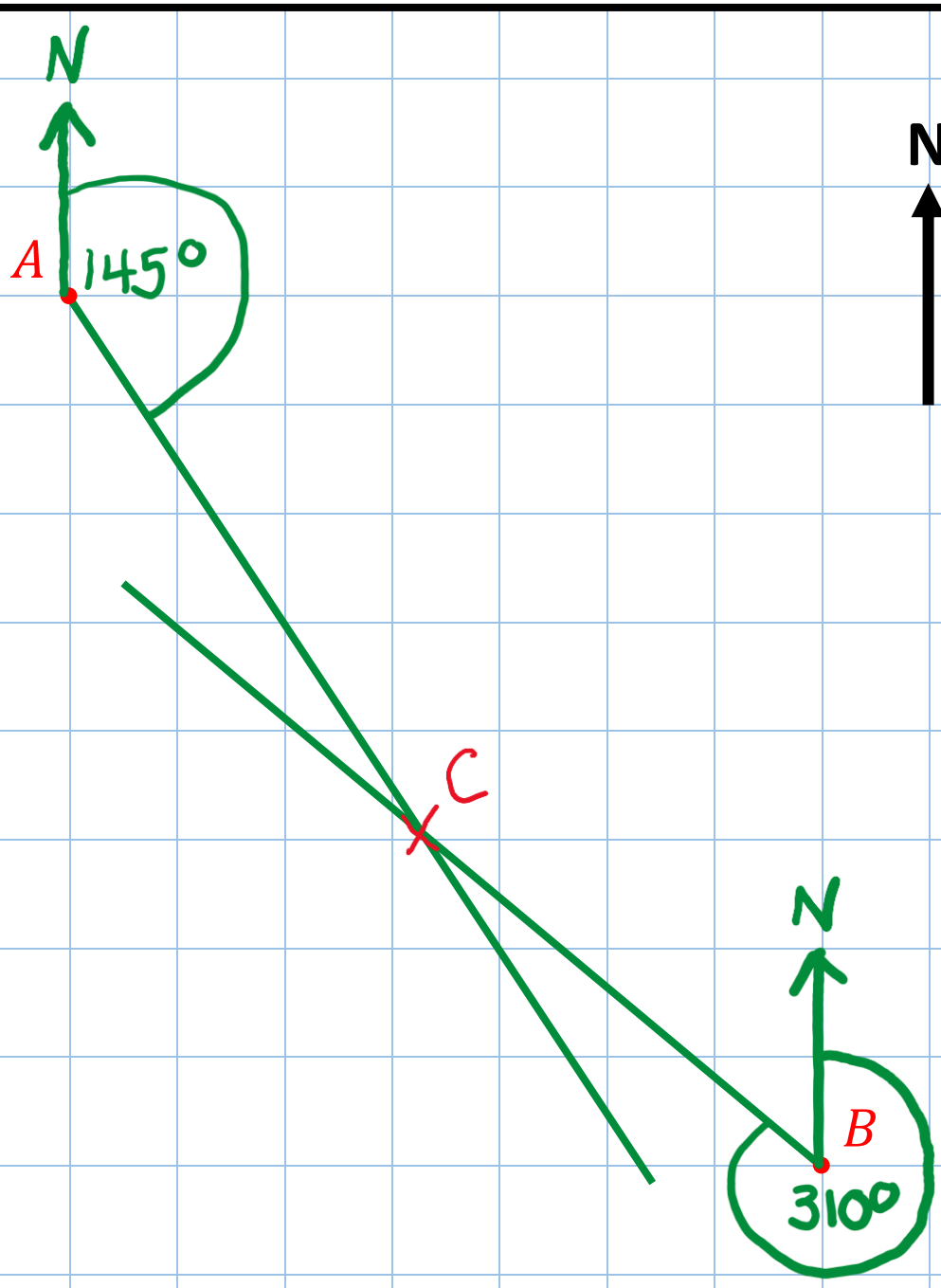
F

G

H

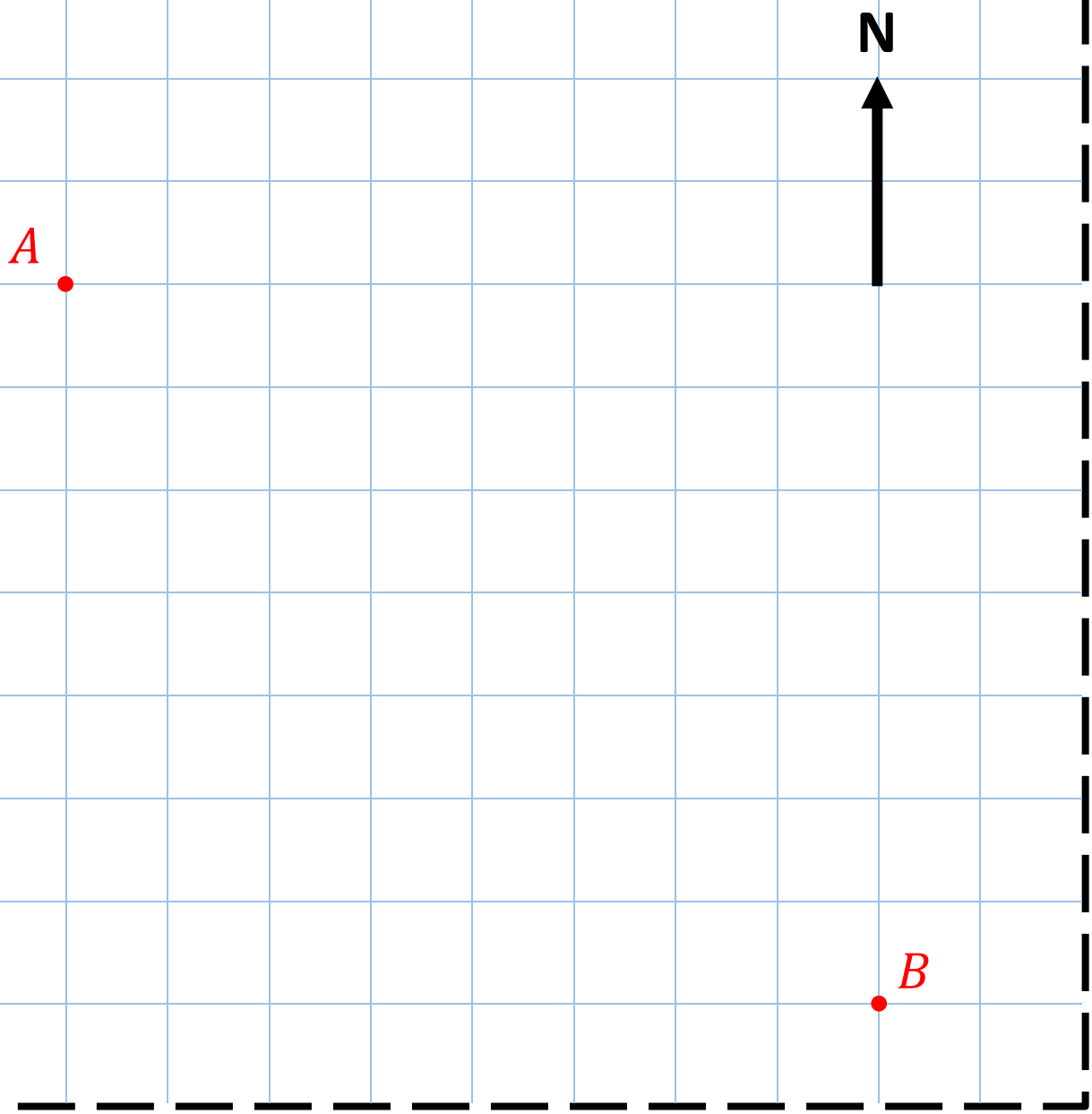
# Example 4

The point $C$ is located at a bearing of 145° from $A$ and at a bearing of 310° from $B$. Mark the location of $C$ using a cross.



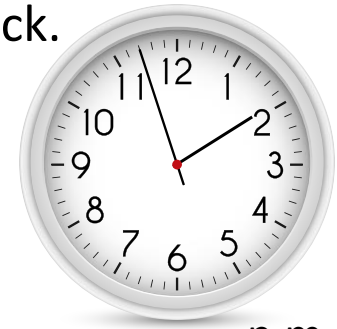
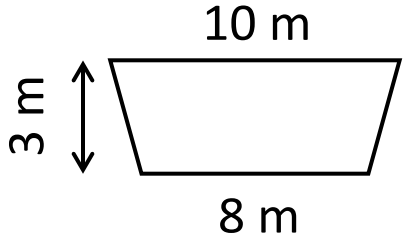
# Exercise 4

The point $C$ is located at a bearing of 110° from $A$ and at a bearing of 335° from $B$. Mark the location of $C$ using a cross.




___ out of 3

# Quiz 5

| | | |
|---|---|---|
| 1) Write the time using the 24-hour clock.<br>  <br>p.m. | 2) $4^3$ | 3) How many edges does a heptagon have? |
| 4) 7.3 × 9 | 5) What is the area of the trapezium?<br>  | 6) Round off 650 to the nearest 100. |
| 7) The mean of 5, 1, 1, 3 | 8) Calculating 25% of a number is the same as dividing by_____. | 9) 0.0264 × 1000 |

___ out off 9

# Quiz 6

| | | | | |
|---|---|---|---|---|
| 6 × 3 = | 14 + 19 = | 72 ÷ 8 = | 10% of 40 = | 31 – 13 = |
| 50% of 30 = | 32 ÷ 4 = | 7 × 8 = | 24 – 7 = | 43 + 58 = |
| 21 + 19 = | 20% of 50 = | 43 – 9 = | 49 ÷ 7 = | 9 × 6 = |
| 70 ÷ 2 = | 13 – 15 = | 11 × 8 = | 25% of 60 = | 32 + 19 = |
| 47 – 12 = | 54 + 9 = | 140 ÷ 14 = | 12 × 5 = | 75% of 20 = |

___ out of 25

# Evaluating the Workbook

# Notes