

Name:

Data Handling

and Statistics 4

Additional Tasks





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Quiz 1



1) $2.4 + 3.8 + 6.3$

2) Order from least to greatest:
0.65, 0.506, 0.56,
0.065, 0.06, 0.605.

3) $56 \div 7$

4) 2.6×8

5) $76 - 38$

6) Order from least to greatest:
8, -3, 5, -9, 0, -7.

7) $2 \div 4$

8) $12 - -4$

9) Which number is largest?
0.002, 0.02, 0.0202,
0.020000, 0.0020.

___ out of 9



Example 1



Calculate the median, mode, mean and range of the following data set. 17, 14, 11, 18, 19, 13, 17, 12.

Re-arrange the numbers:

11, 12, 13, 14, 17, 17, 18, 19.

The median is 15.5

$$\begin{aligned} 14 + 17 &= 31 \\ 31 \div 2 &= 15.5 \end{aligned}$$

The mode is 17.

17 is the most popular number in the data

The total of the numbers is 121.

The mean is $121 \div 8 = \underline{15.125}$

Total \div Number of data items

The range is $19 - 11 = \underline{8}$

Greatest - Least



Quiz 2



1) The mode of
2, 4, 4, 5, 6, 8.

2) The mode of
2, 4, 4, 5, 6, 6.

3) The mode of
2, 3, 4, 6, 7, 8.

4) The median of
3, 4, 7, 8, 10.

5) The median of
2, 3, 4, 7, 8, 10.

6) The median of
8, 4, 2, 10, 3, 4.

7) The mean of
3, 2, 9, 1, 5.

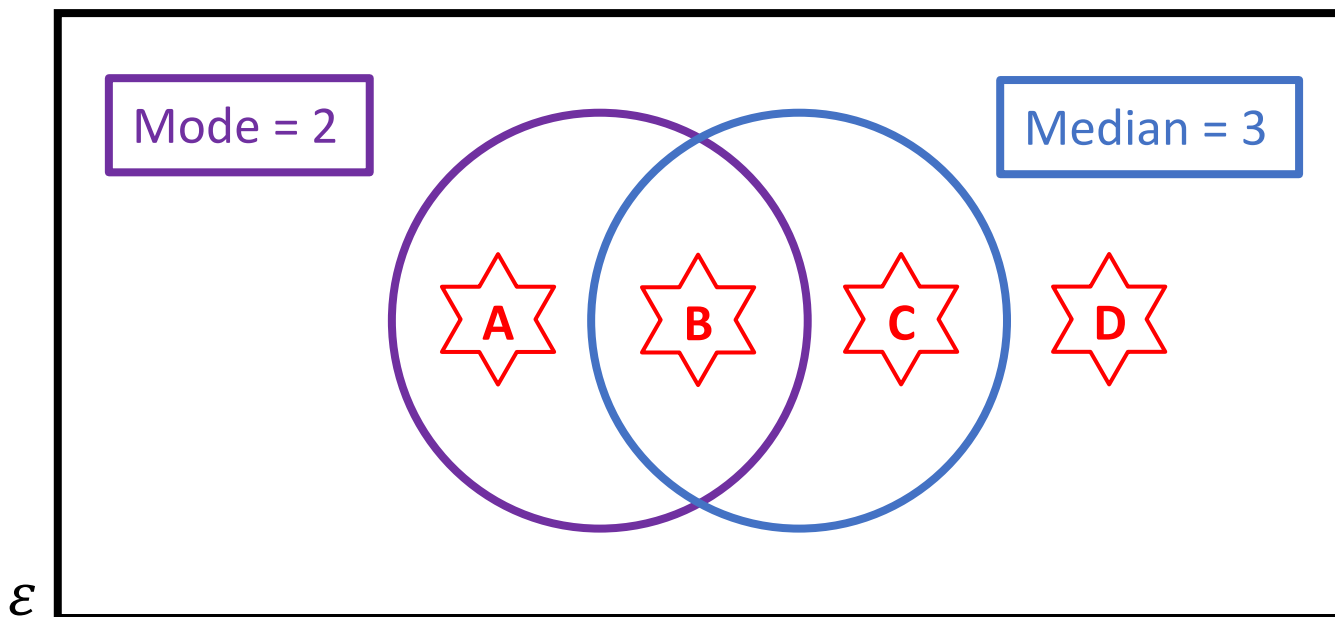
8) The mean of
3, 2, 9, 1.

9) The mean of
-14, -10.

___ out of 9



Venn Diagram Challenge 1



Think of **3** numbers that could belong to each region.
 If you think a region is impossible to fill, explain why!









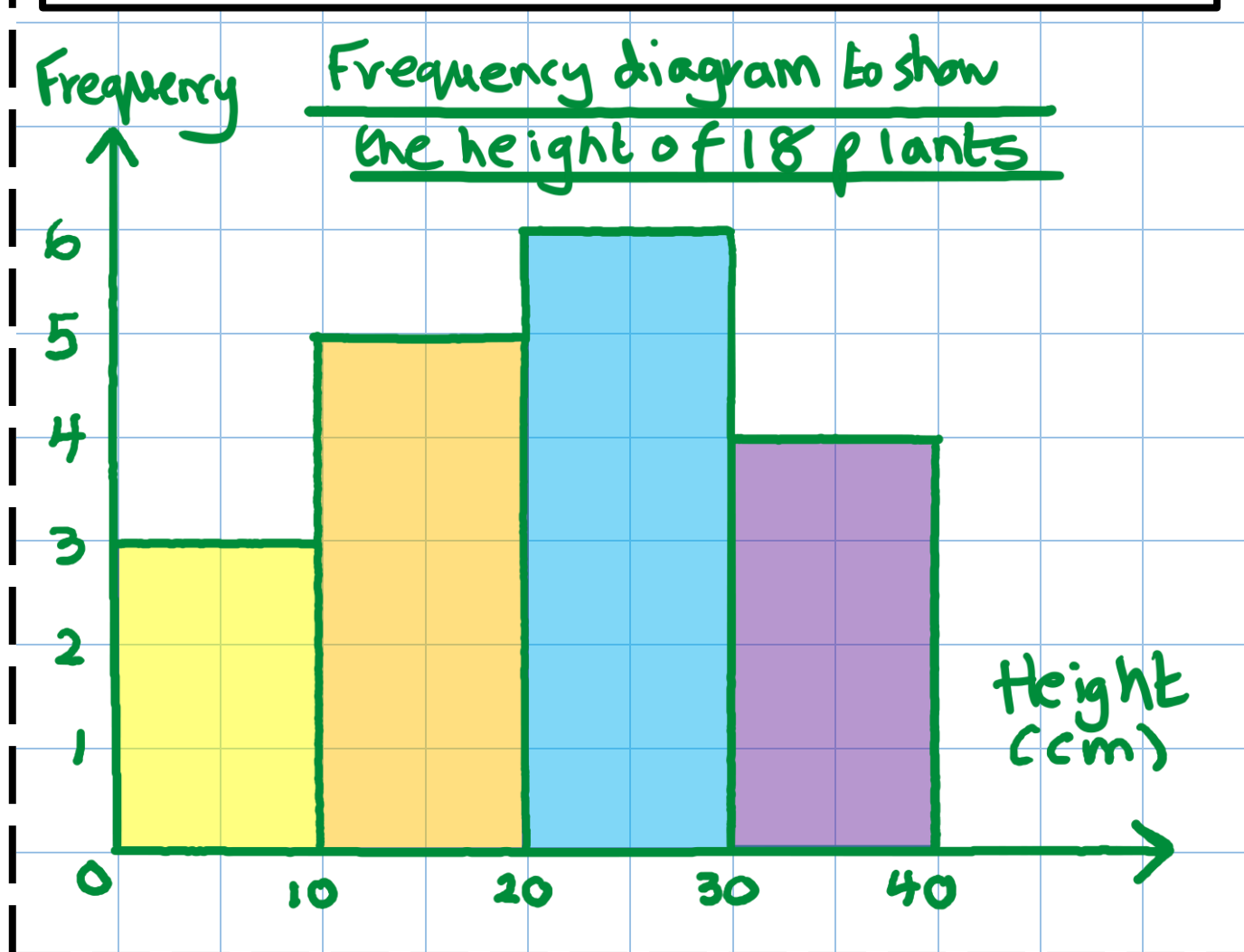


Example 2



Draw a frequency diagram for the following data that shows the height of 18 plants.

Height, h cm	Frequency
$0 \leq h < 10$	3
$10 \leq h < 20$	5
$20 \leq h < 30$	6
$30 \leq h < 40$	4



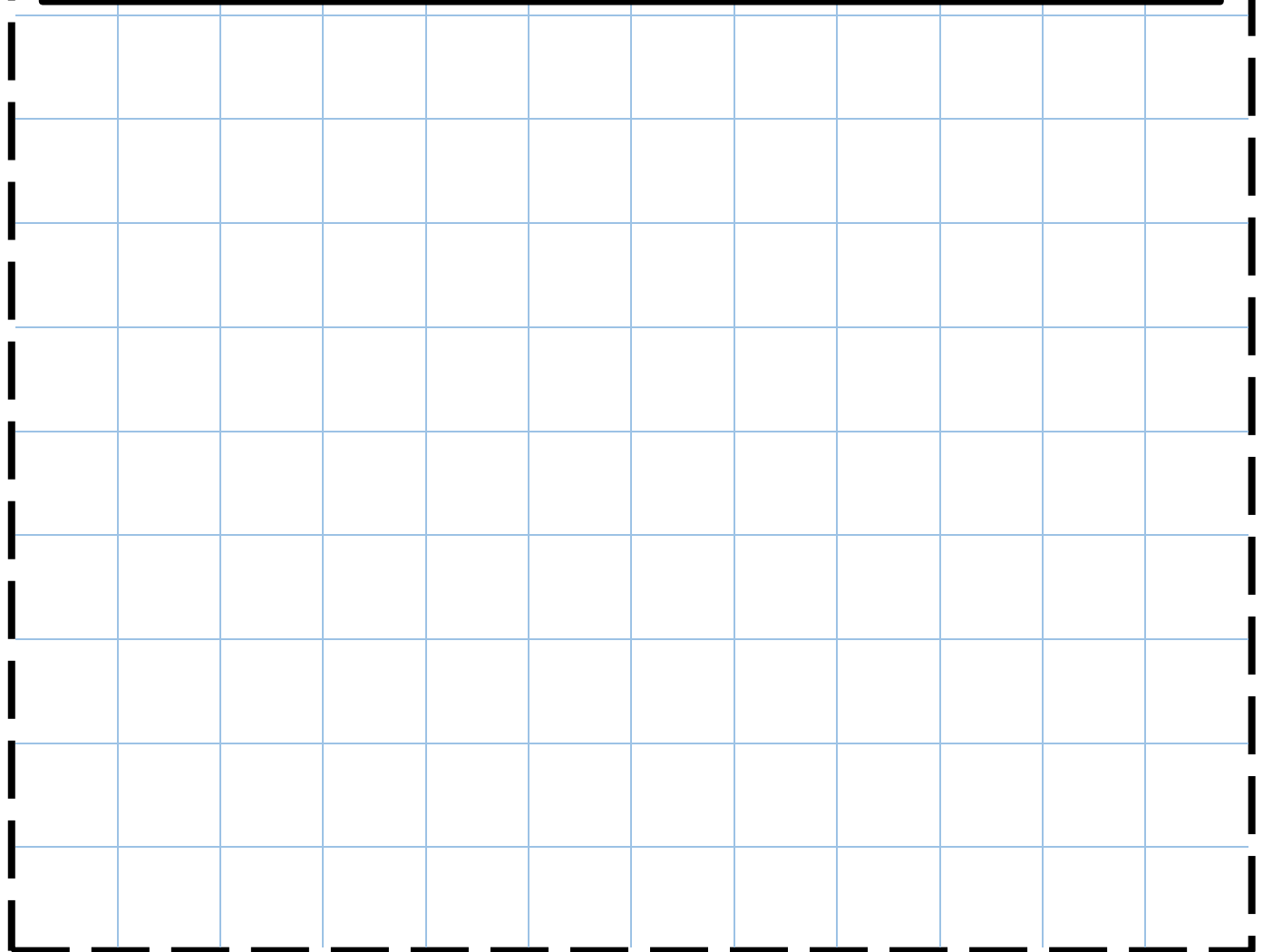


Exercise 2



Draw a frequency diagram for the following data that shows the height of 18 plants.

Height, h cm	Frequency
$0 \leq h < 10$	5
$10 \leq h < 20$	4
$20 \leq h < 30$	6
$30 \leq h < 40$	3



___ out of 6



Quiz 3



1) What is the mid-point of the class

$$0 \leq x < 10?$$

2) What is the mid-point of the class

$$5 \leq x < 10?$$

3) What is the mid-point of the class

$$-10 \leq x < 10?$$

4) The range of 5, 7, 10, 12, 16.

5) The range of 9, 1, 3, 8, 5.

6) The range of -4, -1, 0, 3, 8.

7) $\frac{1}{2}$ of 70.

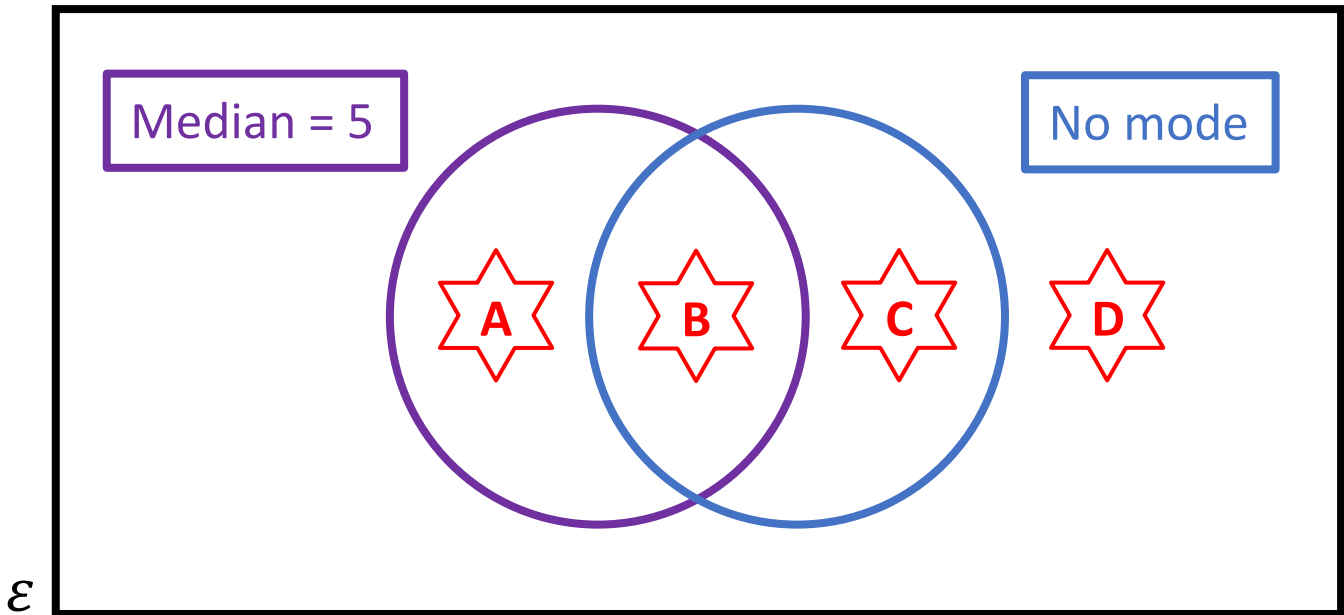
8) $\frac{1}{4}$ of 70.

9) $\frac{3}{4}$ of 70.

___ out of 9



Venn Diagram Challenge 2



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











Example 3



Calculate an estimate for the mean height of the following plants.

Height, h cm	Frequency
$0 \leq h < 10$	3
$10 \leq h < 20$	5
$20 \leq h < 30$	6
$30 \leq h < 40$	4

Height, h cm	Frequency	Mid-point	Multiply
$0 \leq h < 10$	3	5	15
$10 \leq h < 20$	5	15	75
$20 \leq h < 30$	6	25	150
$30 \leq h < 40$	4	35	140
	<u>18</u>		<u>380</u>
			1 1

Divide by the total of the frequencies, NOT by the number of classes
 $380 \div 18 = 21.1 \text{ cm}$
 $= \underline{21.1} \text{ cm}$ to one decimal place

Multiply frequency by mid-point



Exercise 3



Calculate an estimate for the mean height of the following plants.

Height, h cm	Frequency
$10 \leq h < 20$	3
$20 \leq h < 30$	5
$30 \leq h < 40$	11
$40 \leq h < 50$	1

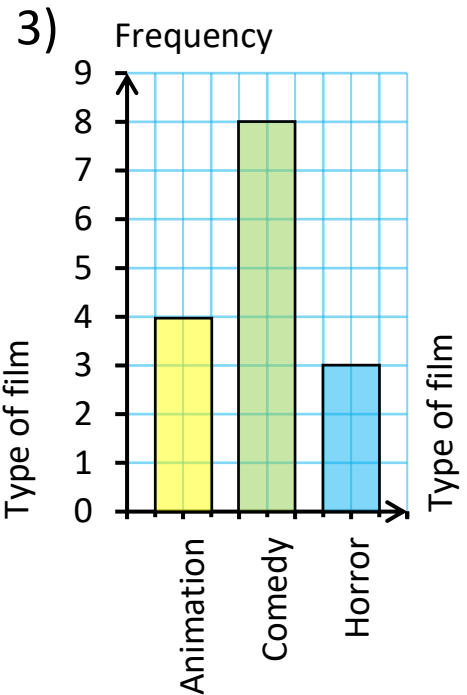
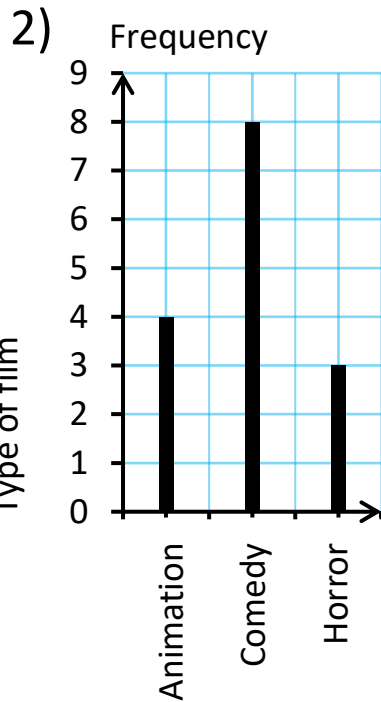
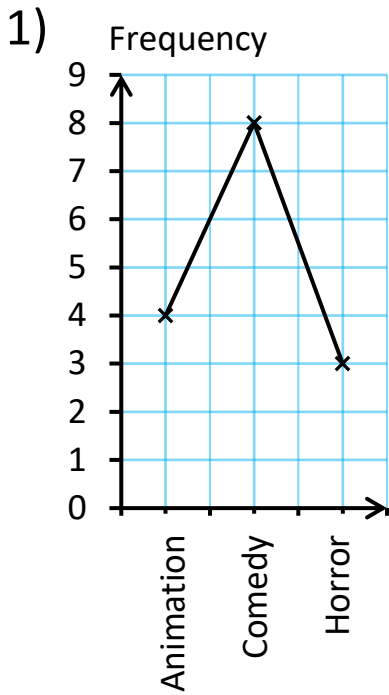
___ out of 4



Quiz 4



What type of graphs/charts/diagrams are these?

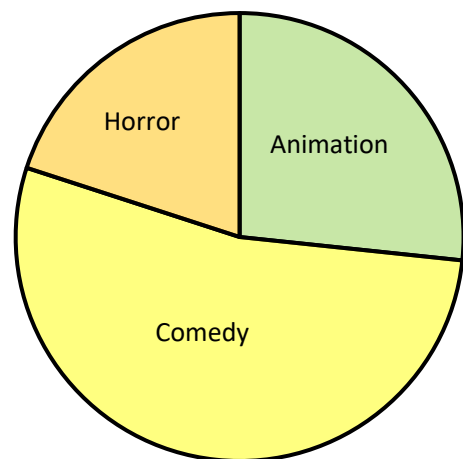


4)

Pictogram to show the favourite film genre of 15 people

Animation	<input type="checkbox"/>	<input type="checkbox"/>			
Comedy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Horror	<input type="checkbox"/>	<input type="checkbox"/>			
					Key: <input type="checkbox"/> = 2 people

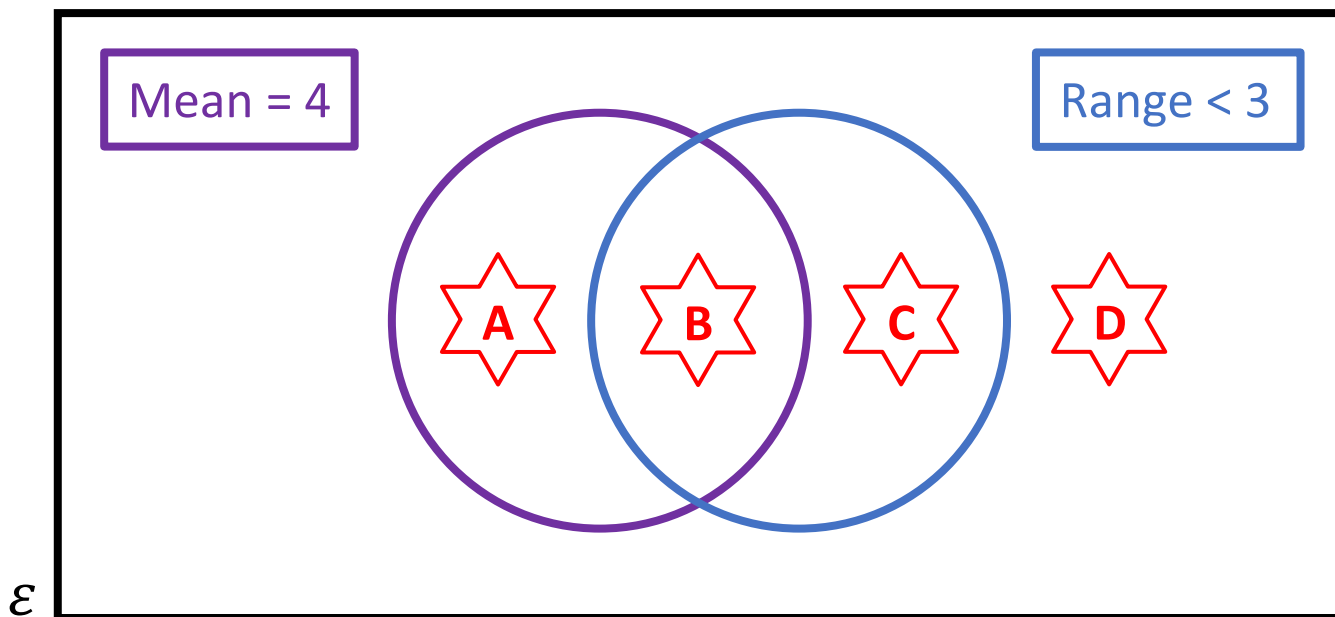
5)



___ out of 5



Venn Diagram Challenge 3



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











Example 4



Draw a pie chart for the following data showing the favourite colour for class 10R.

Colour	Frequency
Red	9
Blue	7
Green	5
Yellow	3

$$9 + 7 + 5 + 3 = 24$$

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

Sector size for 1 person

Draw using a protractor and ruler

Pie chart to show
10R's favourite colour

$$\text{Red: } 9 \times 15^\circ = 135^\circ$$

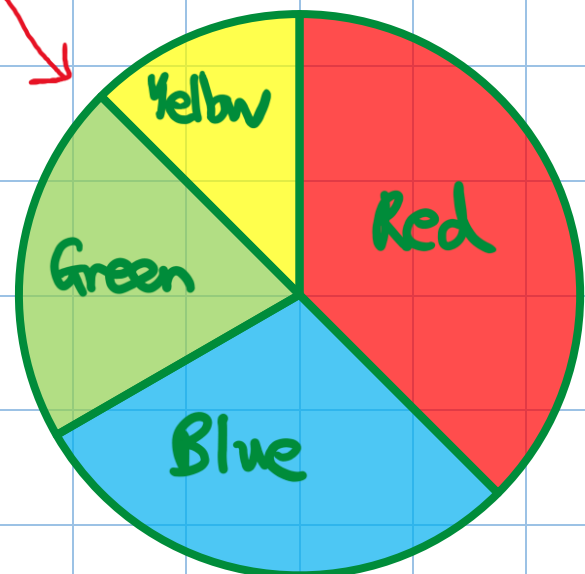
$$\text{Blue: } 7 \times 15^\circ = 105^\circ$$

$$\text{Green: } 5 \times 15^\circ = 75^\circ$$

$$\text{Yellow: } 3 \times 15^\circ = 45^\circ$$

check that the total is 360°

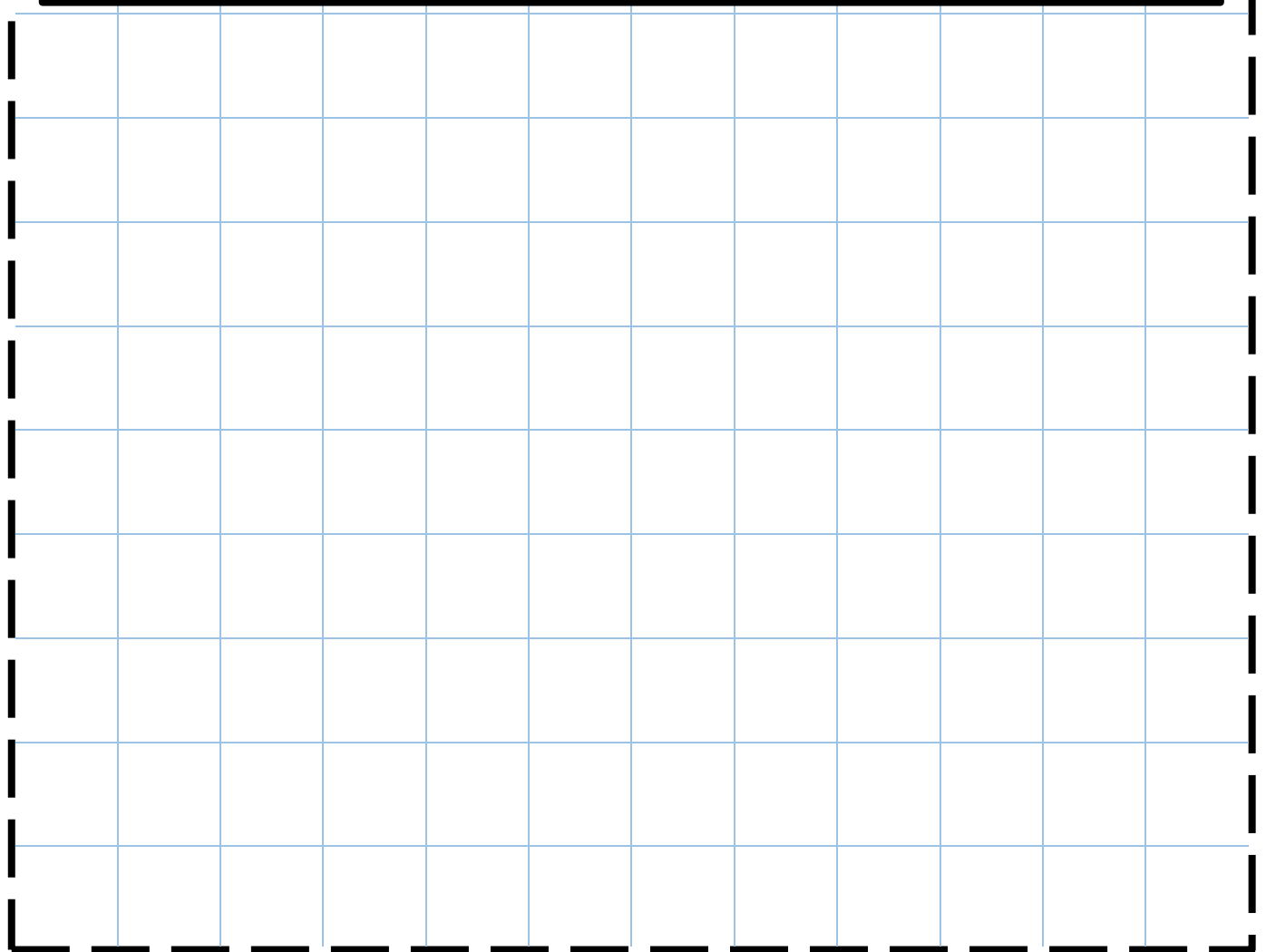
$$\begin{array}{r} 360^\circ \\ \underline{12} \\ 360^\circ \checkmark \end{array}$$



**Exercise 4**

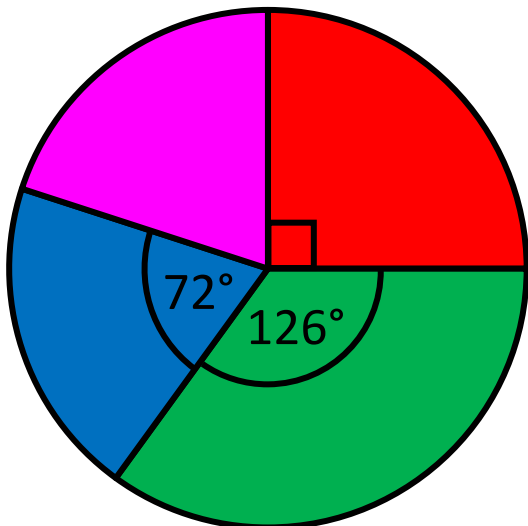
Draw a pie chart for the following data showing the favourite colour for class 10E.

Colour	Frequency
Red	4
Pink	7
Blue	3
Purple	6



— out of 5

Interpreting a Pie Chart



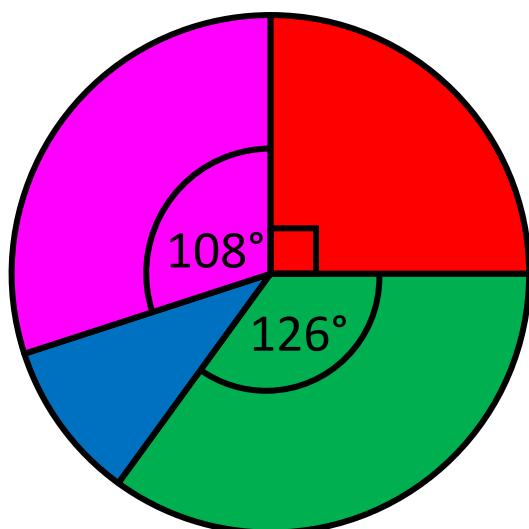
Pie chart to show the favourite crisp flavour for learners from School A

- Ready Salted
- Salt and Vinegar
- Cheese and Onion
- Prawn Cocktail

1) Catrin said “*More people like prawn cocktail than ready salted*”. Do you agree with Catrin? Explain your answer.

2) What percentage of all the learners from School A liked prawn cocktail best?

3) 252 learners liked salt and vinegar best. How many learners liked cheese and onion best?



Pie chart to show the favourite crisp flavour for learners from School B

- Ready Salted
- Salt and Vinegar
- Cheese and Onion
- Prawn Cocktail

4) Dion said “*More people liked cheese and onion in School A than School B*”. Is Dion correct? Explain your answer.

Evaluating the Workbook



Notes

Name: _____

Powers and Roots

Additional Tasks





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Quiz 1



1) List all the factors of 24.

2) 6^2

3) 4^3

4) $1296 \div 6$

5) $\sqrt{49}$

6) $\sqrt[3]{125}$

7) $8 + -2$

8) $8 - -2$

9) 8×-2

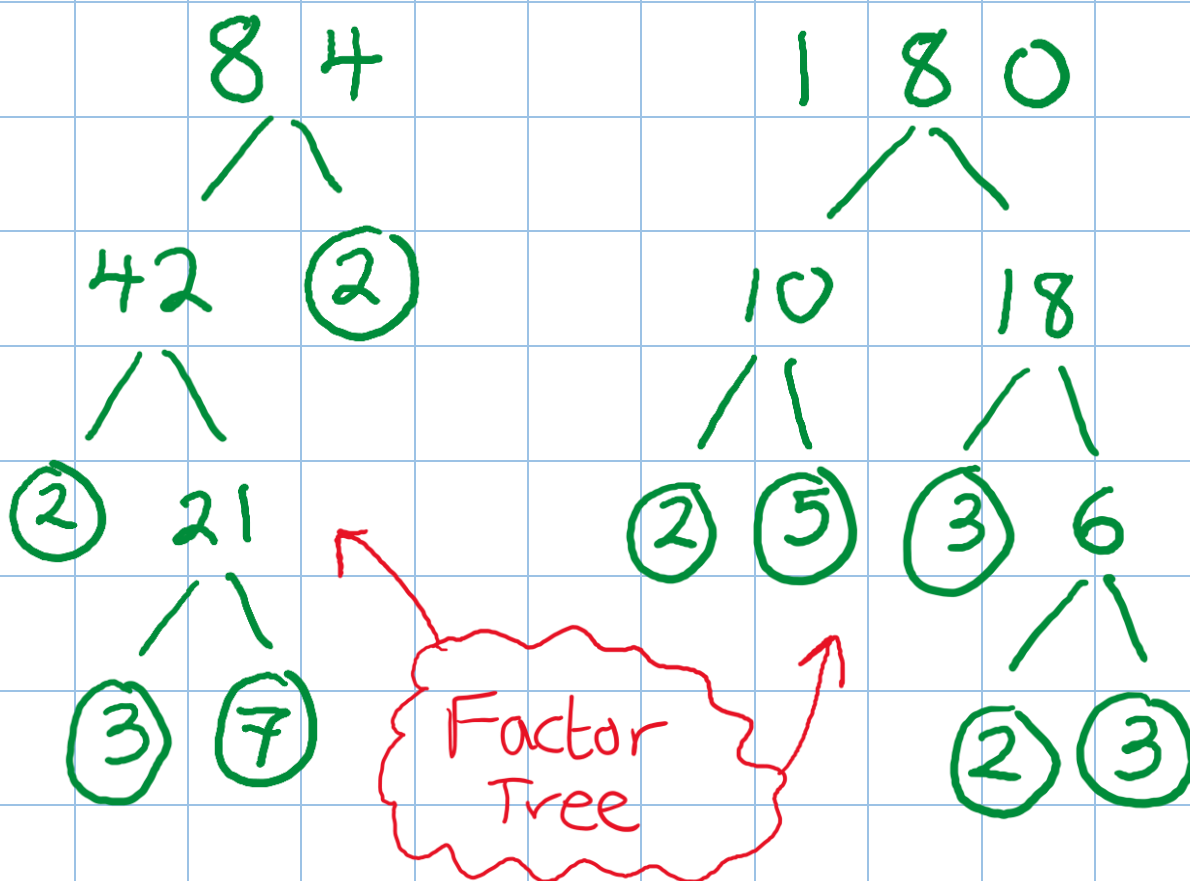
___ out of 9



Example 1



Write 84 and 180 as a product of their prime factors, in index form.



$$84 = 2 \times 2 \times 3 \times 7 \quad 180 = 2 \times 2 \times 3 \times 3 \times 5$$

$$84 = 2^2 \times 3 \times 7 \quad 180 = 2^2 \times 3^2 \times 5$$



Quiz 2



1) List all the factors of 36.

2) 5^2

3) 2^3

4) 343×7

5) $\sqrt{64}$

6) $\sqrt[3]{64}$

7) $-5 + 3$

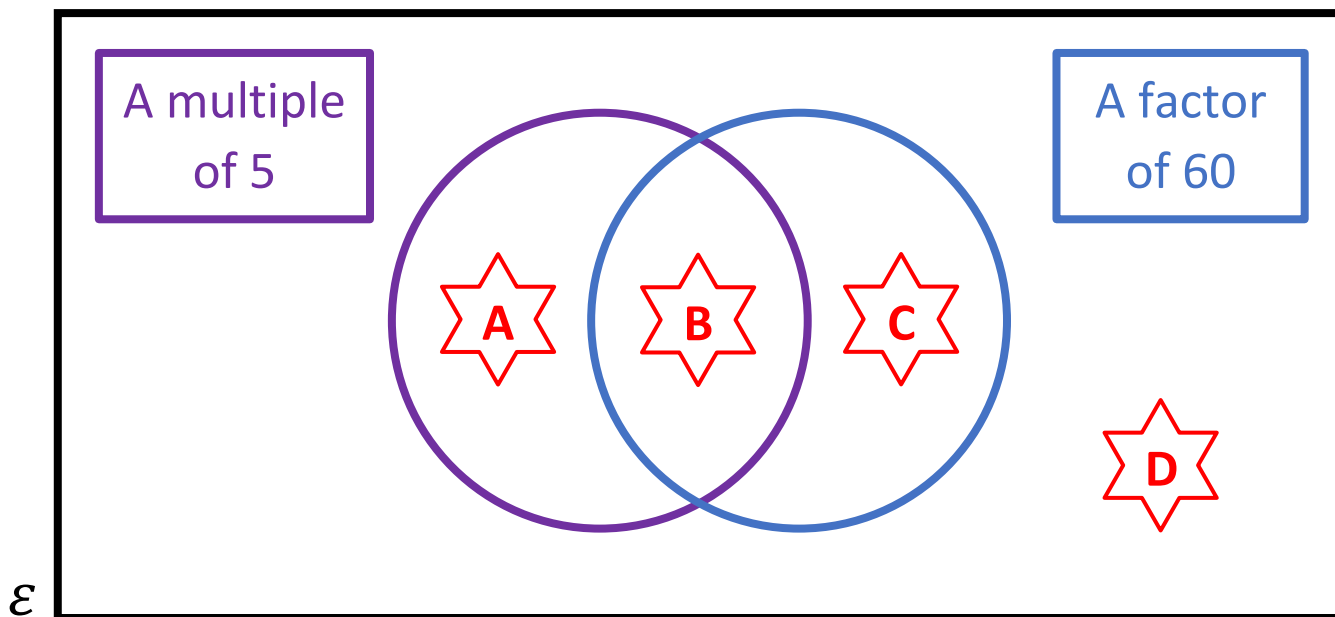
8) $-5 - 3$

9) -5×-3

___ 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!











Example 2



Without using a calculator, find the square root of 784.

$$\begin{array}{r}
 784 \\
 \swarrow \searrow \\
 392 \quad (2) \\
 \swarrow \searrow \\
 (2) \quad 196 \\
 \swarrow \searrow \\
 (2) \quad 98 \\
 \swarrow \searrow \\
 49 \quad (2) \\
 \swarrow \searrow \\
 (7) \quad (7)
 \end{array}$$

$$\begin{array}{r}
 392 \\
 \hline
 2 \overline{)784} \\
 \underline{14} \\
 196 \\
 \underline{196} \\
 098 \\
 \underline{098} \\
 0
 \end{array}$$

$$784 = 2 \times 2 \times 2 \times 2 \times 7 \times 7$$

$$784 = 2^4 \times 7^2$$

$$\sqrt{784} = 2^2 \times 7^1$$

$$\sqrt{784} = 4 \times 7$$

$$\sqrt{784} = 28$$

halve the powers



Quiz 3



1) $\sqrt{81}$

2) $\sqrt[3]{8}$

3) $\sqrt[4]{16}$

4) $\sqrt{16}$

5) $\sqrt[3]{216}$

6) $\sqrt[4]{81}$

7) $\sqrt[3]{1}$

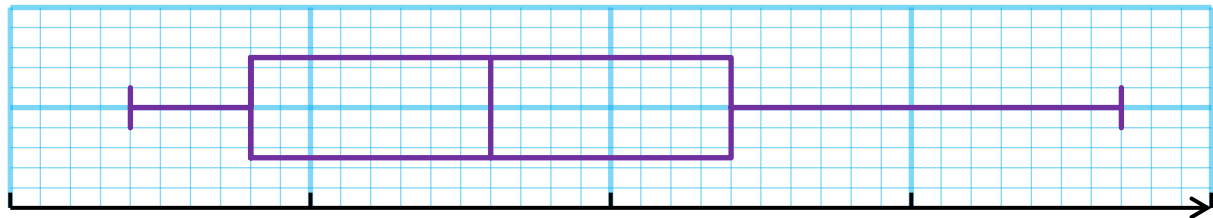
8) $\sqrt[4]{625}$

9) $\sqrt[5]{32}$

___ out of 9



Quiz 4



0 10 20 30 40

Use the above box and whisker diagram to find the following statistics.

1) The median

2) The least value

3) The greatest value

4) The range

5) The lower quartile

6) The interquartile range

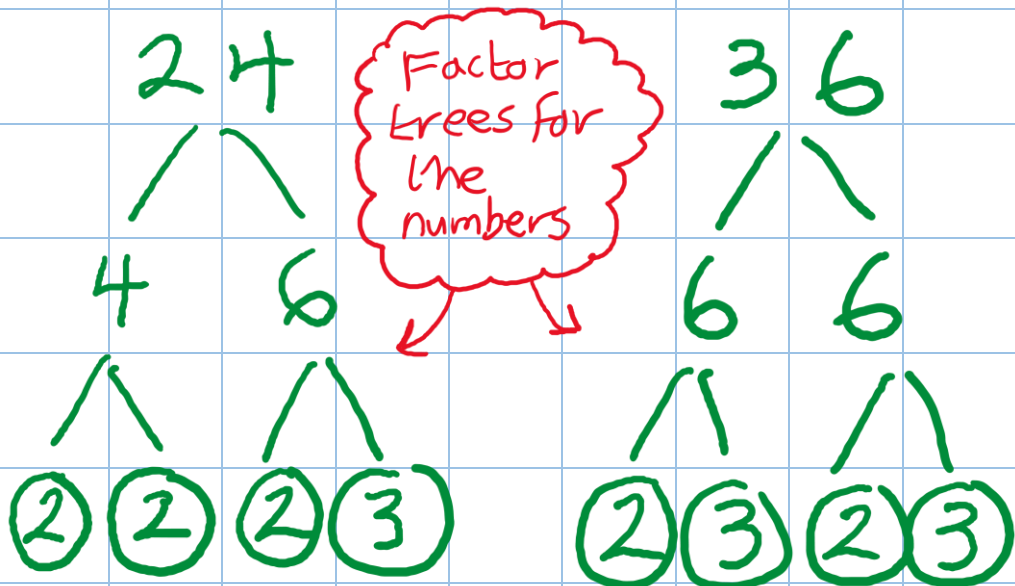
___ out of 6



Example 3



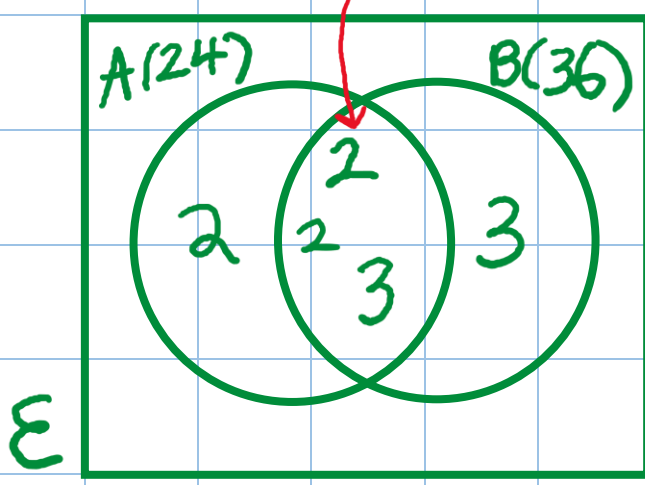
What is the highest common factor and lowest common multiple of the numbers 24 and 36?



$24 = 2 \times 2 \times 2 \times 3$ $36 = 2 \times 2 \times 3 \times 3$

Common numbers in the middle

Multiply the numbers in the middle



H.C.F. = $2 \times 2 \times 3$
 = 12

L.C.M. = $2 \times 2 \times 2 \times 3 \times 3$
 = 24×3
 = 72

number in the Venn diagram



Quiz 5



1) $930 + 4200$

2) $6000 - 870$

3) $54000 - 7005$

4) 10% of £75

5) 50% of 46 cm

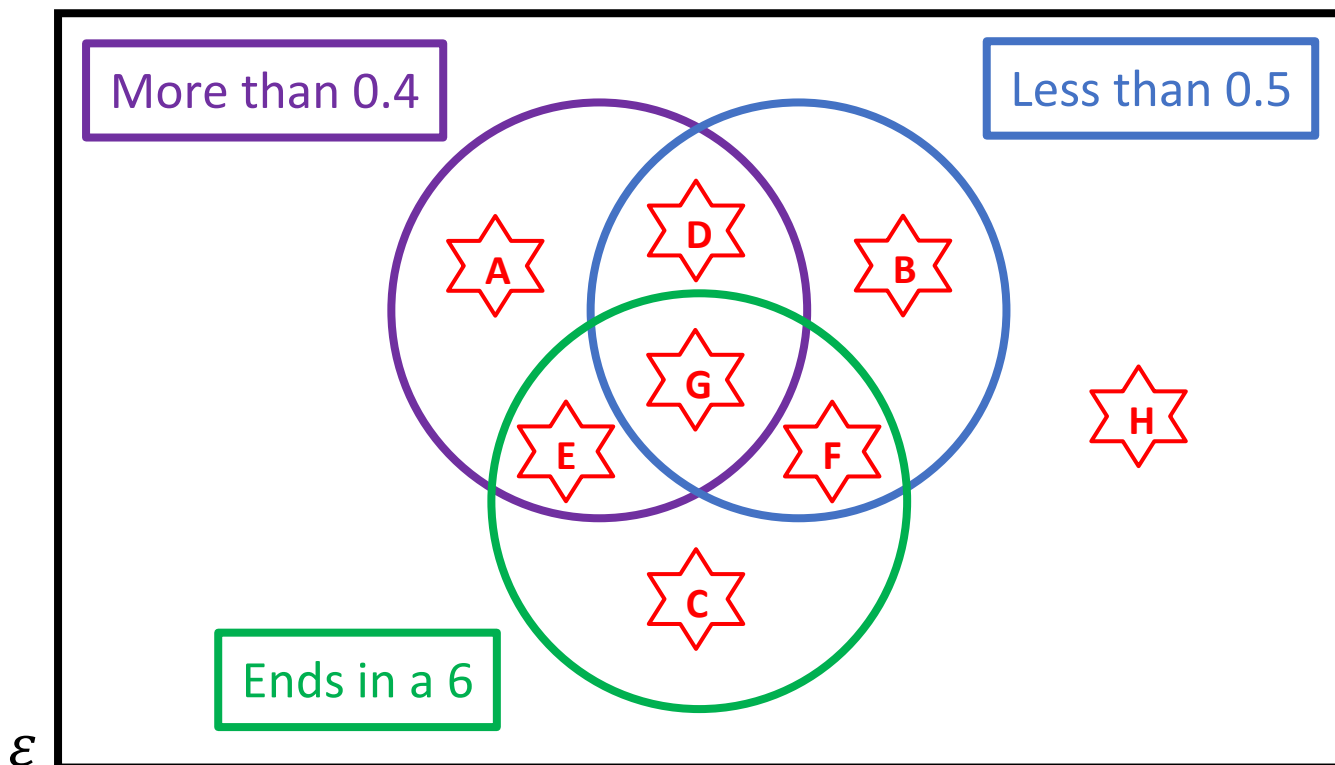
6) 20% of \$90

7) If $x = 4$, what is the value of $6x$?8) If $y = 3$, what is the value of y^2 ?9) If $z = 5$, what is the value of $2z^2$?

___ out of 9



Venn Diagram Challenge 2



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

★ A		★ E	
★ B		★ F	
★ C		★ G	
★ D		★ H	



Example 4



Without using a calculator, calculate 83% of £68.

10% £ 6.80

1% £ 0.68

÷10

÷10

80%

Multiply 10% by 8

3%

Multiply 1% by 3

6.80

0.68

$$\begin{array}{r} \times \quad 8 \\ \hline 54.40 \\ \hline \end{array}$$

$$\begin{array}{r} \times \quad 3 \\ \hline 2.04 \\ \hline \end{array}$$

6

2 2

83%

54.40

$$\begin{array}{r} + \quad 2.04 \\ \hline \pounds 56.44 \\ \hline \hline \end{array}$$

Add 80% to 3%

Final answer



Quiz 6



Substitute $x = 3$ into the following expressions.

1) $4x$

2) $-6x$

3) $\frac{x}{2}$

4) x^2

5) $2x^2$

6) $(2x)^2$

7) x^3

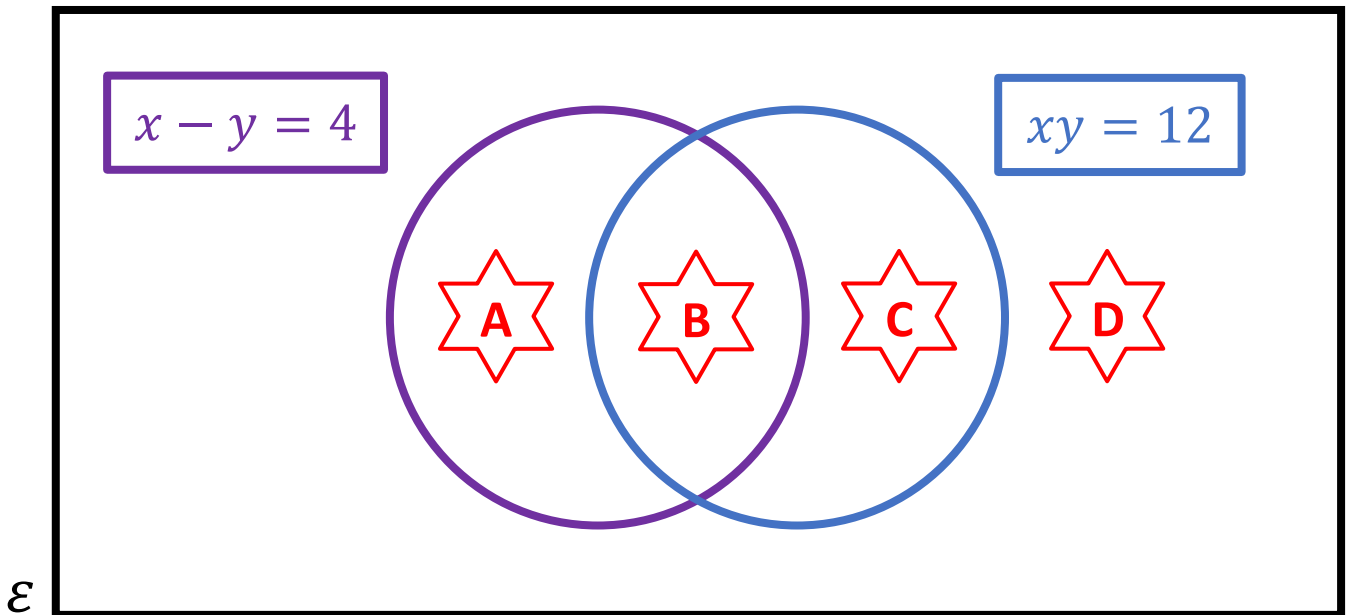
8) $5x^3$

9) $5x - 2$

___ out of 9



Venn Diagram Challenge 3



Think of values for x and y that could fit into each region. If you think a region is impossible to fill, explain why!

Evaluating the Workbook



Notes



Name:

Measuring

Shapes 3

Additional Tasks





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Quiz 1



1) $6^0 =$

2) $2^5 \times 2^8 =$

3) $\frac{3^{15}}{3^5} =$

4) $4^{-2} =$

5) $25^{\frac{1}{2}} =$

6) $(6^7)^3 =$

7) $6a^2b^3 \times 2a^4b^5$
= $$

8) $9c^8d^6 \div 3c^2d^2$
= $$

9) $9^6 \times 9^2 \div 9^4 =$

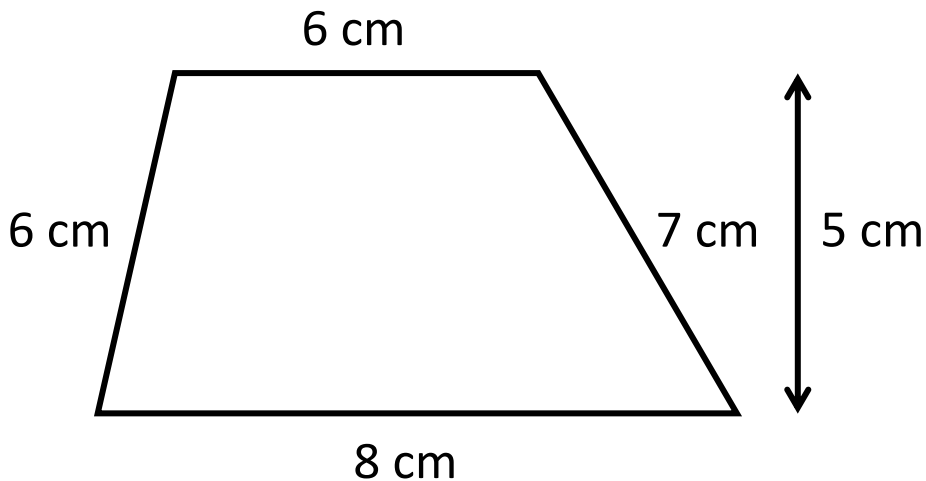
___ out of 9



Example 1



Calculate the perimeter and area of the trapezium below.



$$\begin{aligned} \text{Perimeter: } & 6 + 7 + 8 + 6 \\ & = \underline{27\text{cm}} \end{aligned}$$

$$\text{Area: } 6 + 8 = 14$$

$$14 \div 2 = 7$$

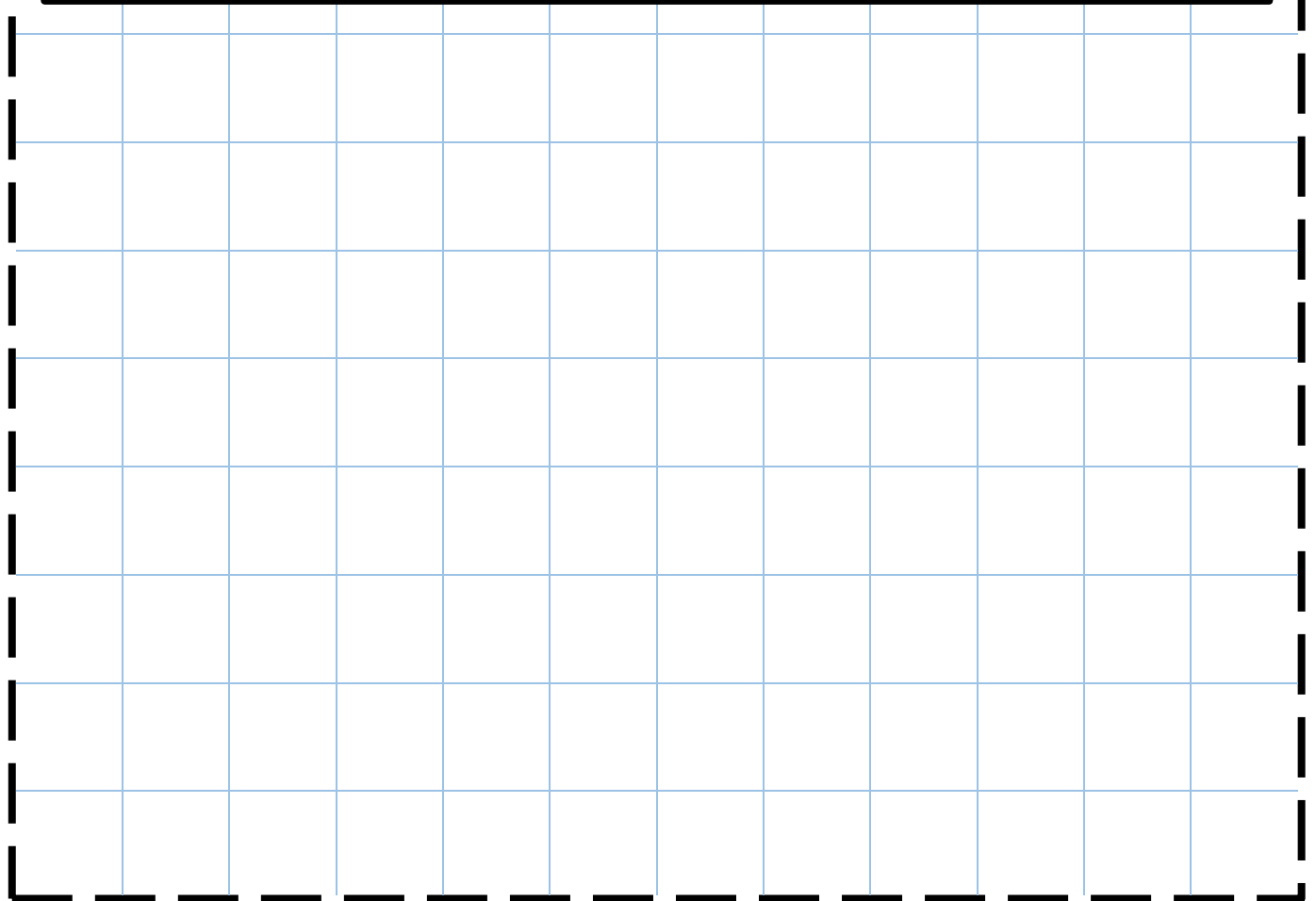
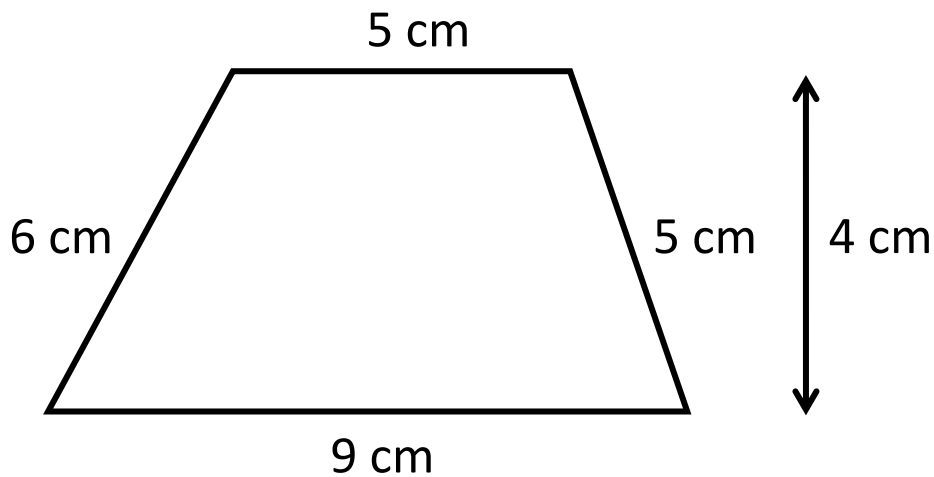
$$\frac{1}{2}(a+b) \times \text{height} \quad 7 \times 5 = \underline{35\text{cm}^2}$$



Exercise 1



Calculate the perimeter and area of the trapezium below.



___ out of 6



Quiz 2



1) Round off
3.8257 to one
decimal place.

2) Round off
3.8257 to two
decimal places.

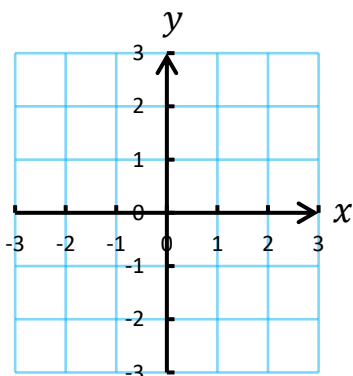
3) Round off
3.8257 to three
decimal places.

4) How many
pence are in £1?

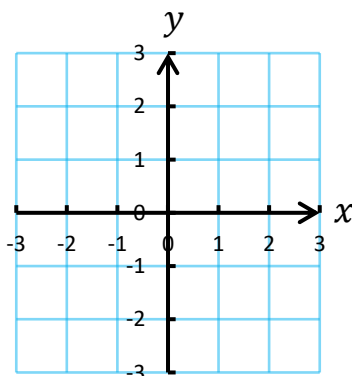
5) If £1 = €1.20
how much is £10
worth in Euros?

6) If £1 = €1.20
how much is €6
worth in pounds?

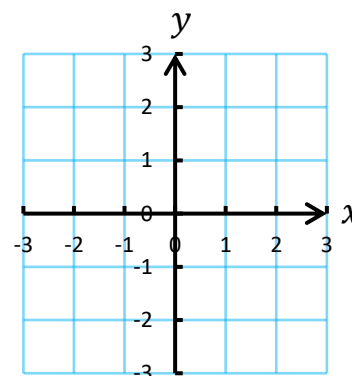
7) Draw the line
 $x = 2$.



8) Draw the line
 $y = -2$.



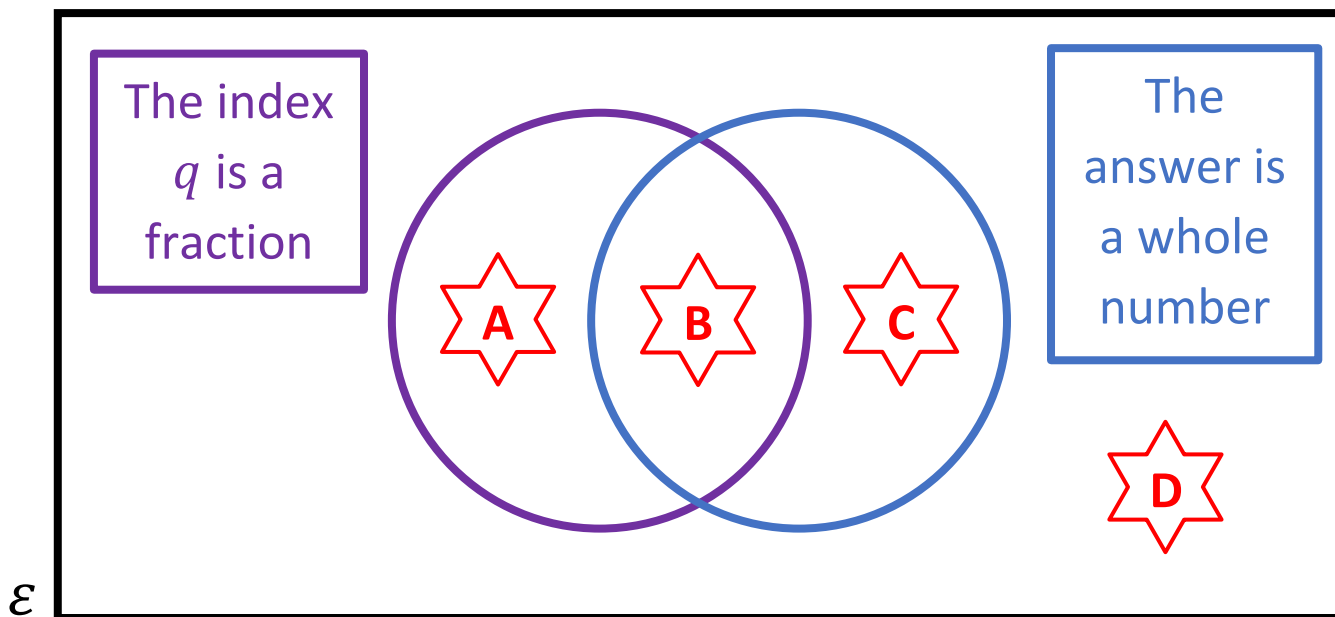
9) Draw the line
 $y = x$.



___ out of 9



Venn Diagram Challenge 1



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











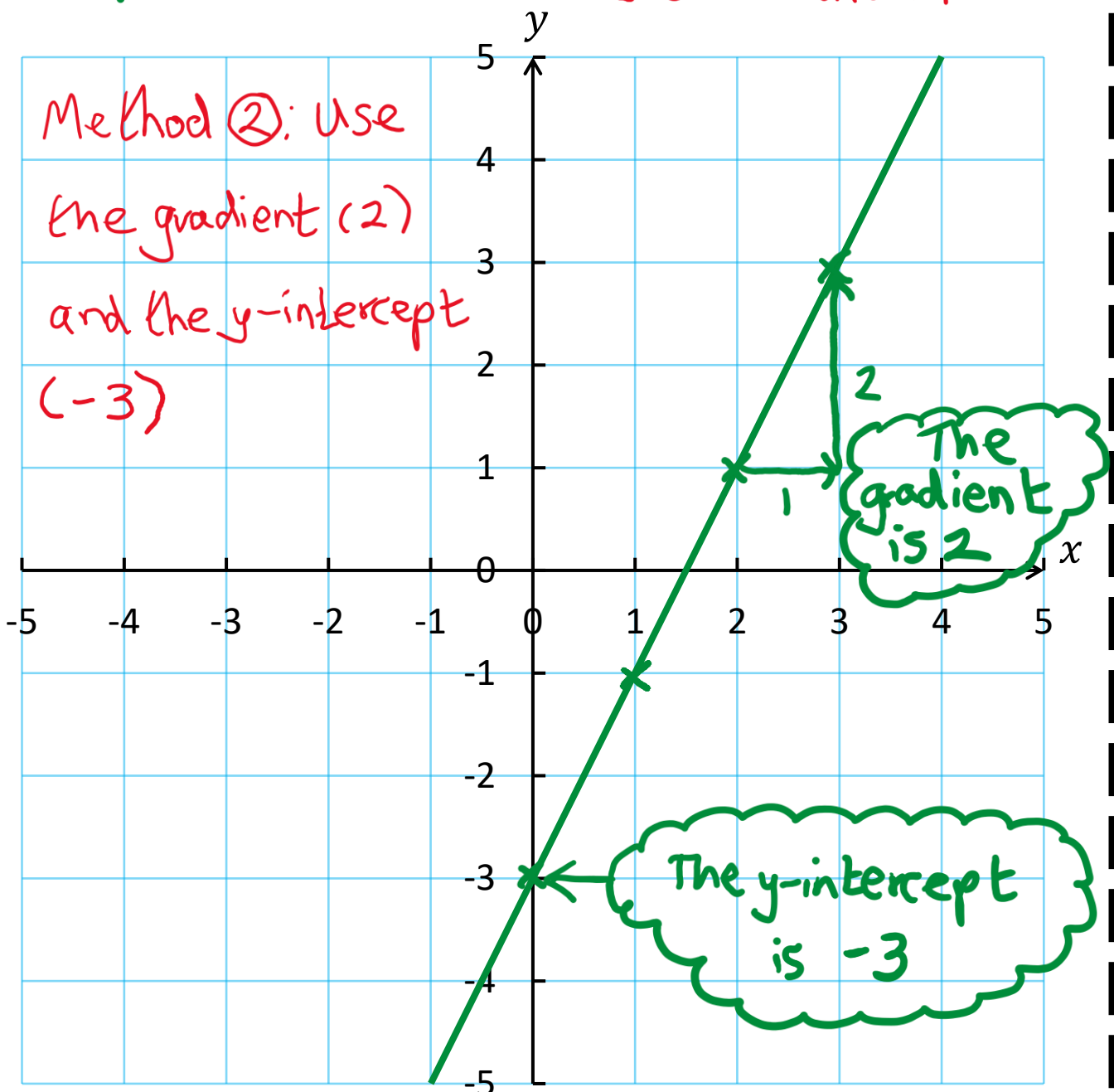
Example 2



Draw the line $y = 2x - 3$.

x	0	1	2	3
y	-3	-1	1	3

Method ①: Plot the values from the table on the left

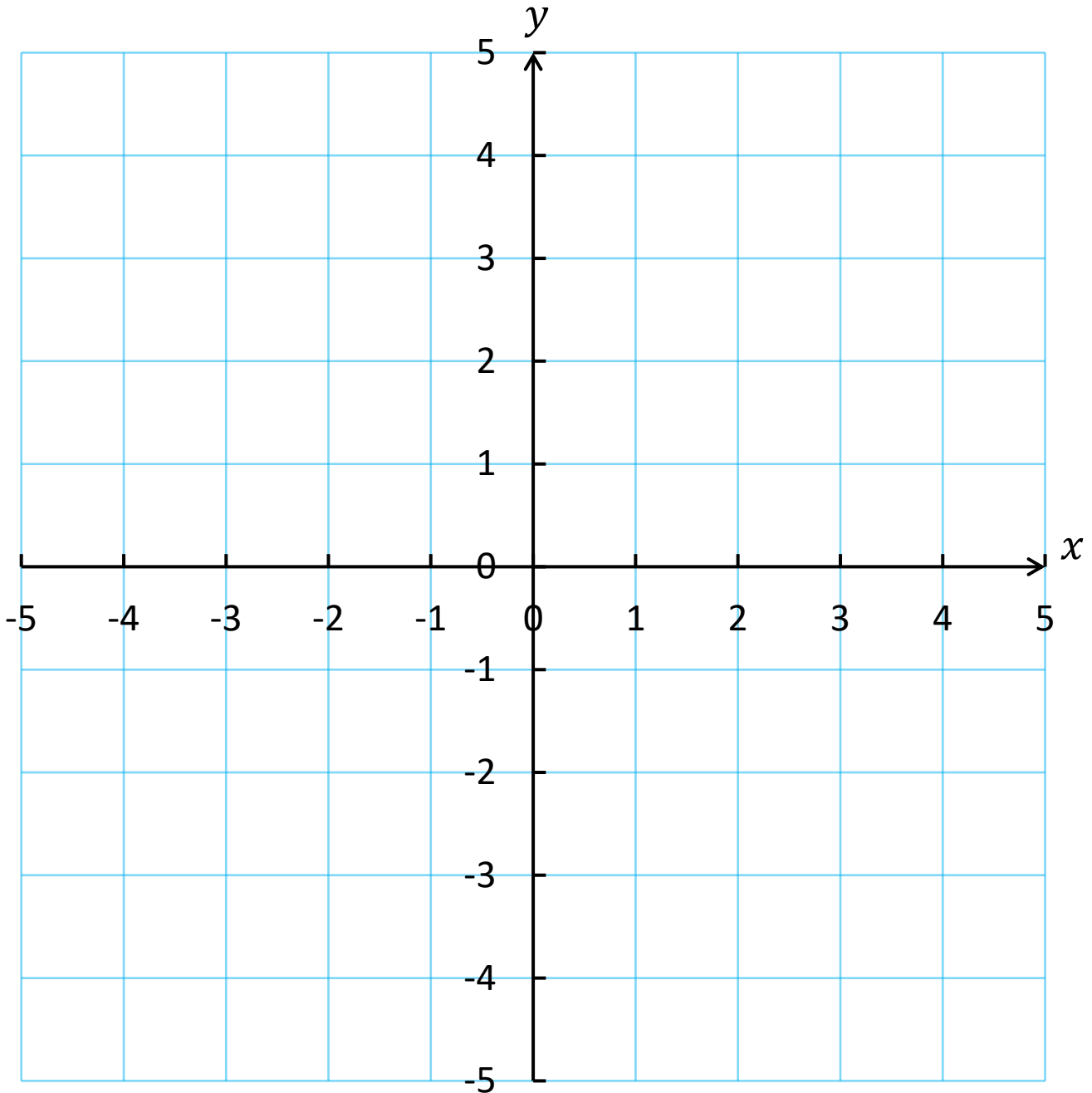




Exercise 2



Draw the line $y = 3x - 2$.



___ out of 2

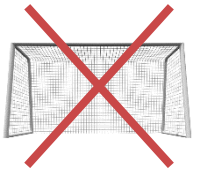


Quiz 3

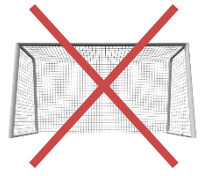


<p>1) Calculate the area of the shape.</p> <div style="text-align: center;"> <p>5 cm 5 cm</p> </div>	<p>2) Calculate the perimeter of the shape.</p> <div style="text-align: center;"> <p>5 cm 5 cm</p> </div>	<p>3) What is the gradient of the line $y = 5x + 2$?</p>
<p>4) Calculate the area of the shape.</p> <div style="text-align: center;"> <p>10 cm 8 cm 6 cm</p> </div>	<p>5) Calculate the perimeter of the shape.</p> <div style="text-align: center;"> <p>10 cm 8 cm 6 cm</p> </div>	<p>6) What is the gradient of the line $y = -4x + 6$?</p>
<p>7) Complete the formula:</p> <p>Speed =</p>	<p>8) Add North-east to the compass.</p> <div style="text-align: center;"> </div>	<p>9) What is the y-intercept of the line $y = -3x + 5$?</p>

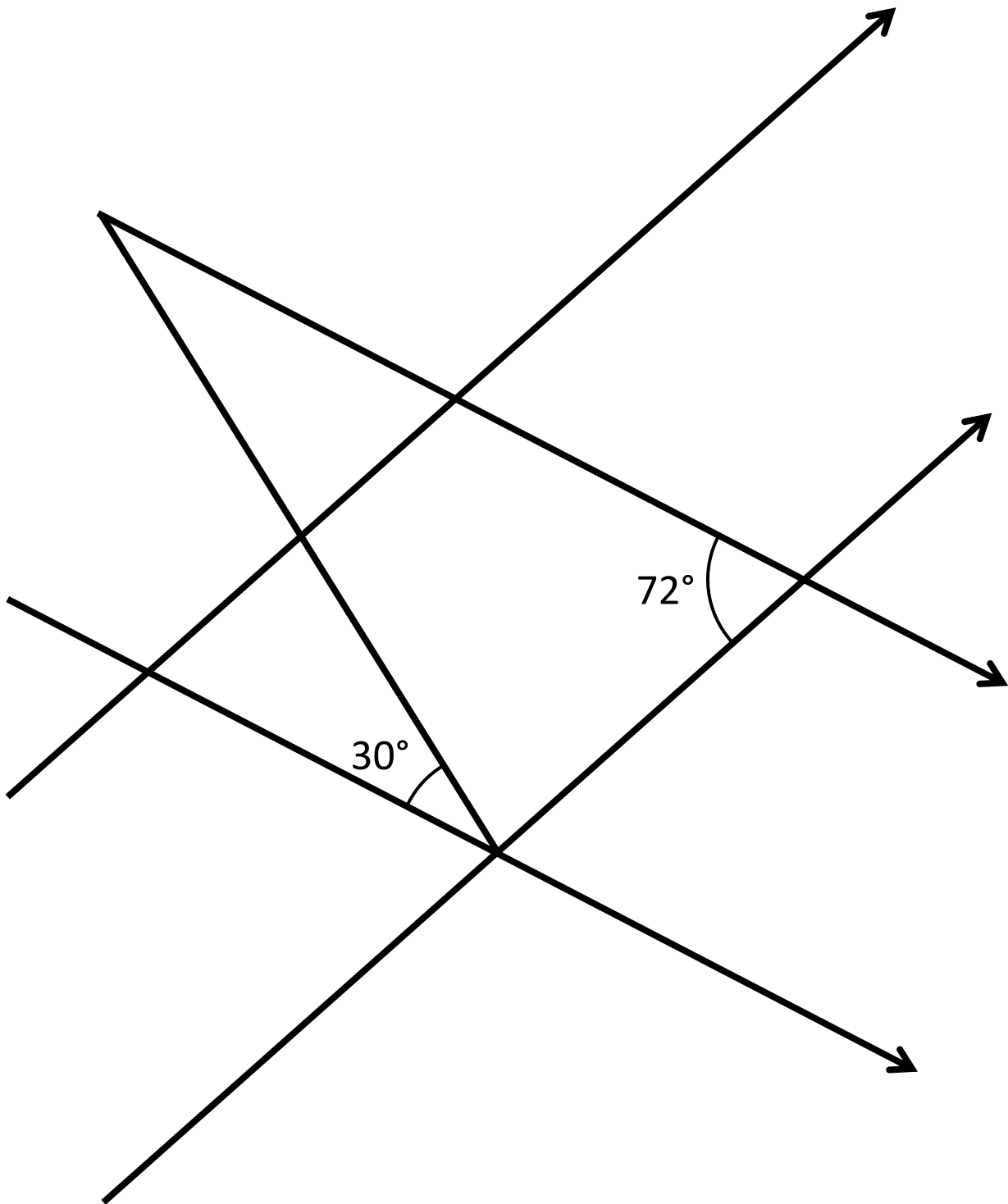
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Looking for the Angles



How many angles can you find in the following diagram?





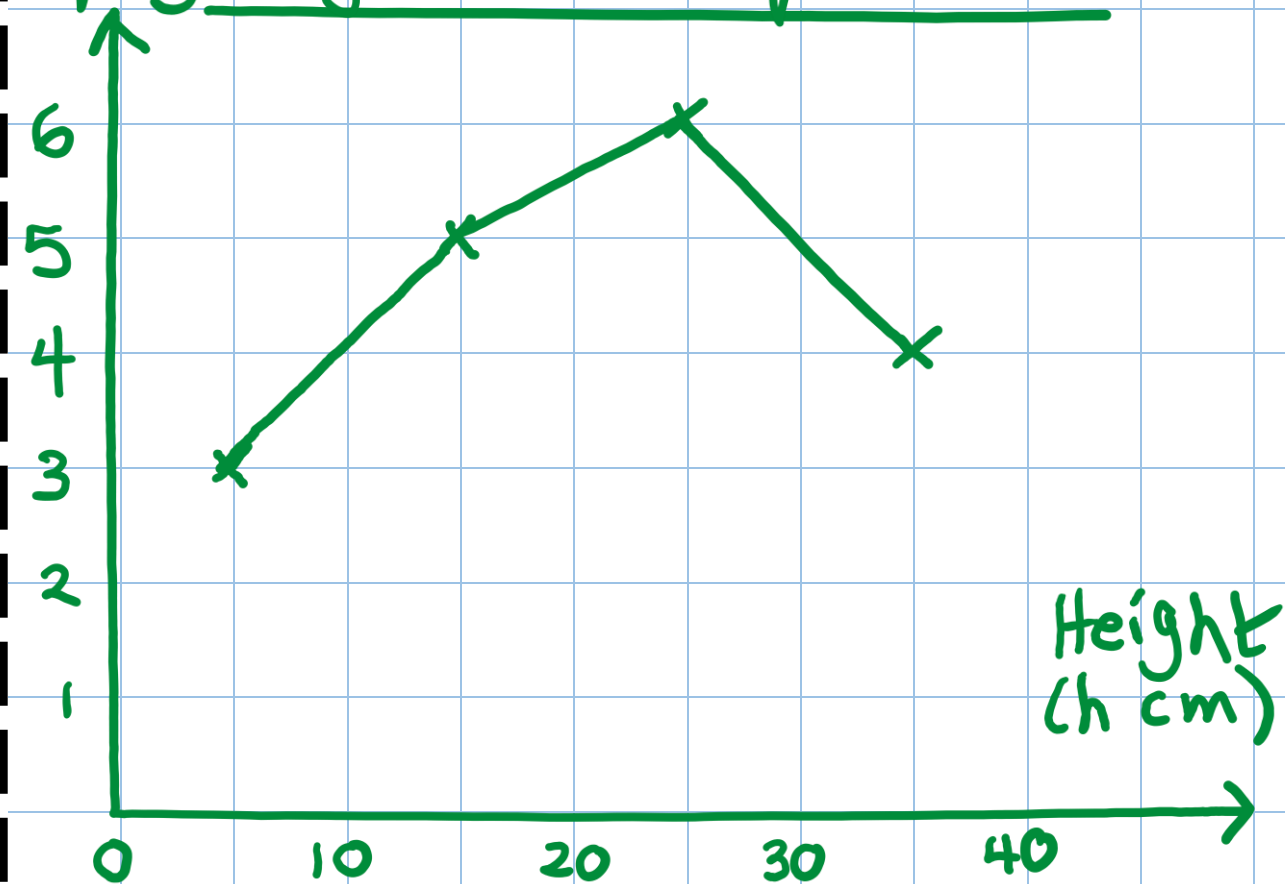
Example 3



Draw a frequency polygon for the following data showing the height of 18 plants.

Height, h cm	Frequency
$0 \leq h < 10$	3
$10 \leq h < 20$	5
$20 \leq h < 30$	6
$30 \leq h < 40$	4

Frequency polygon to show the
height of 18 plants



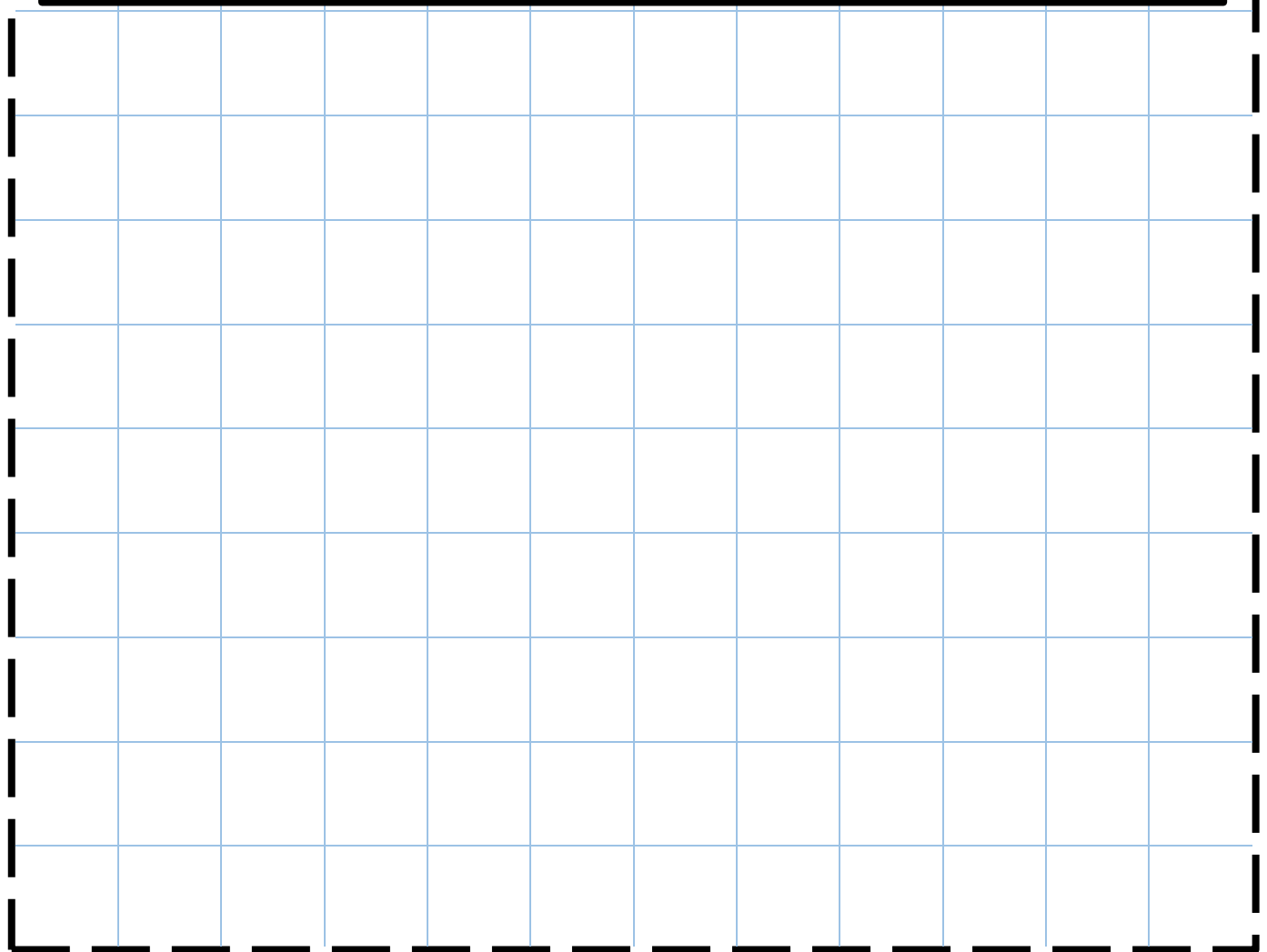


Exercise 3



Draw a frequency polygon for the following data showing the height of 18 plants.

Height, h cm	Frequency
$0 \leq h < 10$	5
$10 \leq h < 20$	4
$20 \leq h < 30$	6
$30 \leq h < 40$	3



___ out of 4



Quiz 4



1) Write the number 4,350,000 in standard form.

2) Write the number 0.0002839 in standard form.

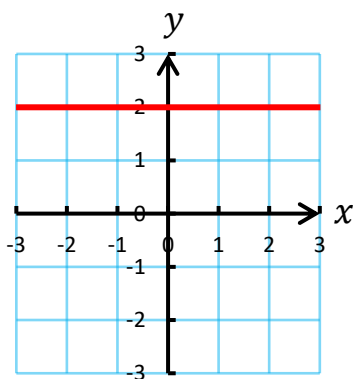
3) $36^{\frac{1}{2}} =$

4) Write 4.3×10^4 as an ordinary number.

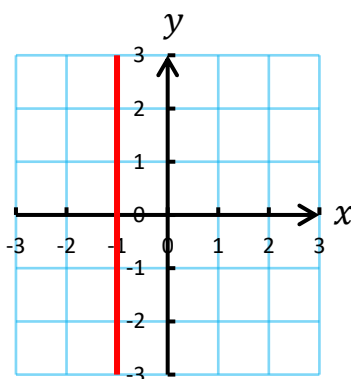
5) Write 7.25×10^{-2} as an ordinary number.

6) $2^{-3} =$

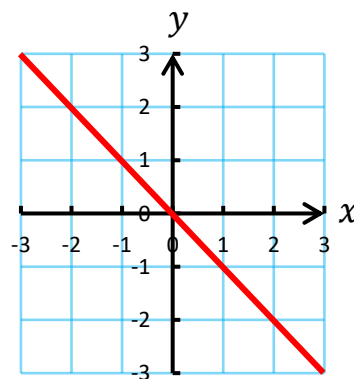
7) What is the equation of the line?



8) What is the equation of the line?



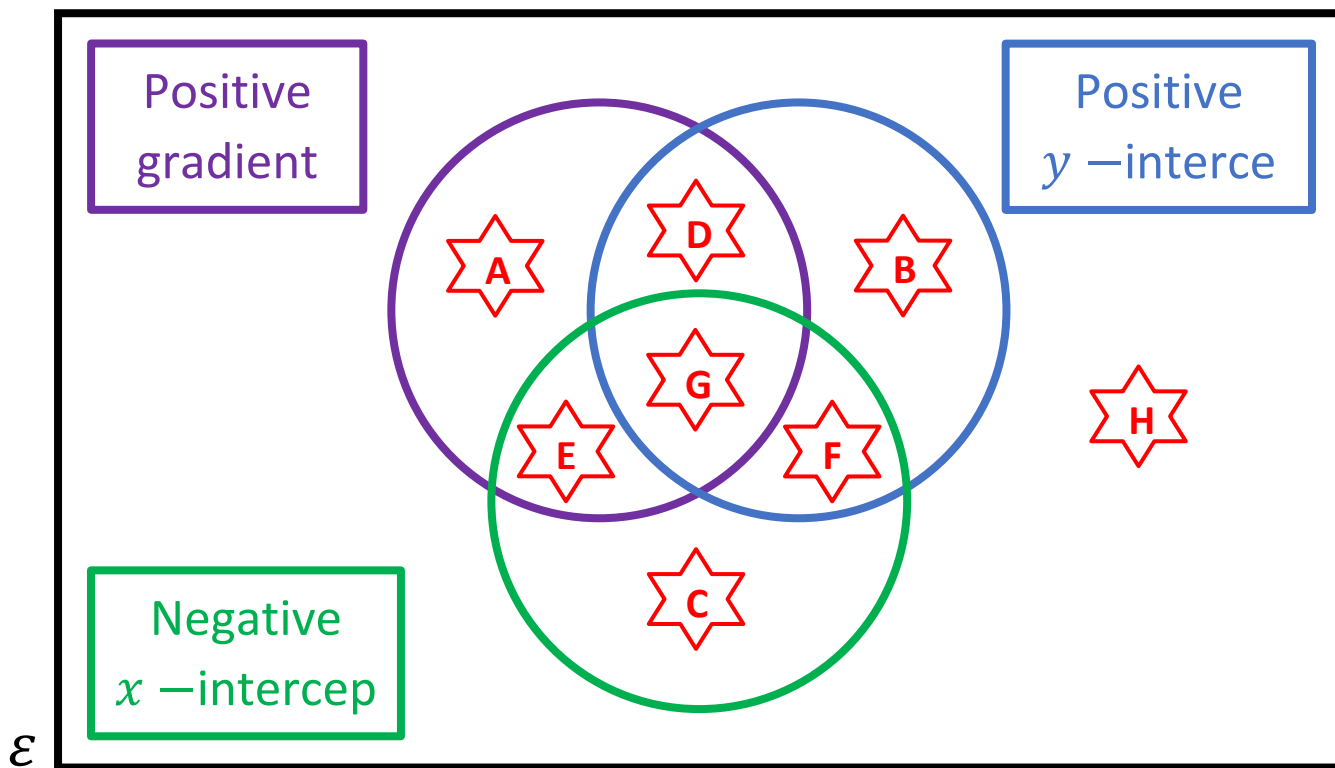
9) What is the equation of the line?



___ out of 9



Venn Diagram Challenge 2



Think of an equation for a straight line that could fit into each region. If you think a region is impossible to fill, explain why!

A		E	
B		F	
C		G	
D		H	



Example 4



Plot the graph for $y = x^2 - 4x + 3$.

x	-5	-4	-3	-2	-1	0	1	2	3	4	5
y	48	35	24	15	8	3	0	-1	0	3	8

$$y = (-2)^2 - 4 \times (-2) + 3$$

$$y = 4 - -8 + 3$$

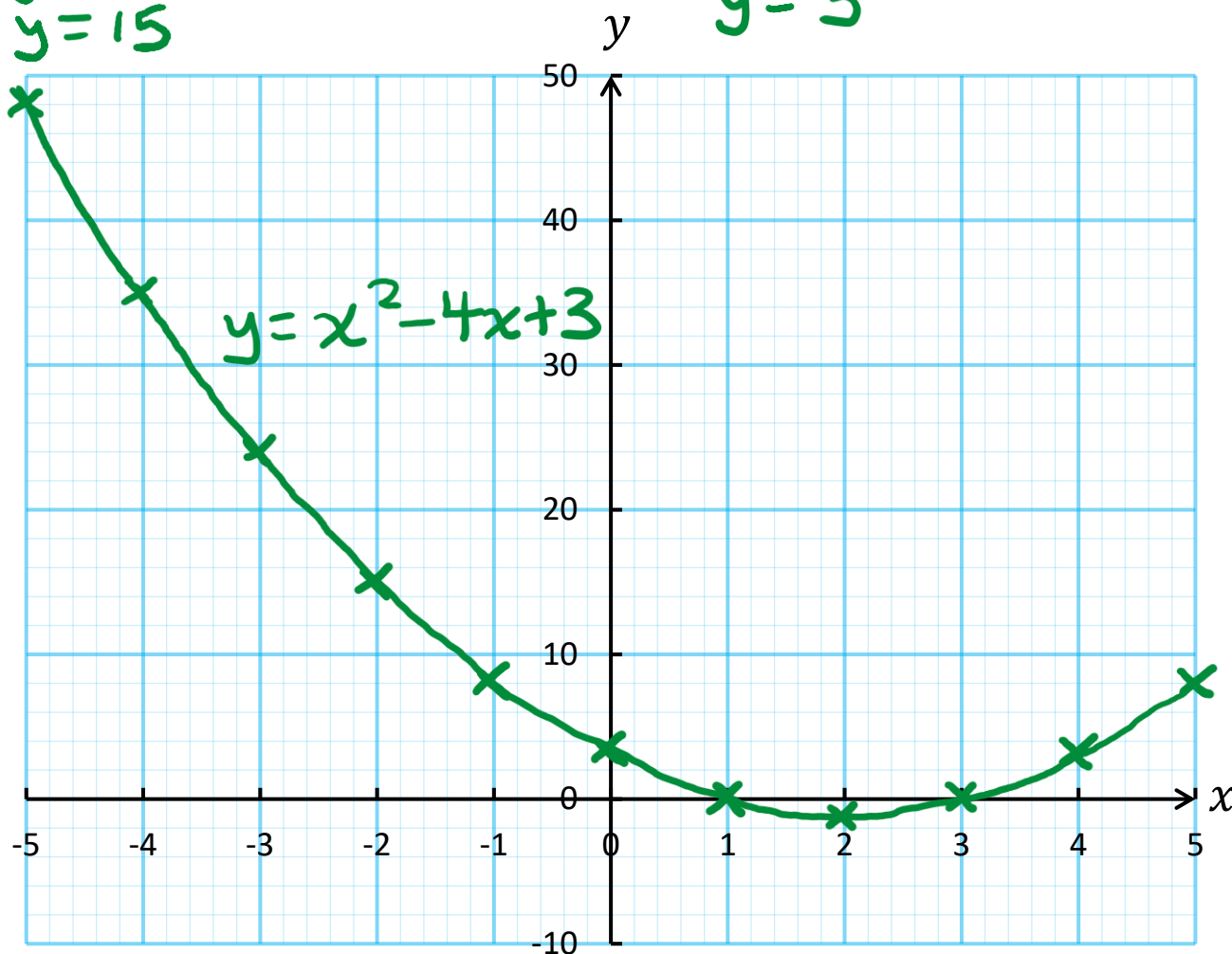
$$y = 4 + 8 + 3$$

$$y = 15$$

$$y = 4^2 - 4 \times 4 + 3$$

$$y = 16 - 16 + 3$$

$$y = 3$$



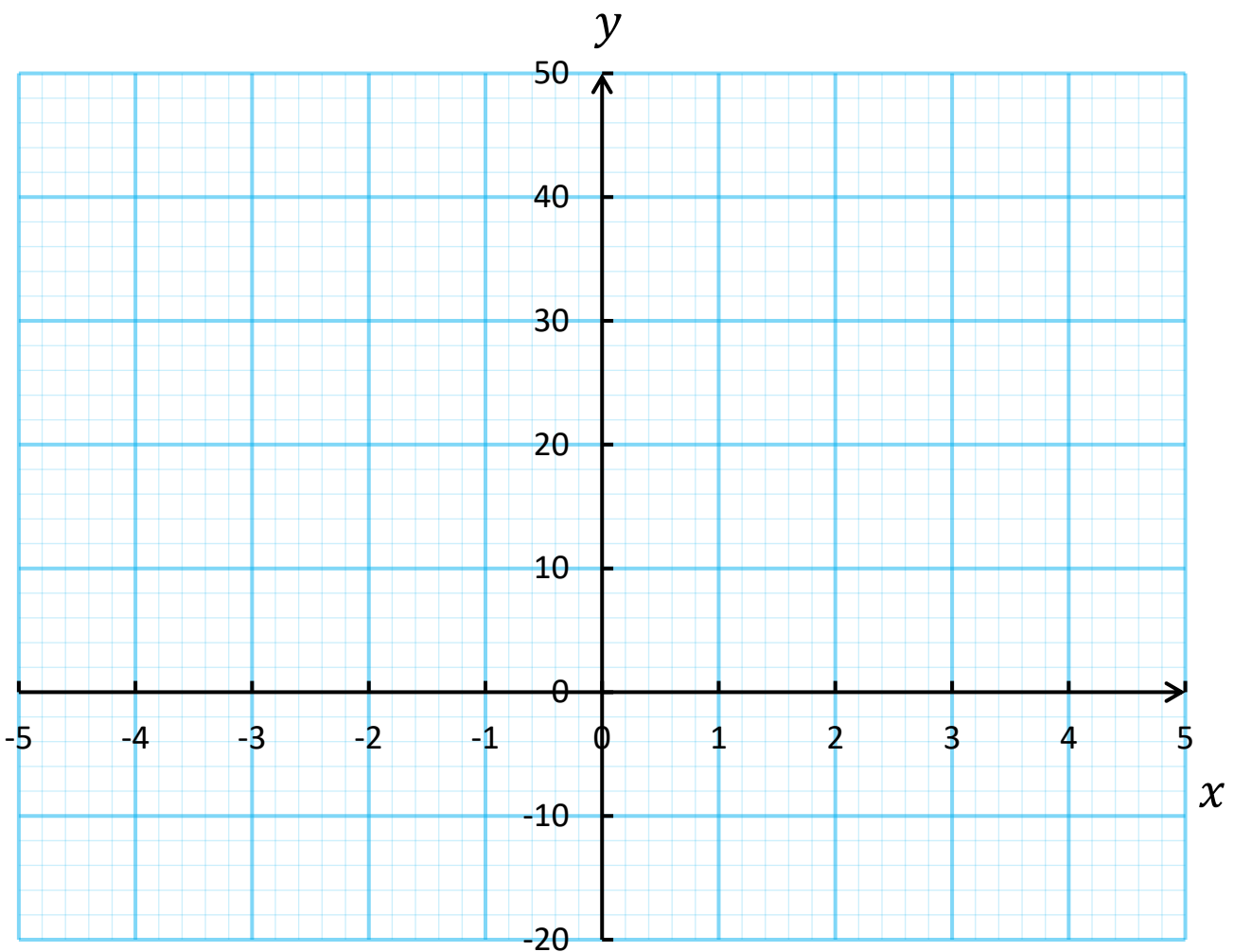


Exercise 4



Plot the graph for $y = x^2 + 5x - 4$.

x	-5	-4	-3	-2	-1	0	1	2	3	4	5
y	-4	-8	-10		-8	-4	2	10	20		46



___ out of 4



Quiz 5



1) $4 - -6$

2) Write the time
10:45pm in the
24-hour clock.3) What type of
angle is the angle
 95° ?4) The mean of
6, 1, 8, 5.5) The range of
6, 1, 8, 5.6) The median of
6, 1, 8, 5.

7) $8.9 \div 100$

8) 20% of £90

9) Write the
fraction $\frac{2}{5}$ as a
decimal.

___ out of 9

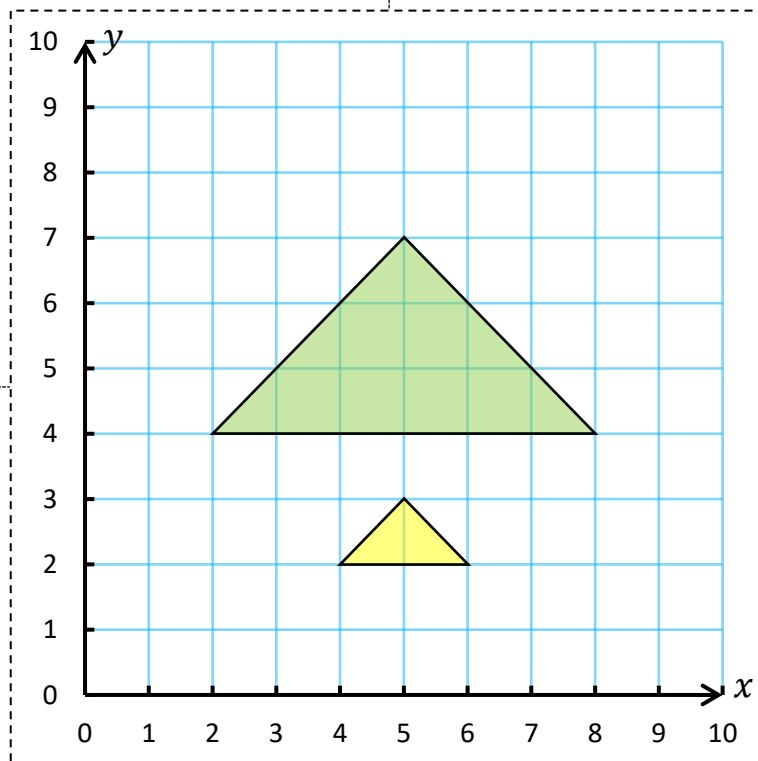


Enlarging the Triangle



1) The green triangle is an enlargement of the yellow triangle. What is the scale factor?

2) Where is the centre of enlargement?



3) What is the area of the green triangle?

4) Calculate the perimeter of the yellow triangle.

___ out of 8

Evaluating the Workbook



Notes