Name:

Data Handling and Statistics 4

Additional Tasks

YSGOL CREUDDYN
DAWN DYSG DAIONI

Contents

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 ÷ 7
4) 2.6 × 8	5) 76 – 38	6) Order from least to greatest: 8, –3, 5, –9, 0, –7.
7) 2 ÷ 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

14 + 17 = 31
31 ÷ 2 = 15.5

The mode is 17.

17 is the most popular number in the data

The total of the numbers is 121.

The mean is 121 ÷ 8 = 15.125

Total ÷ Number of data items

The range is 19 − 11 = 8

Greatest − Least

Exercise 1

Calculate the median, mode, mean and range of the following data set. 24, 27, 25, 28, 21, 26, 27, 23, 25, 27.

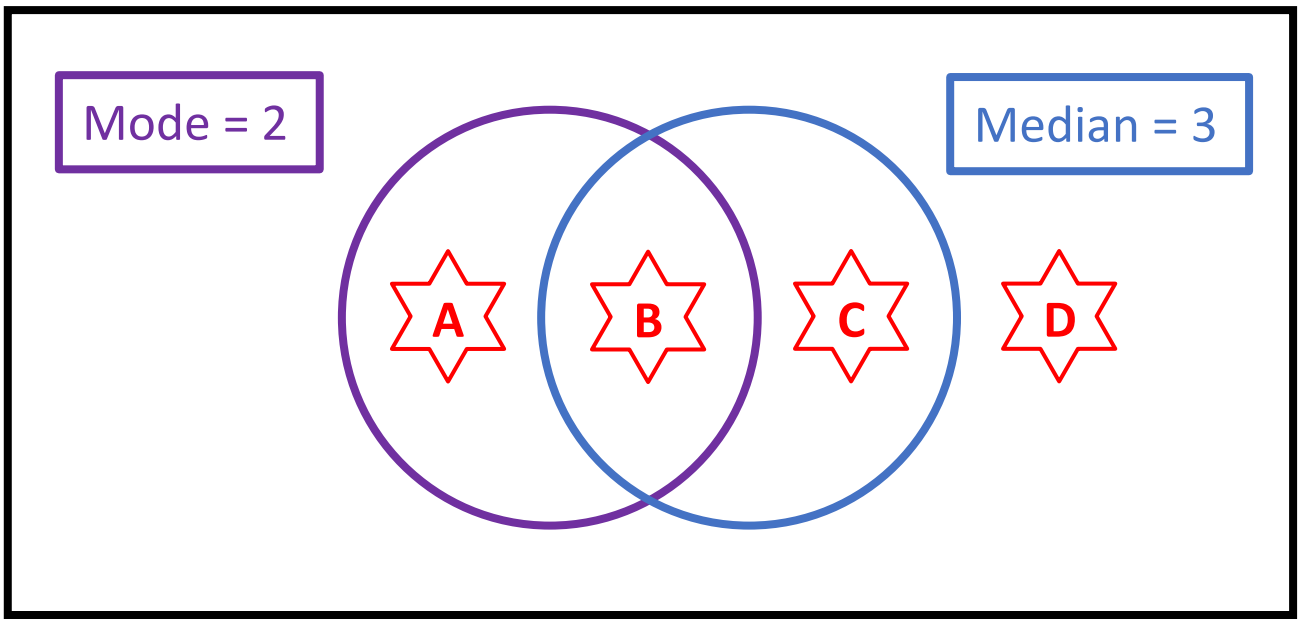
___ out of 6

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!

A

B

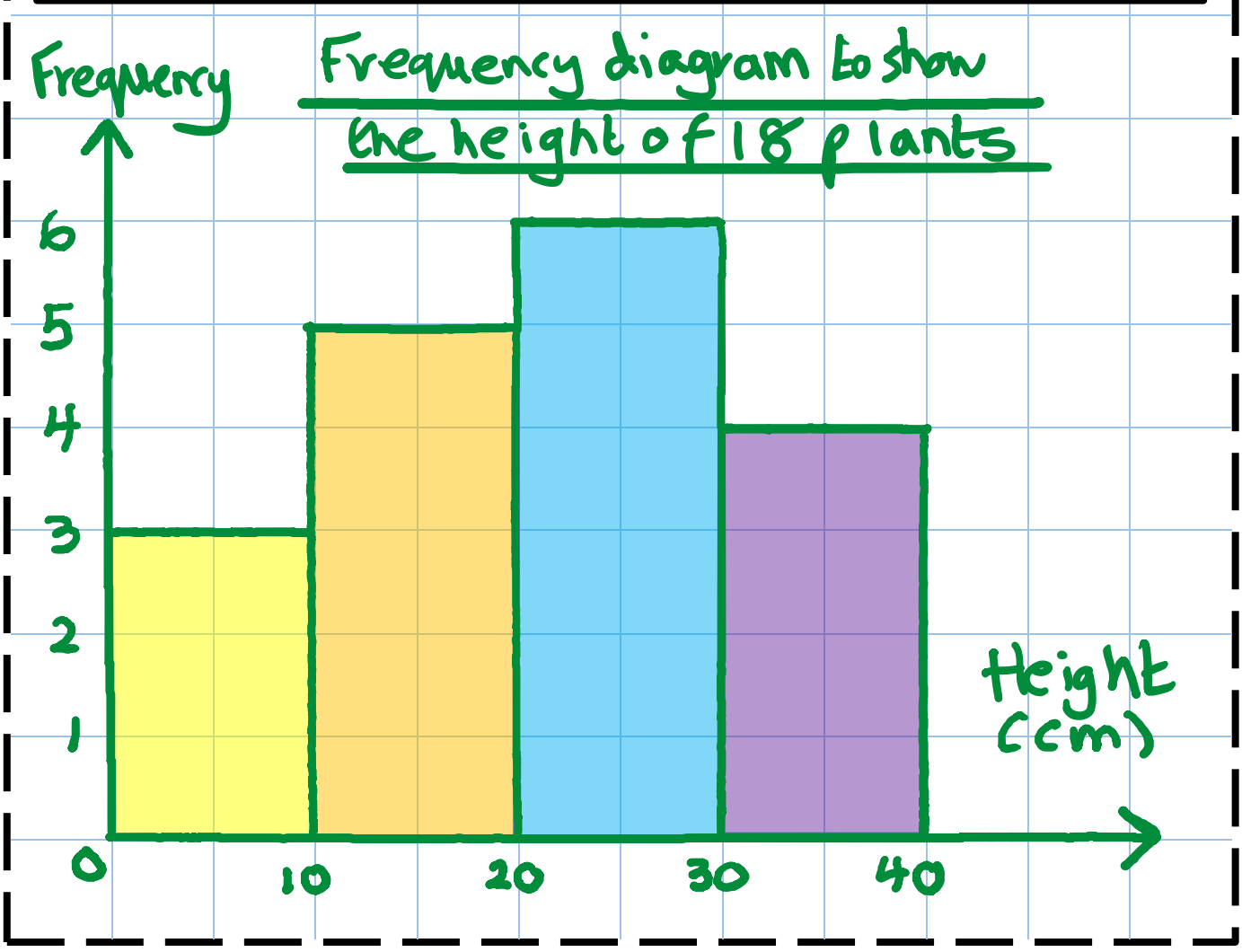
C

D

Example 2

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

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



Exercise 2

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

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

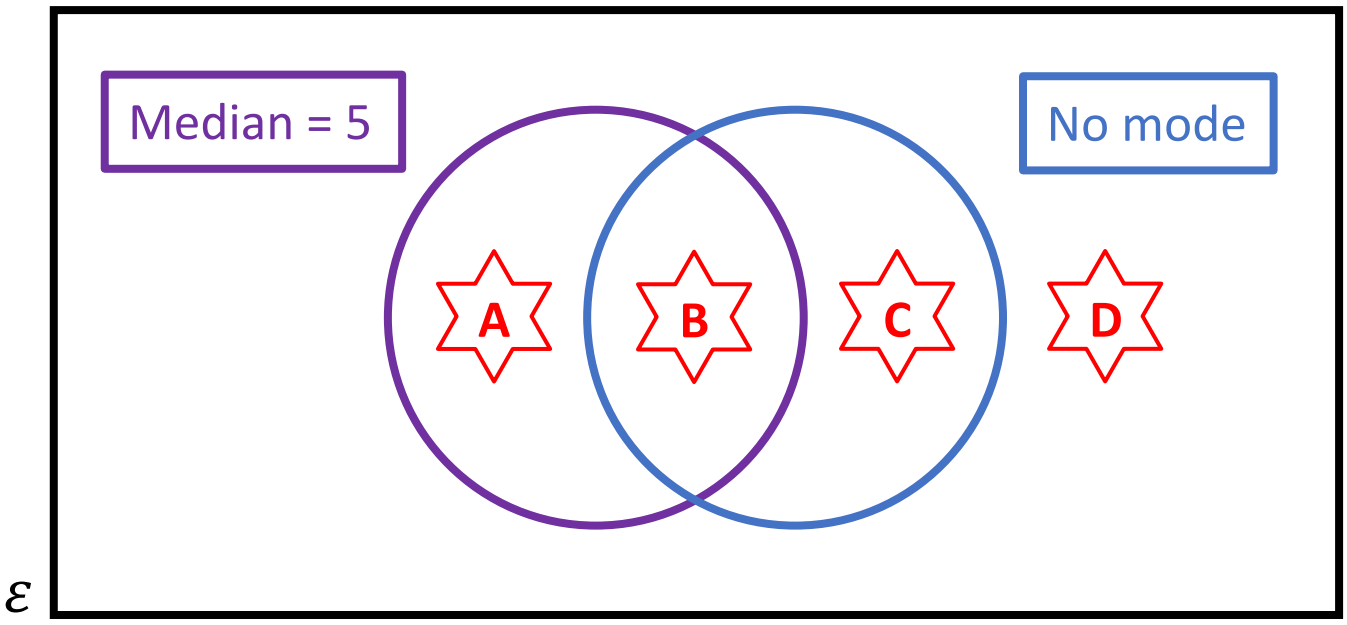
___ out of 6

Quiz 3

1) What is the mid-point of the class $0 \leqslant x < 10$?	2) What is the mid-point of the class $5 \leqslant x < 10$?	3) What is the mid-point of the class $-10 \leqslant x < 10$?
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!

A

B

C

D

Example 3

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

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

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

Divide by the total of the frequencies, NOT by the number of classes

Multiply frequency by mid-point

$380 \div 18 = 21.1\text{cm}$

$= 21.1\text{cm}$ to one decimal place

Exercise 3

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

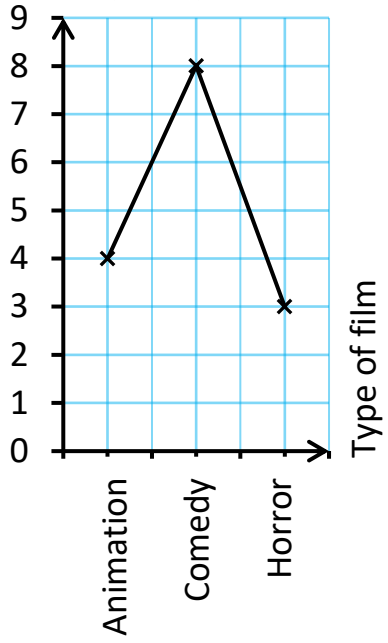
Height, h cm	Frequency
$10 \leqslant h < 20$	3
$20 \leqslant h < 30$	5
$30 \leqslant h < 40$	11
$40 \leqslant h < 50$	1

___ out of 4

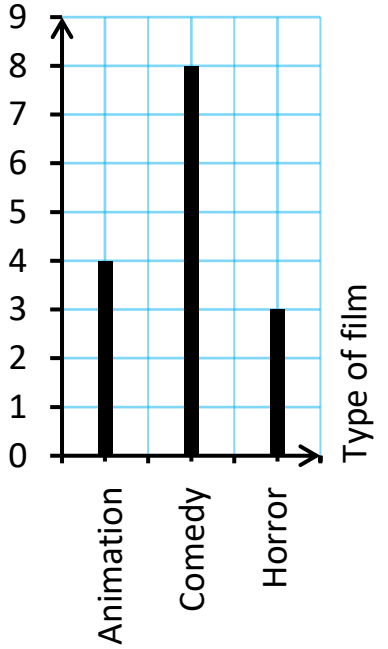
Quiz 4

What type of graphs/charts/diagrams are these?

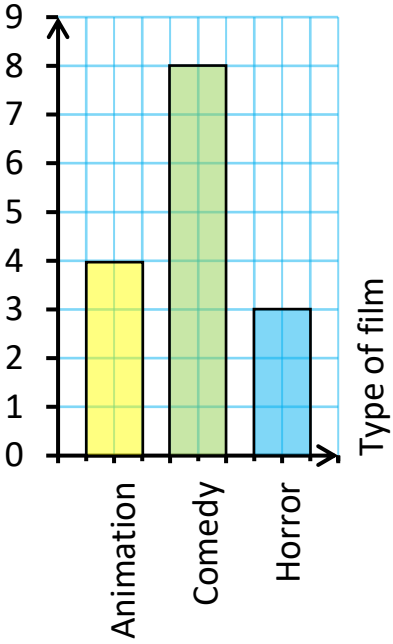
1)



2)



3)

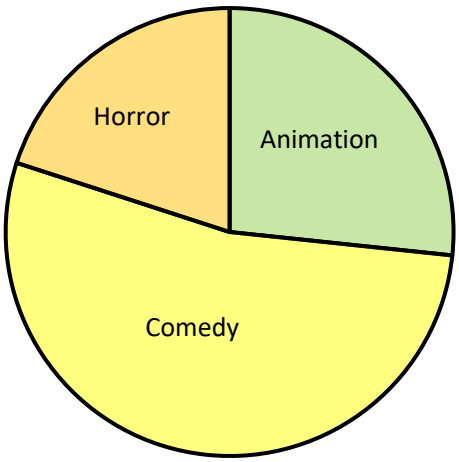


_____ _____ _____

4)

Pictogram to show the favourite film genre of 15 people	
Animation	☐ ☐
Comedy	☐ ☐ ☐ ☐
Horror	☐ ▯
	Key: ☐ = 2 people

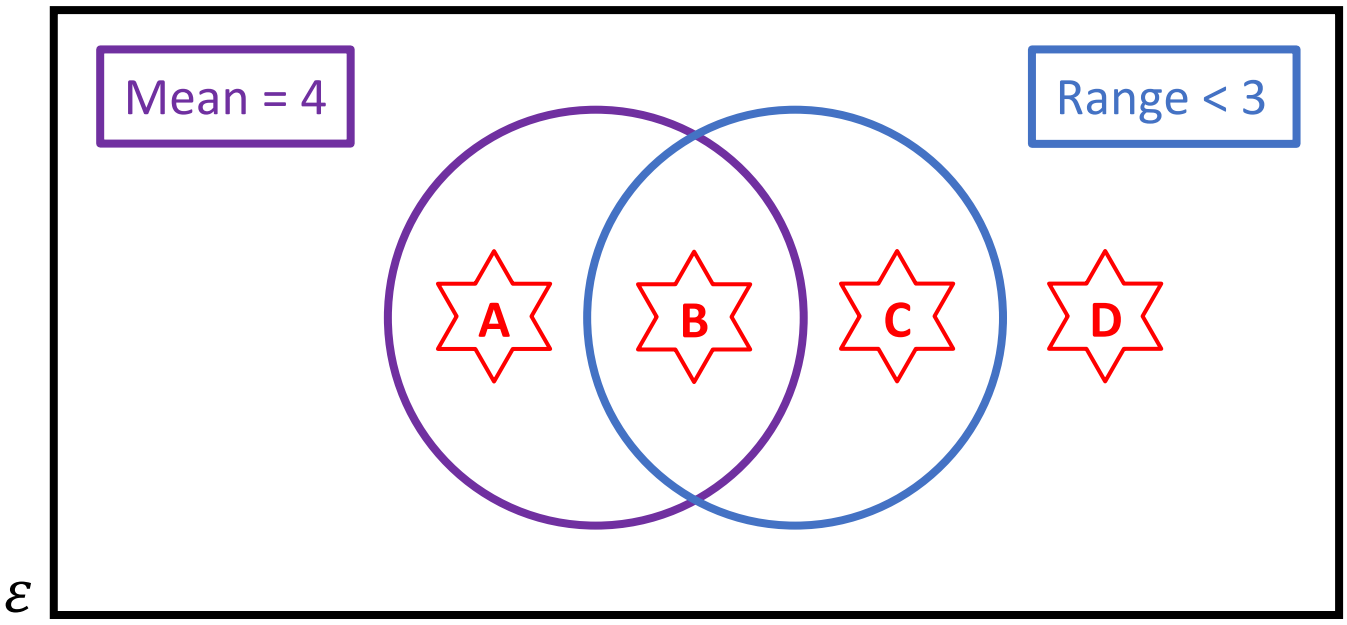
5)



_____ _____

___ 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!

A

B

C

D

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

$9 + 7 + 5 + 3 = 24$

$360° \div 24 = 15°$

Sector size for 1 person

Draw using a protractor and ruler

Pie chart to show 10R's favourite colour

Red: $9 \times 15° = 135°$

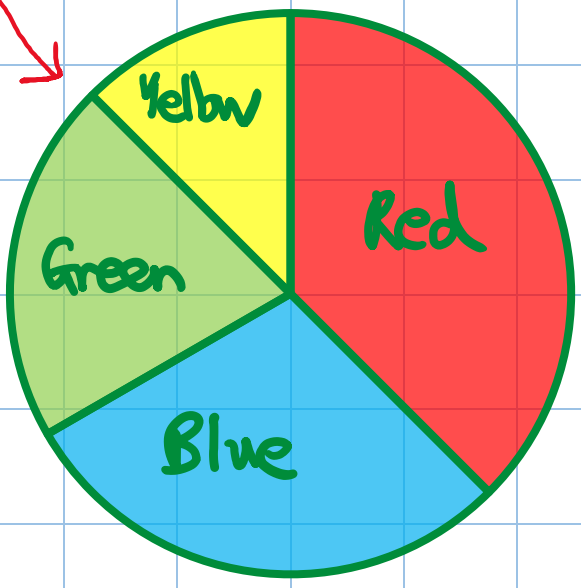
Blue: $7 \times 15° = 105°$

Green: $5 \times 15° = 75°$

Yellow: $3 \times 15° = 45°$

$360°$ ✓

Check that the total is $360°$



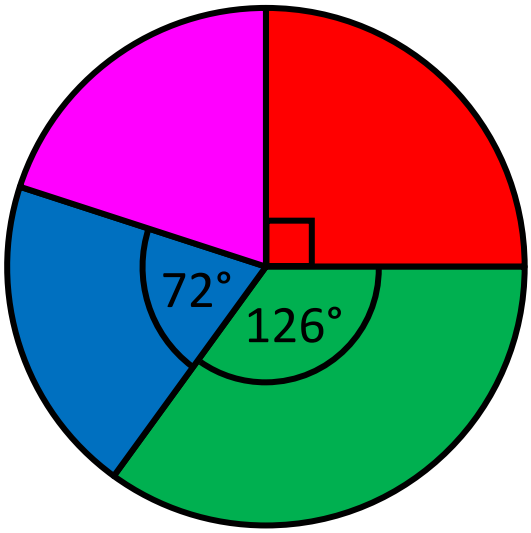
Exercise 4

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



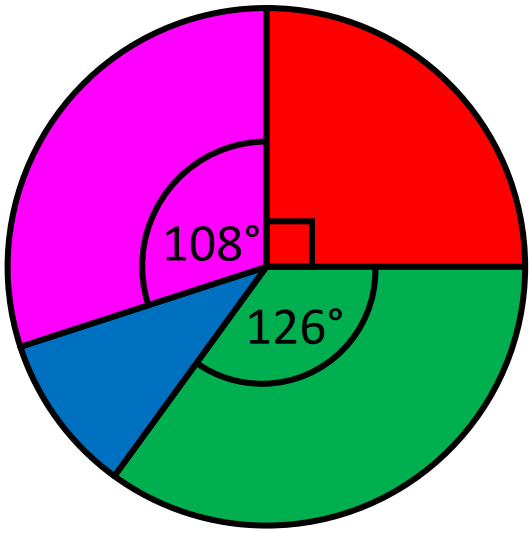
Pie chart to show the favourite crisp flavour for learners from School A

- 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

YSGOL CREUDDYN
DAWN DYSG DAIONI

Contents

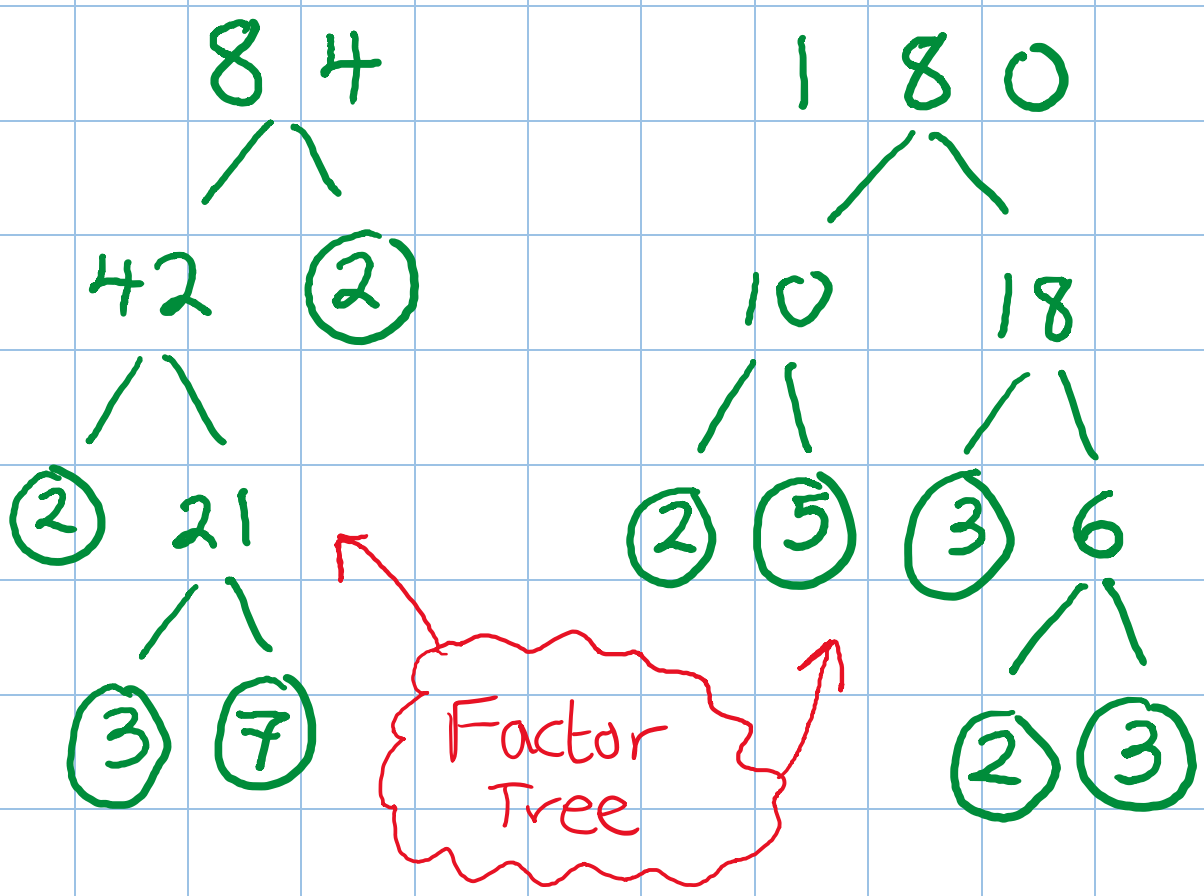
Quiz 1

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.



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

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

Check with a calculator: SHIFT, FACT

Exercise 1

Write 54 and 360 as a product of their prime factors, in index form.

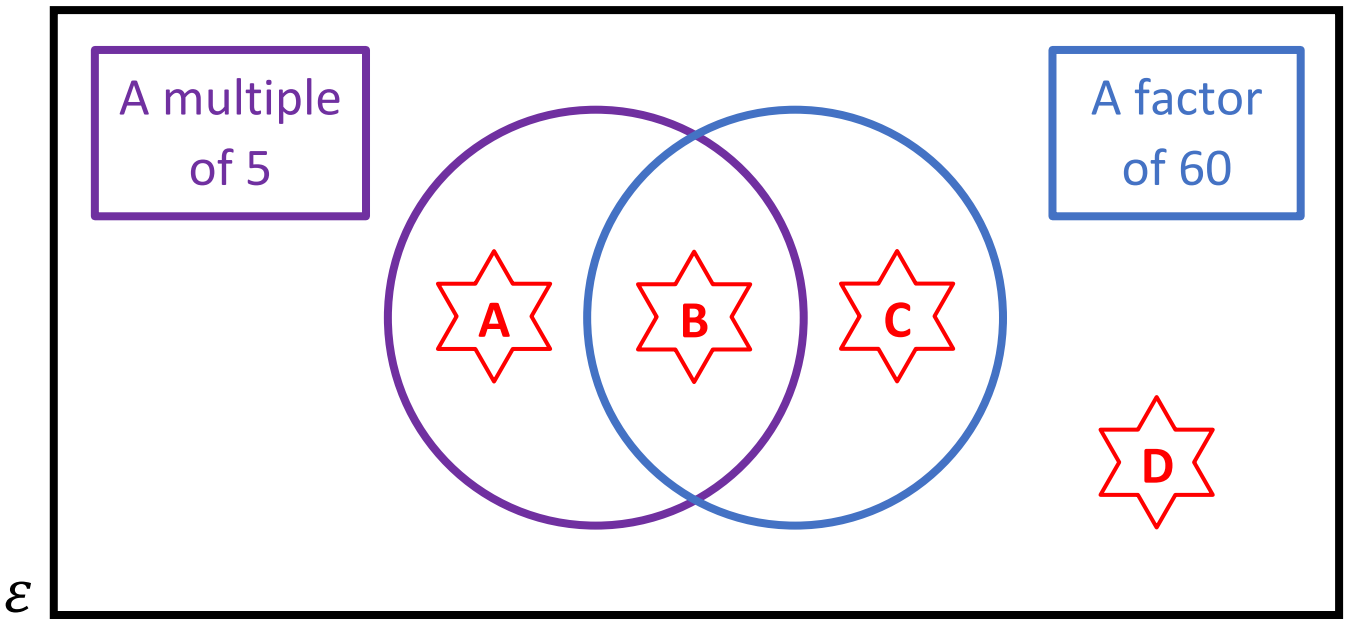
___ out of 6

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!

A

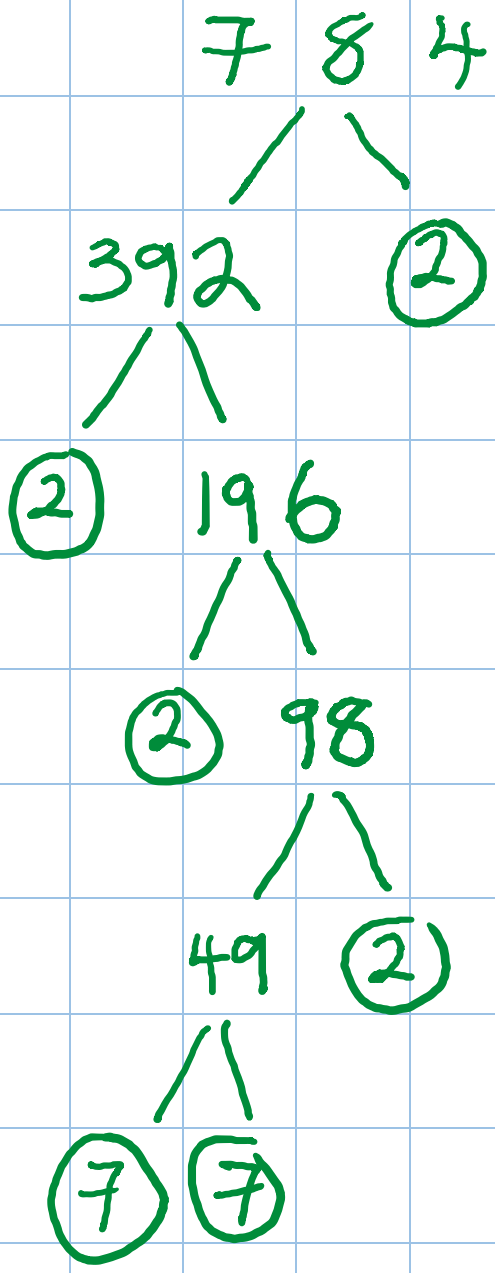
B

C

D

Example 2

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



$$\begin{array}{r} 392 \\ 2\overline{)784} \end{array} \qquad \begin{array}{r} 196 \\ 2\overline{)392} \end{array} \qquad \begin{array}{r} 098 \\ 2\overline{)196} \end{array}$$

$784 = 2\times2\times2\times2\times7\times7$

$784 = 2^4 \times 7^2$ (halve the powers)

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

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

$\sqrt{784} = 28$

Exercise 2

Without using a calculator, find the square root of 324.

___ out of 6

Quiz 3

1) $\sqrt{81}$

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

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

4) $\sqrt{16}$

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

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

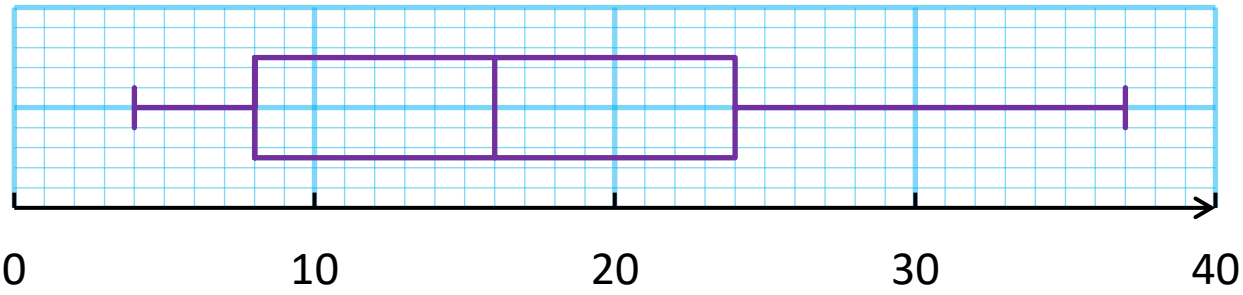
7) $\sqrt[3]{1}$

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

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

___ out of 9

Quiz 4



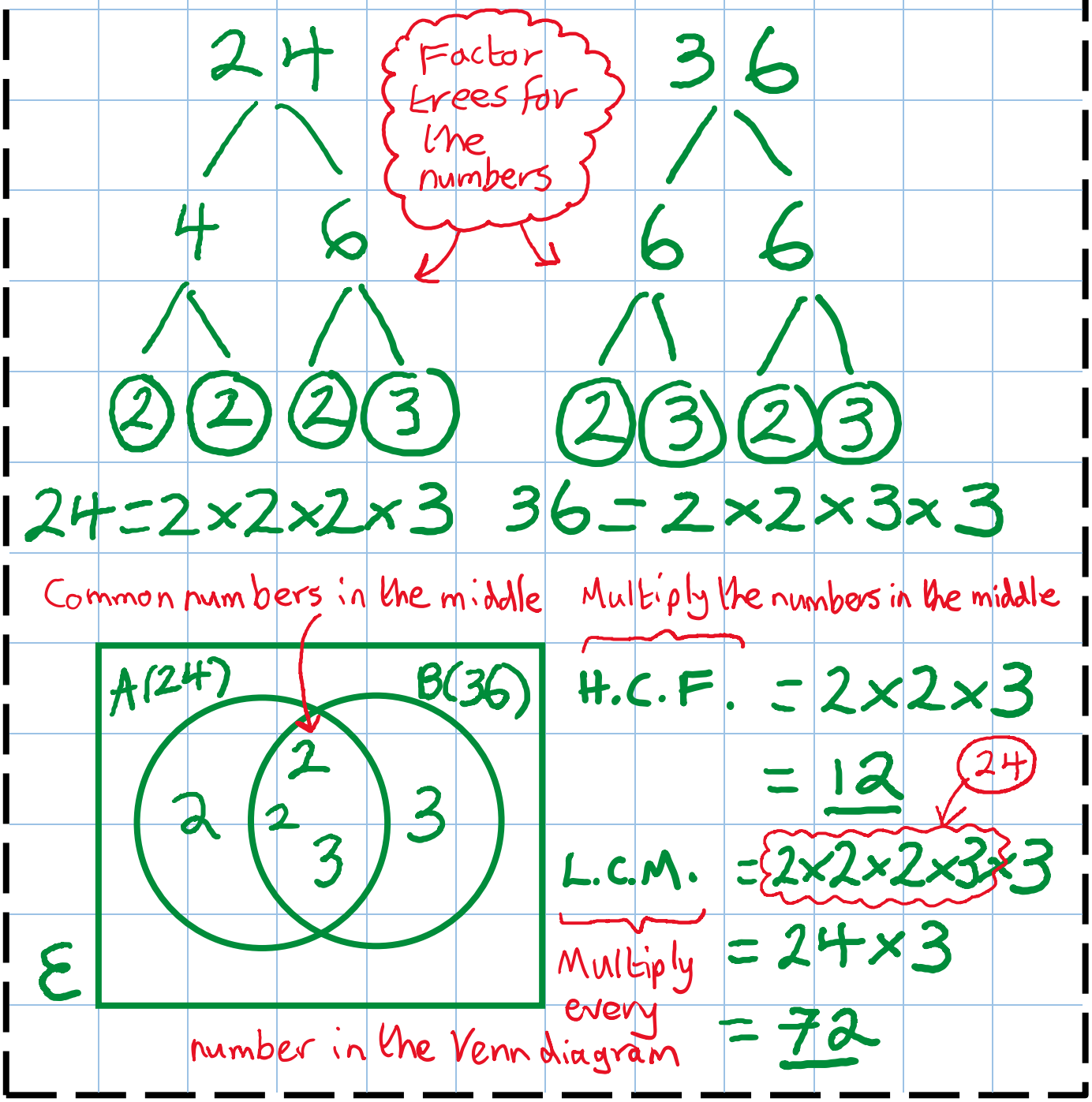
Use the above box and whisker diagram to find the following statistics.

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?



Exercise 3

What is the highest common factor and lowest common multiple of the numbers 27 and 63?

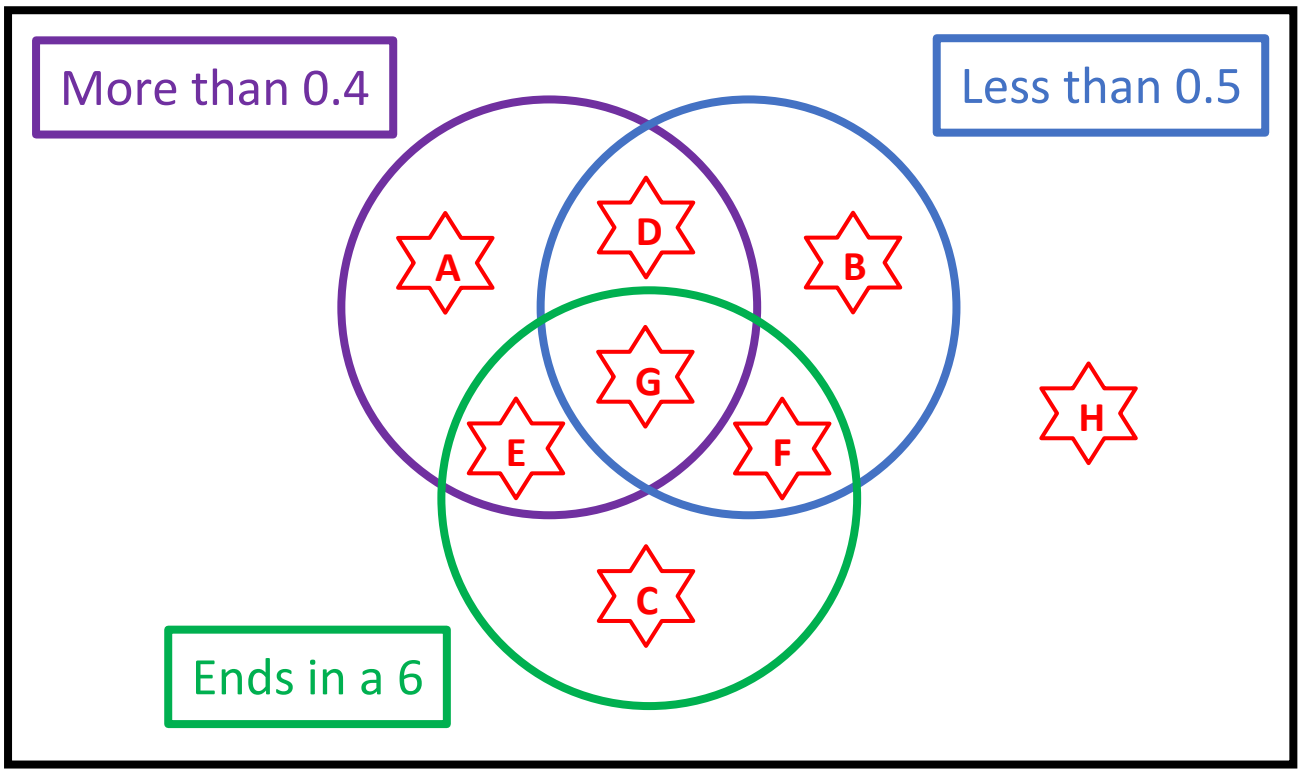
___ out of 4

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

B

C

D

E

F

G

H

Example 4

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

10% £6.80 ÷10

1% £0.68 ÷10

80% Multiply 10% by 8

3% Multiply 1% by 3

6.80	0.68
× 8	× 3
54.40	2.04
6	2 2

83% 54.40

\+ 2.04

£56.44 Final answer

Add 80% to 3%

Exercise 4

Without using a calculator, calculate 47% of £74.

___ out of 5

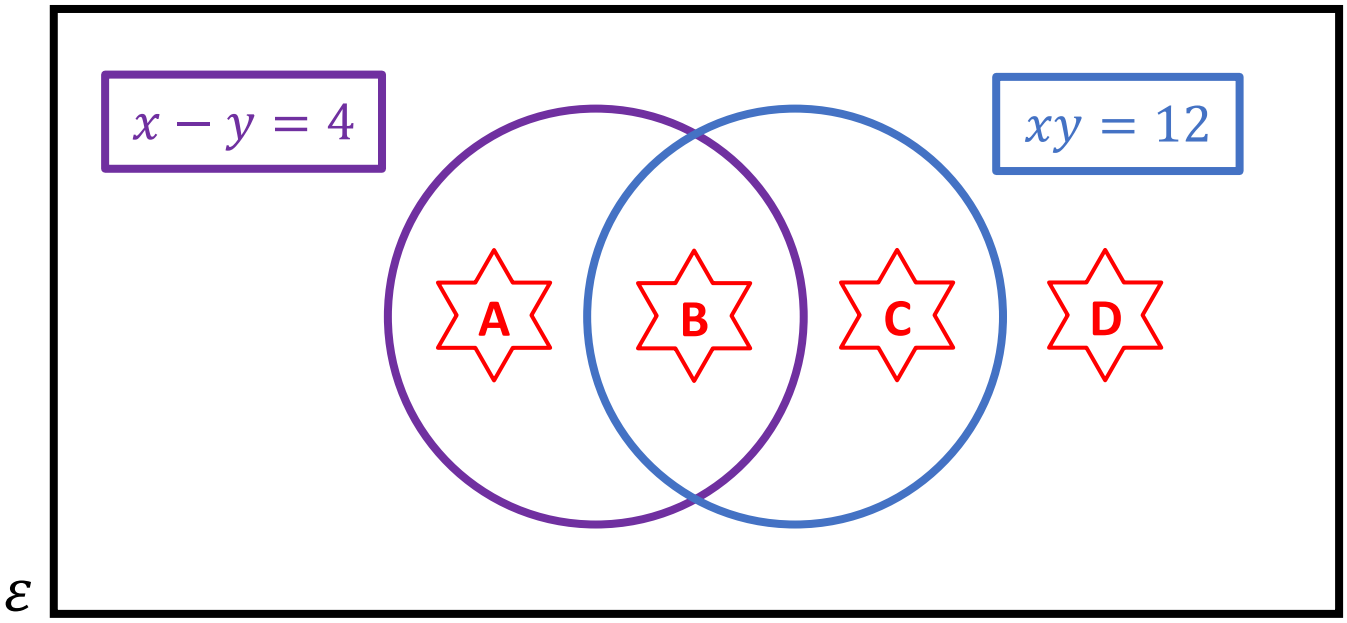
Quiz 6

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!

A

B

C

D

Evaluating the Workbook

Notes

Name:

Measuring Shapes 3

Additional Tasks

YSGOL CREUDDYN
DAWN DYSG DAIONI

Contents

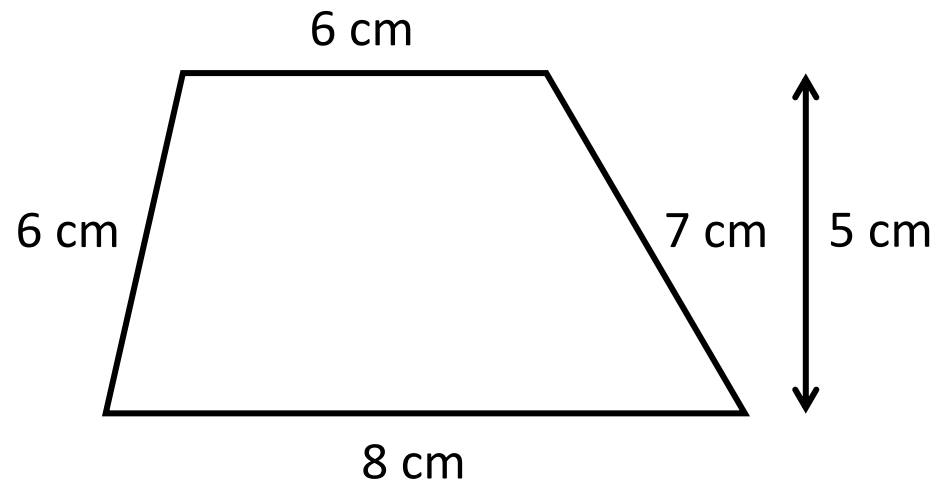
Quiz 1

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.



Perimeter: $6 + 7 + 8 + 6$

$= 27\text{cm}$

Area: $6 + 8 = 14$

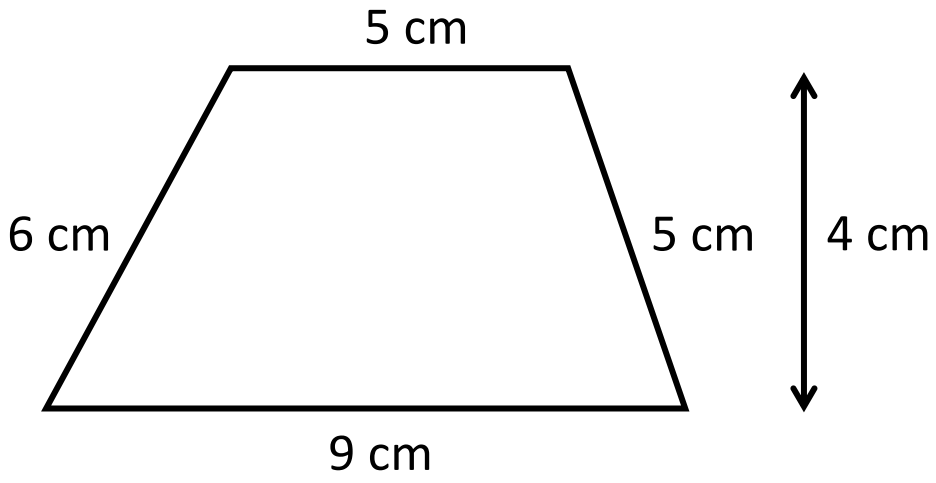
$14 \div 2 = 7$

$\frac{1}{2}(a+b) \times \text{height}$

$7 \times 5 = 35\text{cm}^2$

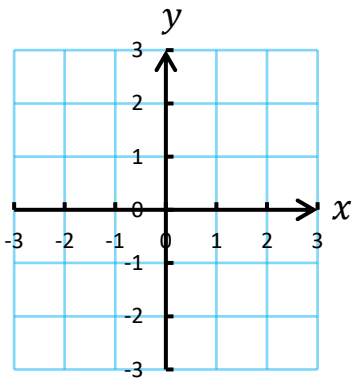
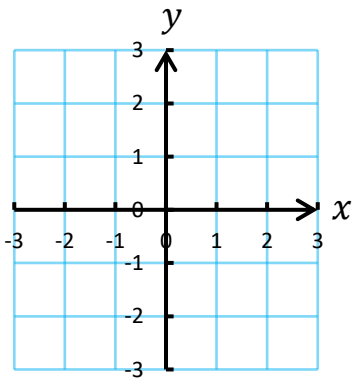
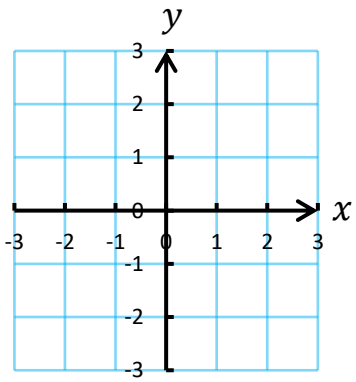
Exercise 1

Calculate the perimeter and area of the trapezium below.



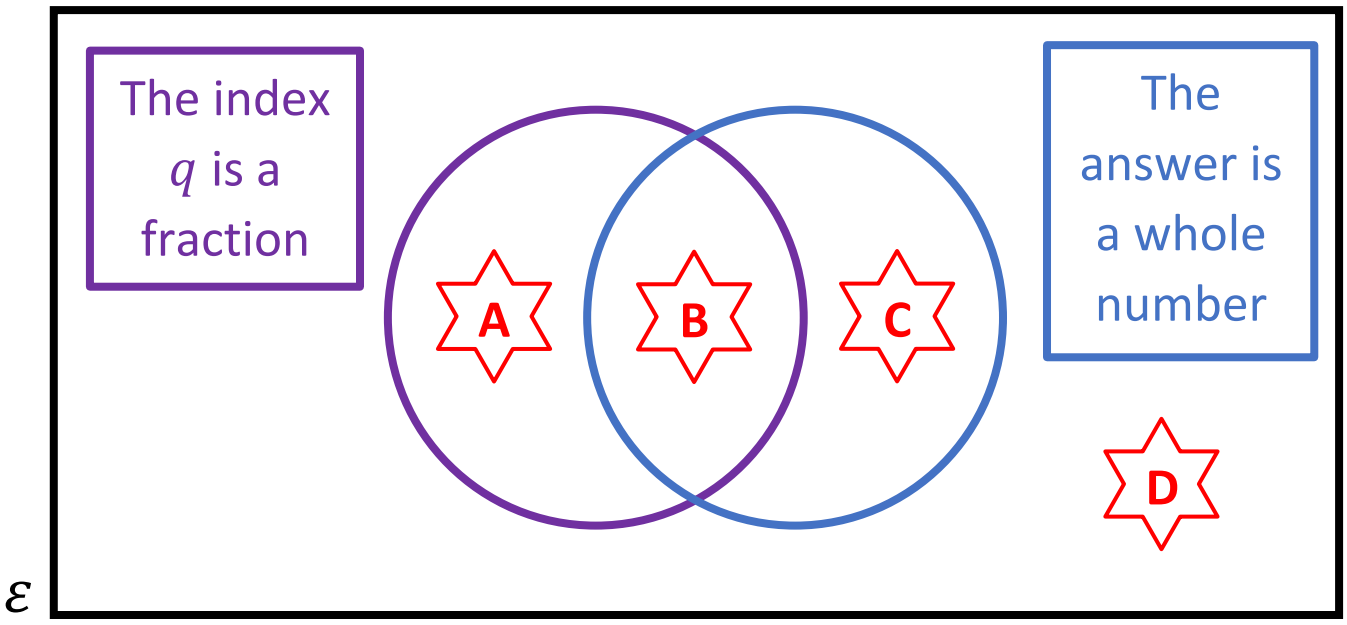
___ out of 6

Quiz 2

1) Round off 3,825 to one significant figure.	2) Round off 3,825 to 2 significant figures.	3) Round off 3,825 to 3 significant figures.
4) Estimate $\frac{795\times198}{3982}$.	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!

A

B

C

D

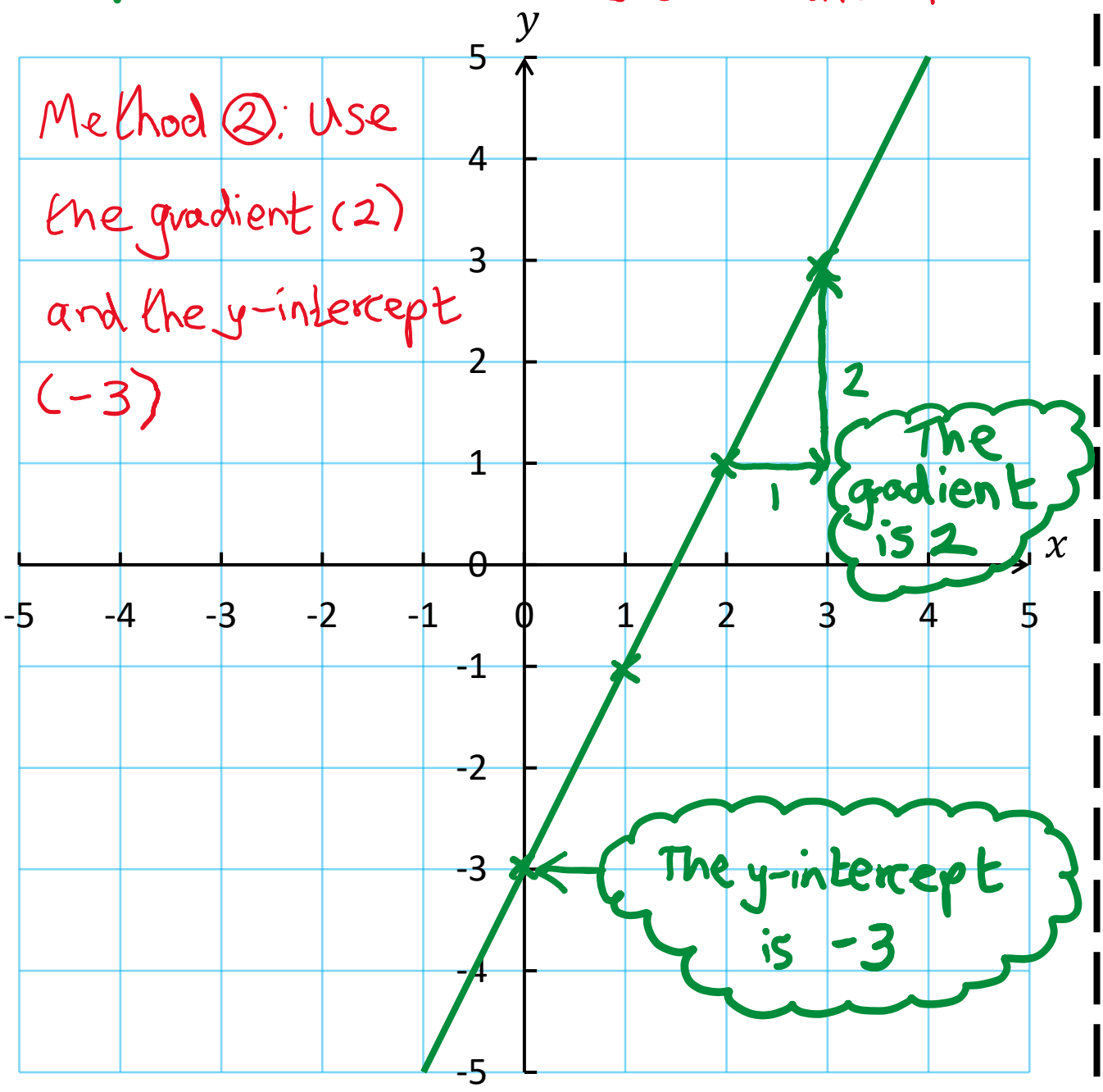
Example 2

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

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

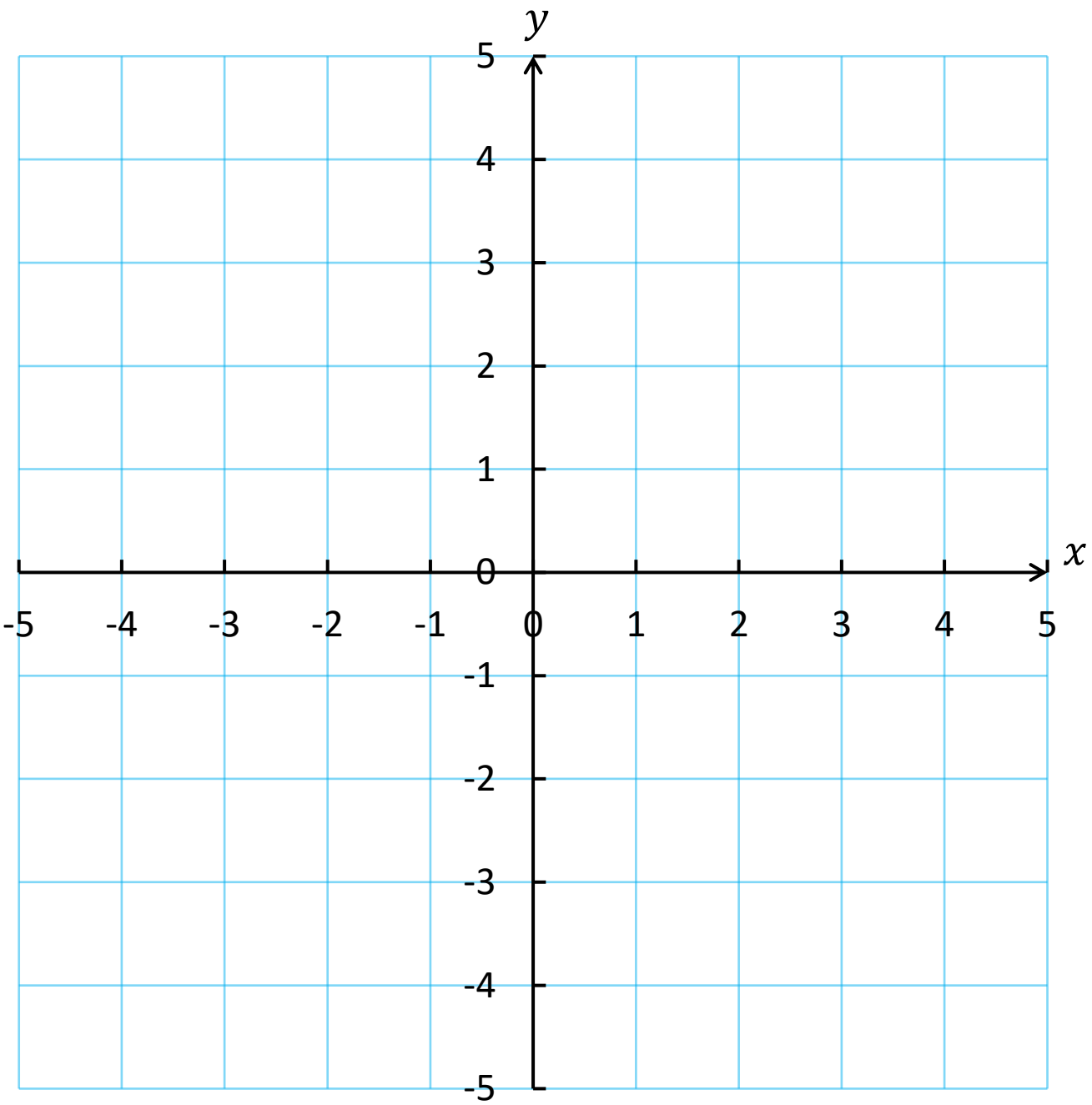
Method ①: Plot the values from the table on the left

Method ②: Use the gradient (2) and the y-intercept (-3)



Exercise 2

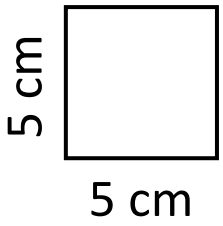
Draw the line $y = 3x - 2$.



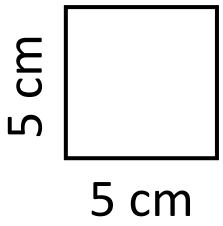
___ out of 2

Quiz 3

1) Calculate the area of the shape.

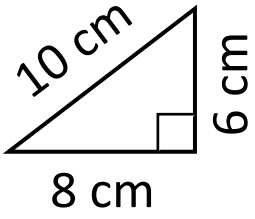


2) Calculate the perimeter of the shape.

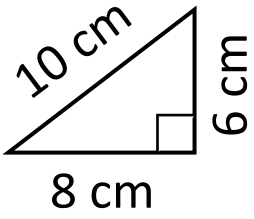


3) What is the gradient of the line $y = 5x + 2$?

4) Calculate the area of the shape.



5) Calculate the perimeter of the shape.



6) What is the gradient of the line $y = -4x + 6$?

7) Complete the formula:

Speed =

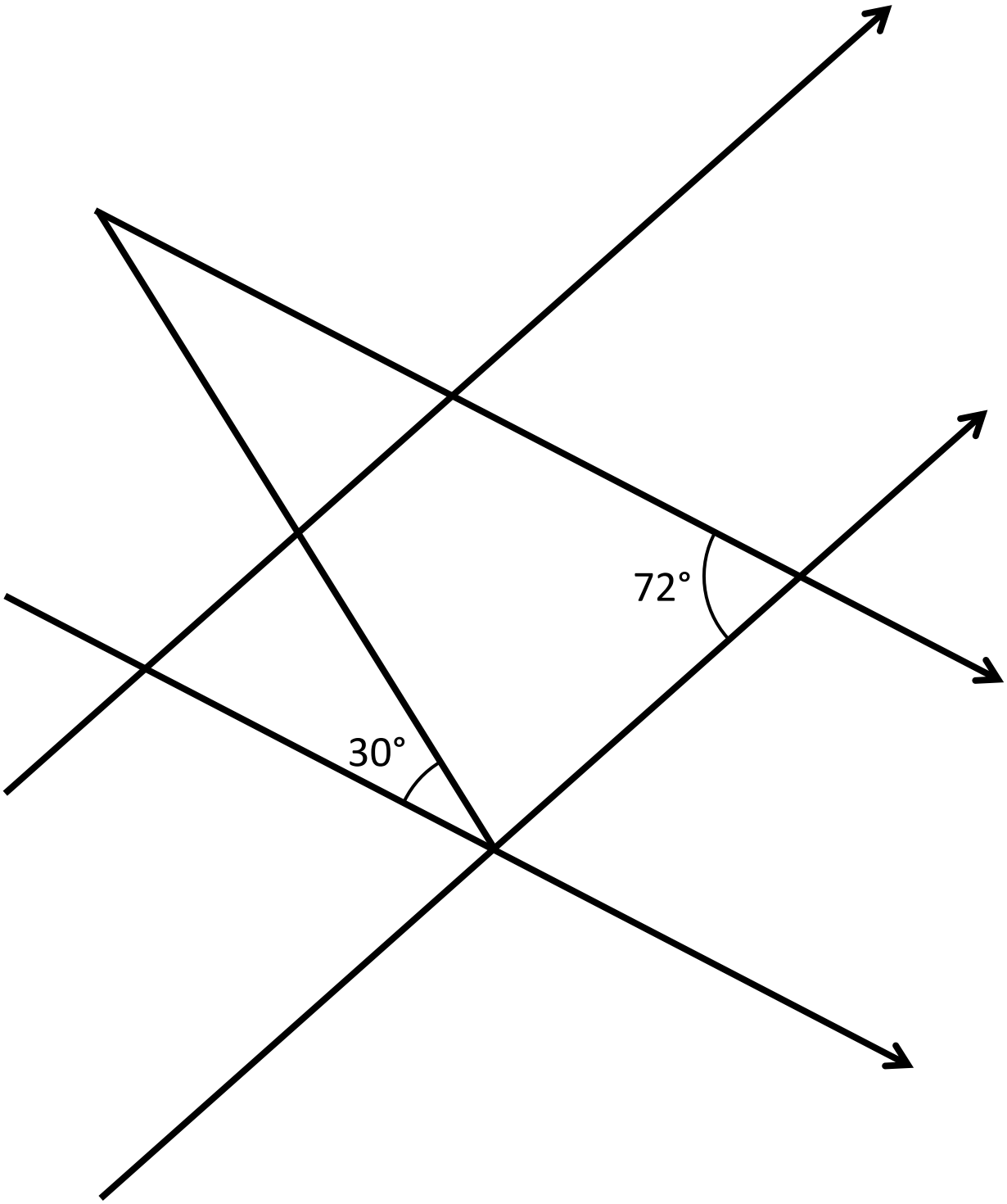
8) Add North-east to the compass.

9) What is the y–intercept of the line $y = -3x + 5$?

___ out of 9

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.

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$0 \leqslant h < 10$	3
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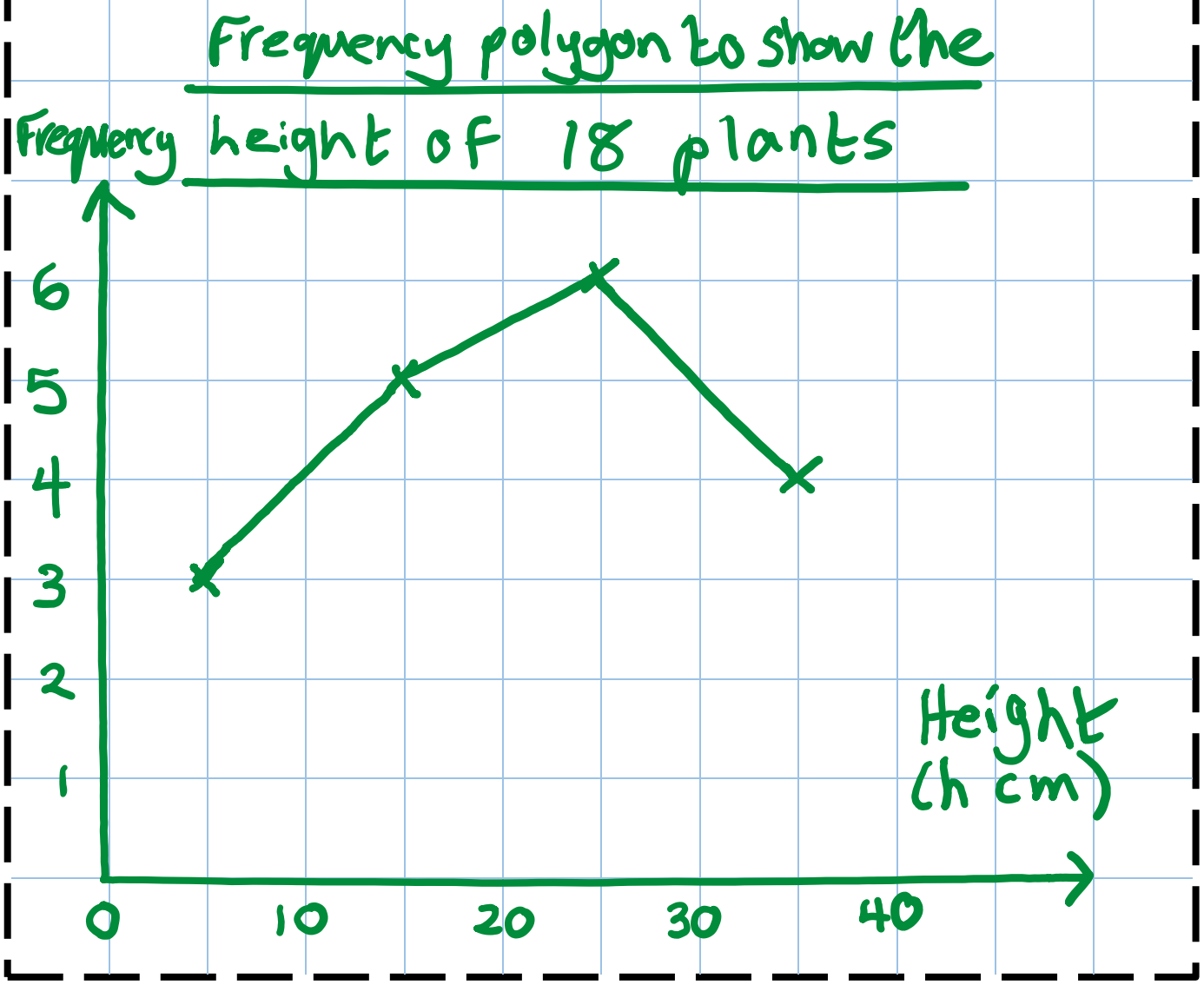

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Height, h cm	Frequency
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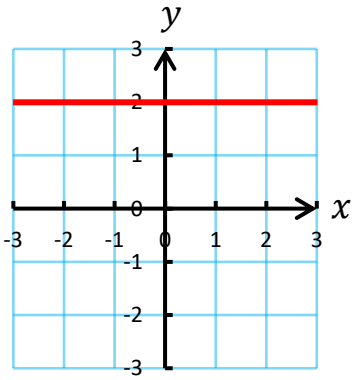
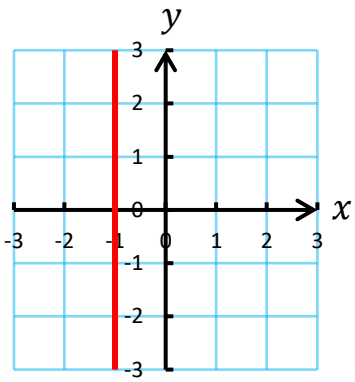
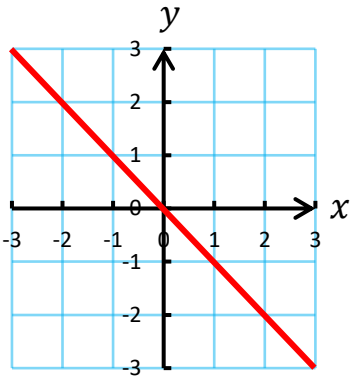
$10 \leqslant h < 20$	4
$20 \leqslant h < 30$	6
$30 \leqslant h < 40$	3

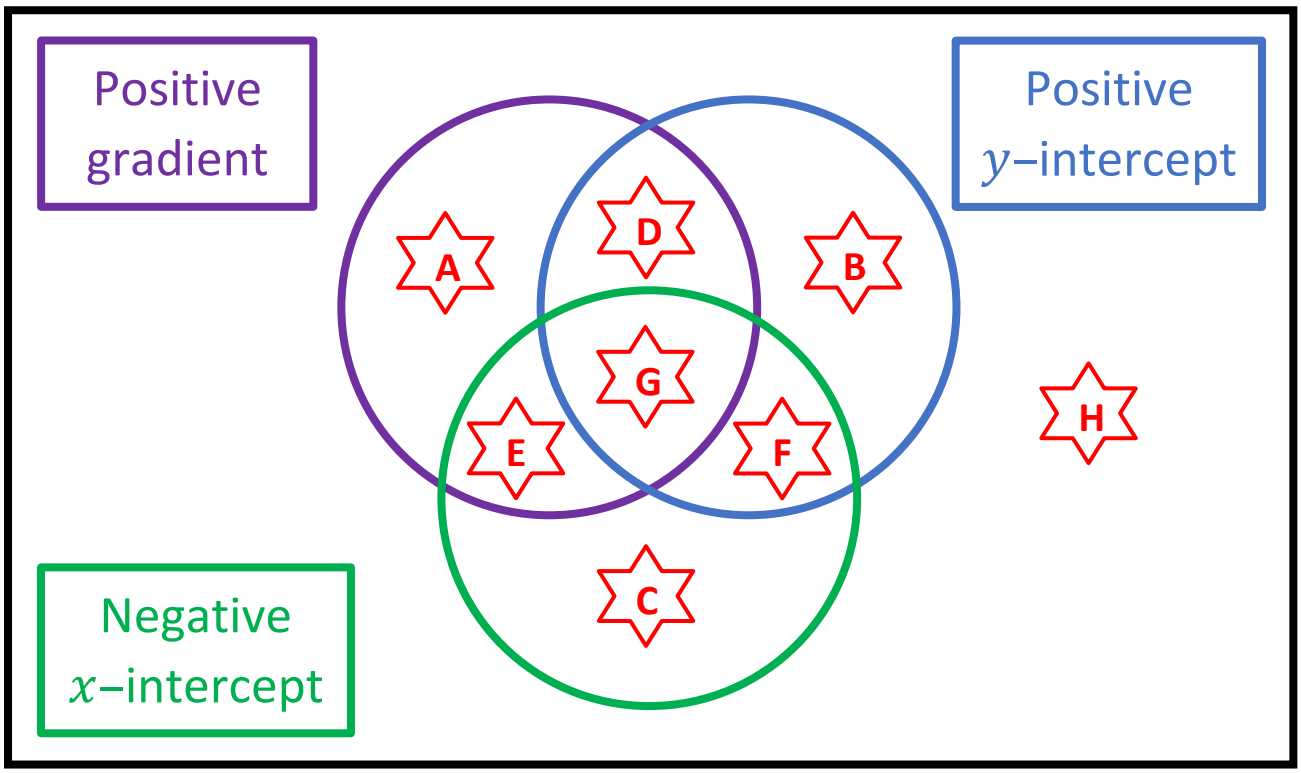
___ out of 4

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

B

C

D

E

F

G

H

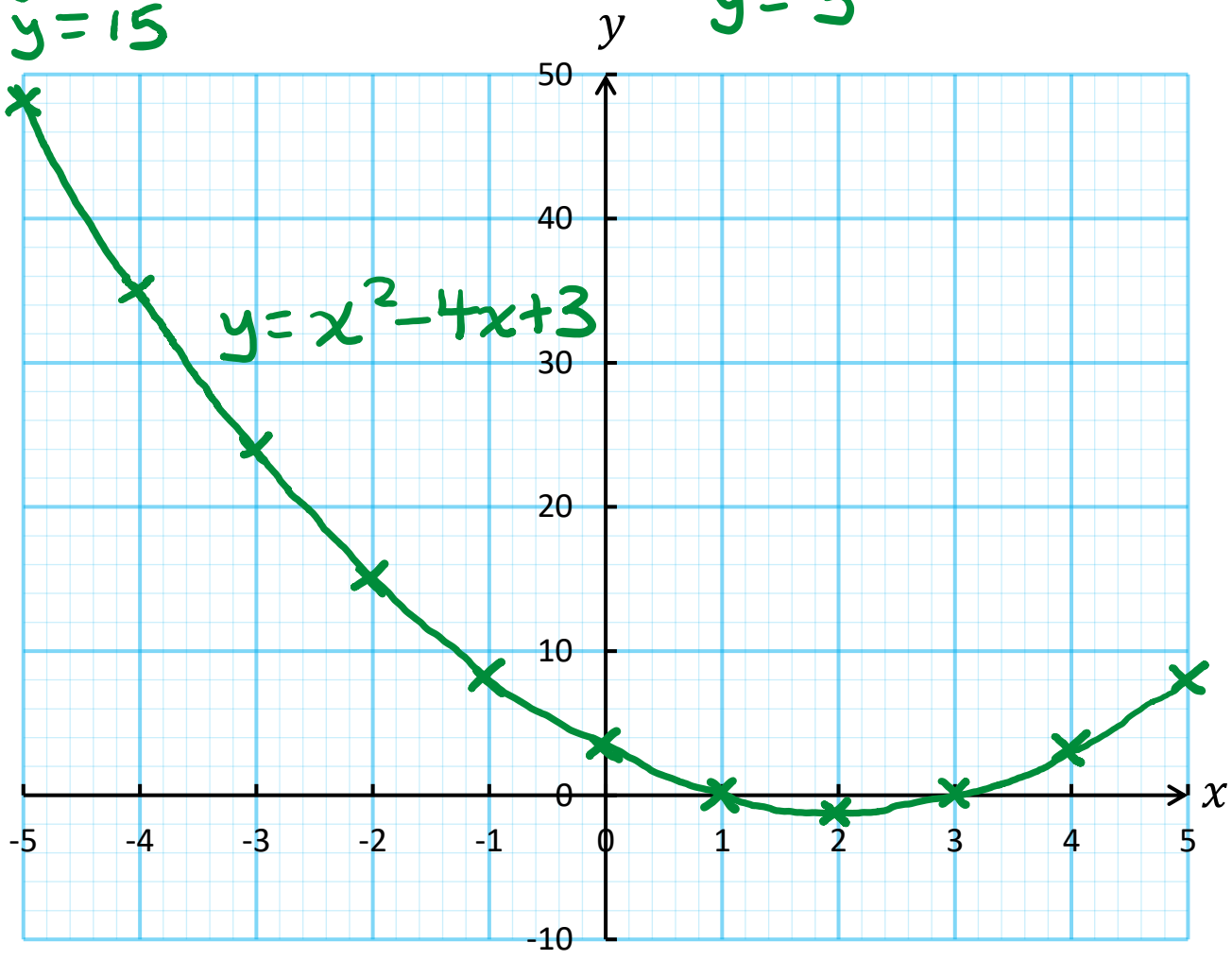
Example 4

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

$y = (-2)^2 - 4 \times (-2) + 3$
$y = 4 - -8 + 3$
$y = 4 + 8 + 3$
$y = 15$

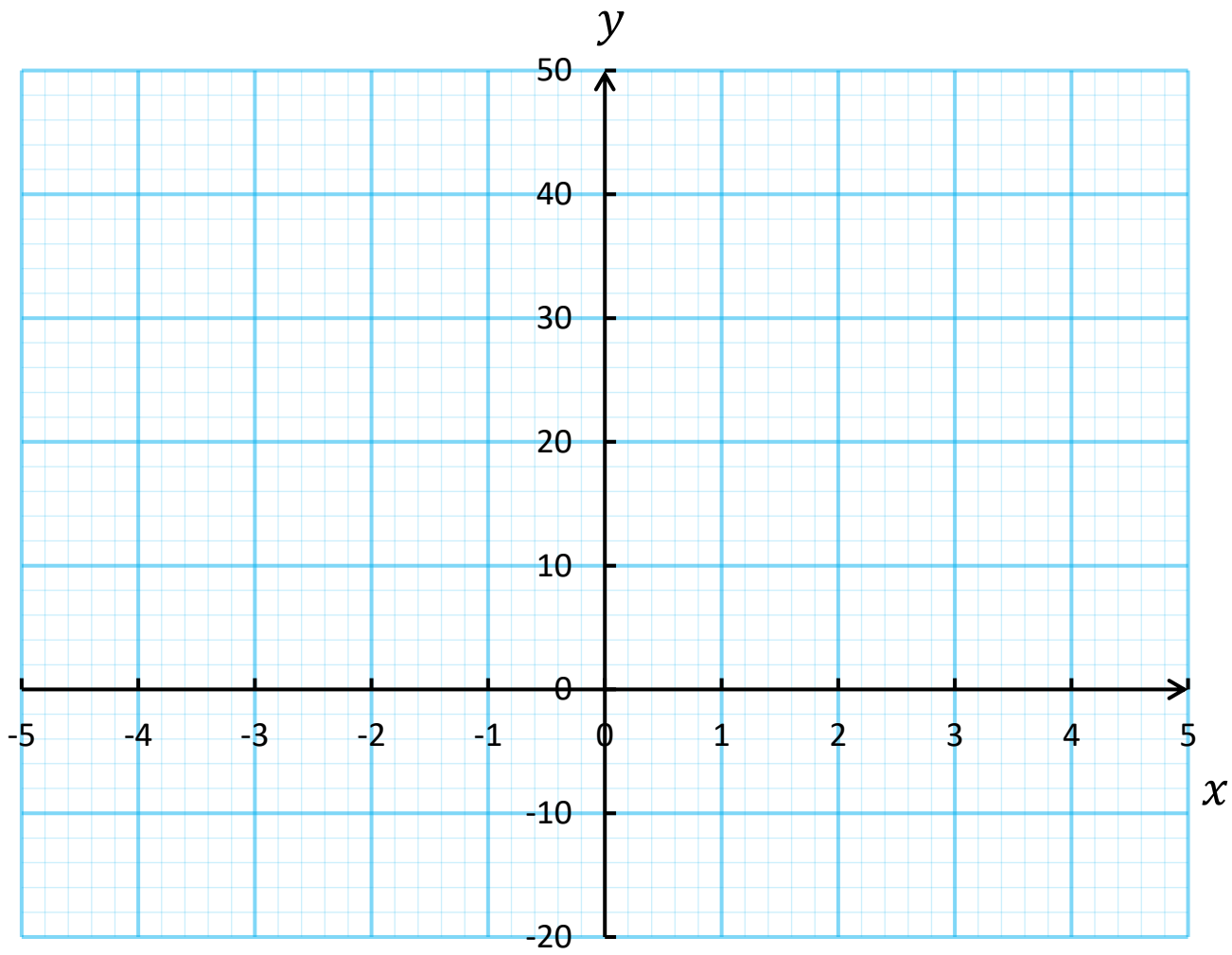
$y = 4^2 - 4 \times 4 + 3$
$y = 16 - 16 + 3$
$y = 3$



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

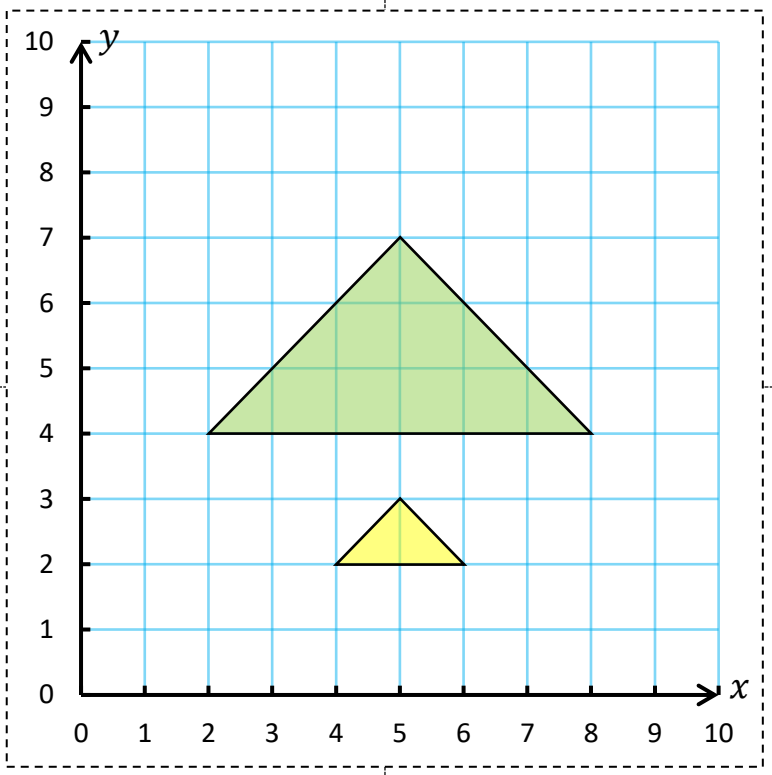
1) How does the column vector $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$ move a shape?	2) Write the time 10:45pm in the 24-hour clock.	3) What type of angle is the angle 95°?
4) The mean of 6, 1, 8, 5.	5) The range of 6, 1, 8, 5.	6) The median of 6, 1, 8, 5.
7) 8.9 ÷ 100	8) 20% of £90	9) Write the fraction $\frac{2}{5}$ 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

Name:

Fractions, Percentages and Decimals

Additional Tasks

YSGOL CREUDDYN
DAWN DYSG DAIONI

Contents

Quiz 1

$2 \times 7 =$	$6 \times 5 =$	$9 \times 3 =$	$24 \div 4 =$	$11 \times 8 =$
$3 \times 5 =$	$45 \div 5 =$	$7 \times 7 =$	$8 \times 4 =$	$12 \times 3 =$
$8 \times 7 =$	$10 \times 6 =$	$1 \times 15 =$	$5 \times 4 =$	$44 \div 4 =$
$72 \div 8 =$	$7 \times 9 =$	$15 \times 4 =$	$2 \times 0 =$	$7 \times 6 =$
$9 \times 12 =$	$2 \times 26 =$	$7 \div 2 =$	$5 \times 8 =$	$9 \times 9 =$

___ out of 25

Example 1

Calculate $\frac{3}{5} + \frac{7}{15}$. Write your answer as a mixed number.

$$\frac{3}{5} + \frac{7}{15} = \frac{9}{15} + \frac{7}{15}$$

$$= \frac{16}{15}$$

$$= 1\frac{1}{15}$$

the traditional method

Answer:

$$\frac{80}{75} \xrightarrow{\div 5} \frac{16}{15}$$

$$= 1\frac{1}{15}$$

	3	5
7	X	35
15	45	75

The peanut method

Exercise 1

Calculate $\frac{7}{12} + \frac{2}{3}$. Write your answer as a mixed number.

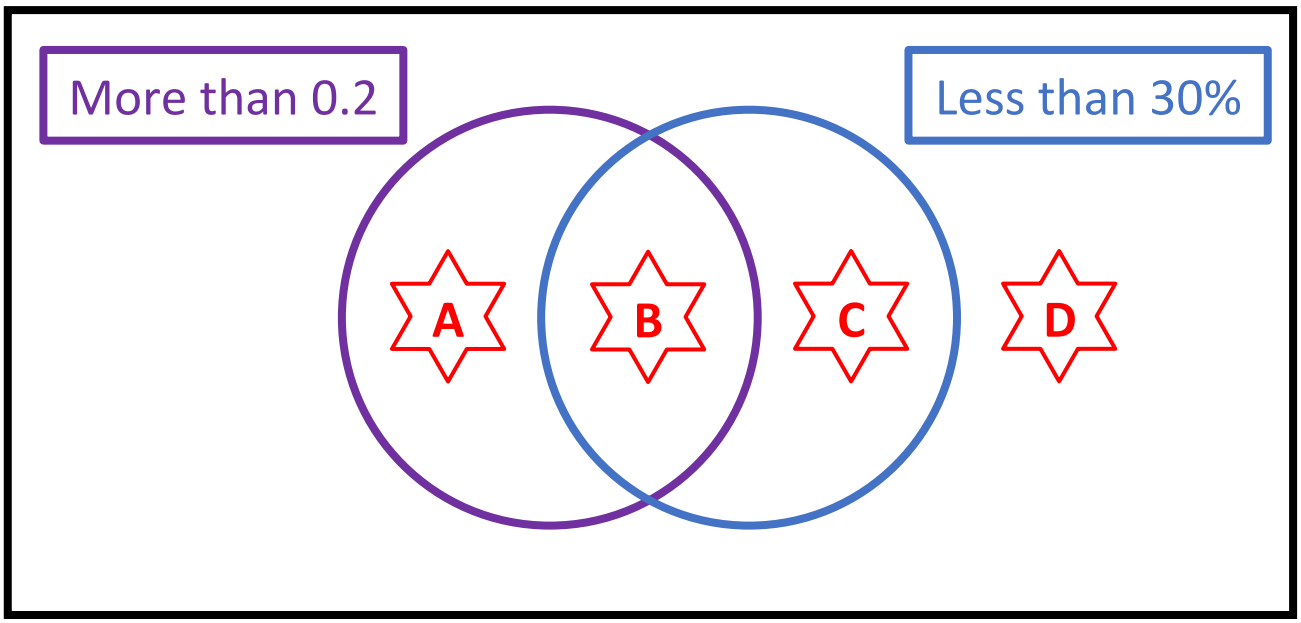
___ out of 2

Quiz 2

1) 24 + 395	2) 2.4 × 10	3) 10% of £54
4) $1 - \frac{1}{3}$	5) 3 ÷ 0.5	6) $\frac{4}{5} \times \frac{1}{2}$
7) $\frac{3}{7}$ of £28	8) 0.1 × 0.5	9) 4 – 2.46

___ 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

Without a calculator, calculate 64% of £76.

10% → £76 ÷ 10 = £7.60

1% → £7.60 ÷ 10 = £0.76

60%

7.60

× 6

£45.60

3

4%

0.76

× 4

£3.04

3 2

64%

45.60

+ 3.04

£48.64

Exercise 2

Without a calculator, calculate 37% of £82.

___ out of 3

Quiz 3

1) $\frac{2}{9} + \frac{5}{9}$	2) 34×8	3) 10% of £145
4) 0.6×0.2	5) 0.026×100	6) $360 \div 24$
7) $\frac{6}{11}$ of £88	8) $5 \div 0.25$	9) $\frac{5}{6} - \frac{1}{3}$

___ out of 9

Ffion's Bags

Ffion buys 60 bags to sell on a stall in a market.
She pays £3 per bag.
She sells $\frac{1}{2}$ of the bags for £5 each.
She sells $\frac{1}{3}$ of the bags for £4 each.
What can you calculate from this information?

Example 3

Calculate $\frac{4}{5} \div \frac{2}{7}$. Write your answer as a mixed number.

$\frac{4}{5} \div \frac{2}{7} = \frac{4}{5} \times \frac{7}{2}$

Change to a multiplication sum and take the reciprocal of the 2nd fraction

$= \frac{28}{10}$

$\div 2$

$= \frac{14}{5}$

$= 2\frac{4}{5}$

Change to a mixed number

Exercise 3

Calculate $\frac{2}{3} \div \frac{6}{11}$. Write your answer as a mixed number.

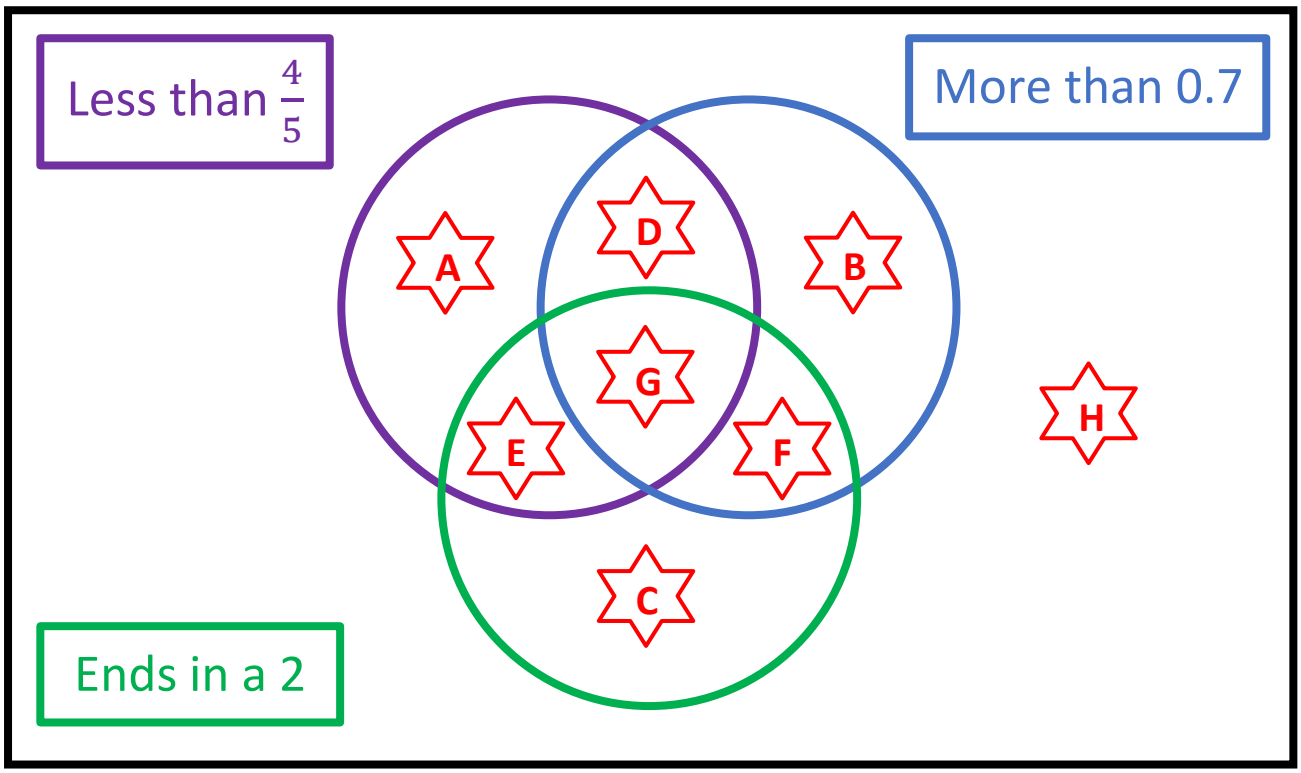
___ out of 3

Quiz 4

1) 43×57	2) 54.8×100	3) $\frac{7}{8} - \frac{3}{8}$
4) $4.2 - 2.18$	5) $\frac{2}{3} \times \frac{1}{4}$	6) $21 + 4298$
7) $1 - \frac{4}{13}$	8) $2 \div 0.5$	9) 3.45×6

___ 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

Calculate 434 ÷ 27.

Multiples of 27: 27, 54, 81, 108, 135, 162, 189, 216, 243, 270.

Method ①: Short Division

$$27\overline{)4^{4}3^{16}4} \quad 0\,1\,6\ r\ 2$$

Method ②: Long Division

$$\begin{array}{r|l} & 27\overline{)\overset{3}{\not 4}\,\overset{1}{3}\,4} \\ 10 & -\,270 \\ \hline & 164 \\ 6 & -\,162 \\ \hline 16 & 2 \end{array}$$

Answer: 16 r 2

Exercise 4

Calculate 549 ÷ 32.

___ out of 2

Quiz 5

1) Change 24% to be a decimal.	2) Change 24% to be a fraction.	3) Change 0.04 to be a percentage.
4) Change 0.04 to be a fraction.	5) Change $\frac{14}{25}$ to be a decimal.	6) Change $\frac{14}{25}$ to be a percentage.
7) Write $0.8777\ldots$ using dot notation.	8) Write $2.3656565\ldots$ using dot notation.	9) Write $0.32865865865\ldots$ using dot notation.

____ out of 9

The Restaurant Voucher

1) Before using the voucher the bill was £34. How much needs to be paid after using the voucher?

2) After using the voucher the bill was £34. What was the original bill?

3) After using the voucher, what fraction of the original bill must be paid? Give your answer in its simplest form.

4) After using the voucher, I divide the bill between myself and three friends. What fraction of the original bill do I pay?

___ out of 8

Evaluating the Workbook

Notes

Name:

Developing Algebra 2

Additional Tasks

YSGOL CREUDDYN
DAWN DYSG DAIONI

Contents

Quiz 1

1) 10% of \$64	2) $1 - \frac{2}{7}$	3) 0.4×5
4) Write 51% as a decimal.	5) Write $\frac{1}{4}$ as a percentage.	6) Write 0.3 as a fraction.
7) $2.4 + 7.85$	8) $4 \div 100$	9) $\frac{5}{6}$ of £18

___ out of 9

Example 1

Expand and simplify $(2x + 5)(x - 3)$.

$$(2x+5)(x-3)$$
$$= 2x^2 - 6x + 5x - 15$$
$$= \underline{2x^2 - x - 15}$$

Remember the acronym FOIL

First	$2x^2$
Outside	$-6x$
Inside	$+5x$
Last	-15

Exercise 1

Expand and simplify $(3x + 4)(x - 2)$.

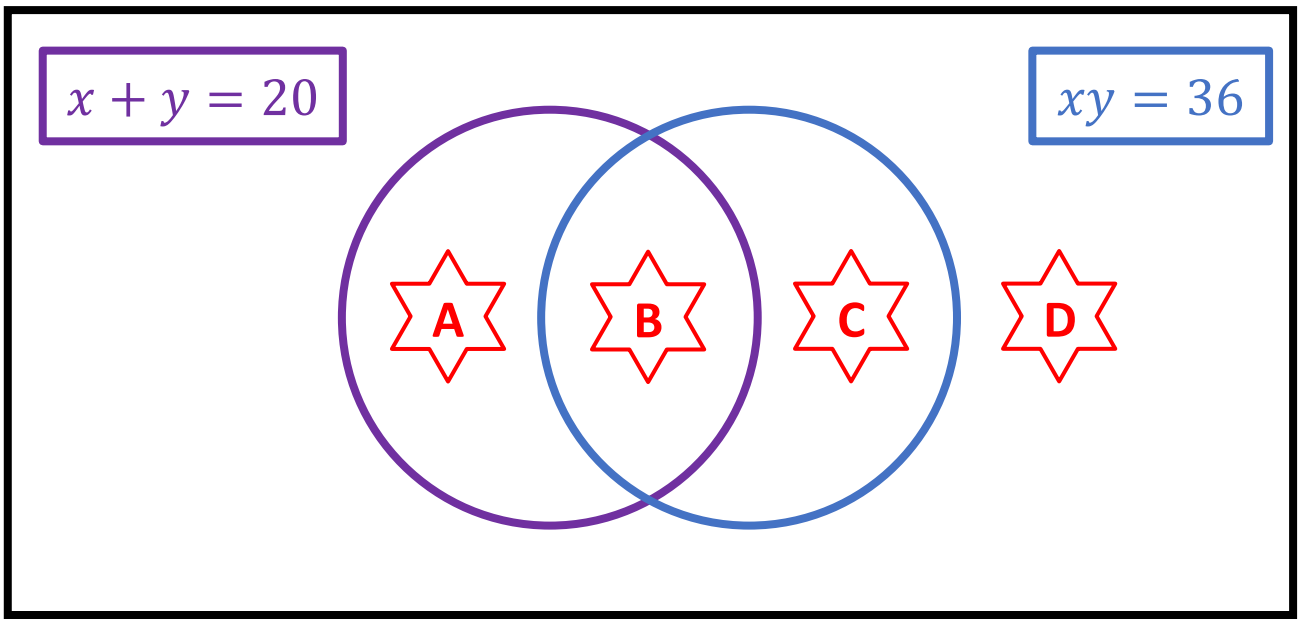
___ out of 2

Quiz 2

1) Expand $4(x-2)$	2) Expand $x(x+3)$	3) Expand $2y(y-4+x)$
4) Solve $4x = 20$	5) Solve $4x = 18$	6) Solve $4x = 1$
7) Simplify $2x + 7y + 5x - 3y$	8) Substitute $x = 2$ into $6x - 3.$	9) Factorise $8x + 14$

____ out of 9

Venn Diagram Challenge 1



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

A

B

C

D

Example 2

Solve the equation $5x + 3 = 3x - 27$.

BALANCING METHOD

$5x + 3 = 3x - 27$

$5x = 3x - 30$ [Subtract 3]

$2x = -30$ [Subtract $3x$]

$x = -15$ [Divide by 2]

JUMPING METHOD

$5x + 3 = 3x - 27$

$5x + 3 = 3x - 27 - 3$ [Jump the 3]

$5x = 3x - 30$ [Simplify]

$5x - 3x = -30$ [Jump the $3x$]

$2x = -30$ [Simplify]

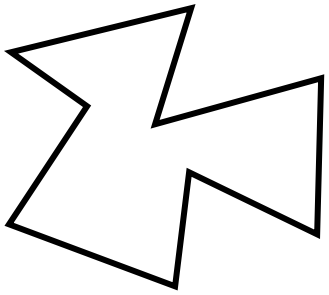
$x = -15$ [Divide by 2]

Exercise 2

Solve the equation $7x + 5 = 4x + 41$.

___ out of 3

Quiz 3

1) Name this shape. 	2) $3^2 + 4^3$	3) How many days are in November?
4) Was 1826 a leap year?	5) What is the total internal angles of any triangle?	6) Amy scored 12 out of 25 in a test. What was Amy's percentage in the test?
7) The mean of 4, 2, 1, 9, 4	8) The mode of 4, 2, 1, 9, 4	9) The median of 4, 2, 1, 9, 4

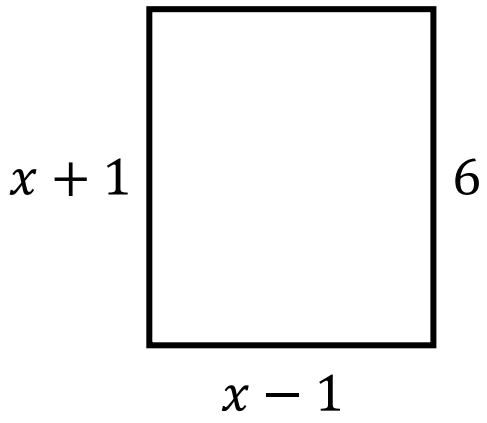
___ out of 9

The Rectangle's Measurements

The diagram shows a rectangle.

The lengths are all in centimetres.

What can you find from this information?



Example 3

Solve the equation $\frac{x}{2} = 4x - 7$.

$$\frac{x}{2} = 4x - 7$$

$$x = 2(4x - 7) \quad \text{[Multiply by 2]}$$

$$x = 8x - 14 \quad \text{[Expand]}$$

$$8x - 14 = x \quad \text{[Swap sides]}$$

$$7x = 14 \quad \text{[Subtract x, add 14]}$$

$$x = 2 \quad \text{[Divide by 7]}$$

Exercise 3

Solve the equation $\frac{x}{3} = 4x - 22$.

___ out of 4

Quiz 4

1) $\sqrt{16}$

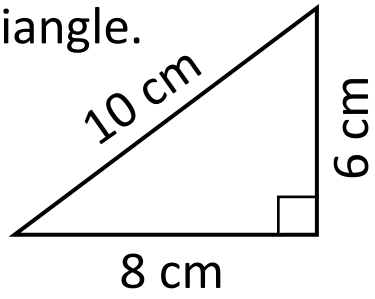
2) Circle the prime numbers.

16 17 18

19 20 21

3) Write an algebraic expression for 'three more than x'.

4) Calculate the area of the triangle.



5) $\frac{3}{11} + \frac{5}{11}$

6) Sketch a trapezium.

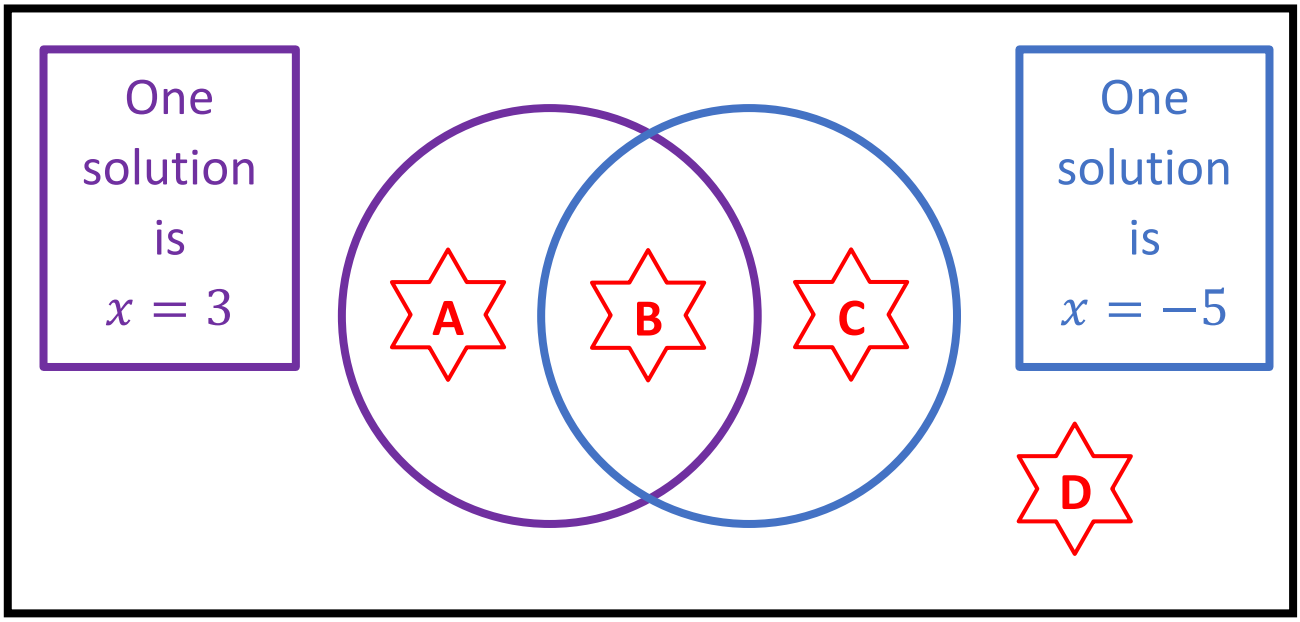
7) Simplify $2^5 \times 2^7$

8) Simplify $3^{15} \div 3^5$

9) Simplify 5^0

___ out of 9

Venn Diagram Challenge 2



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

A

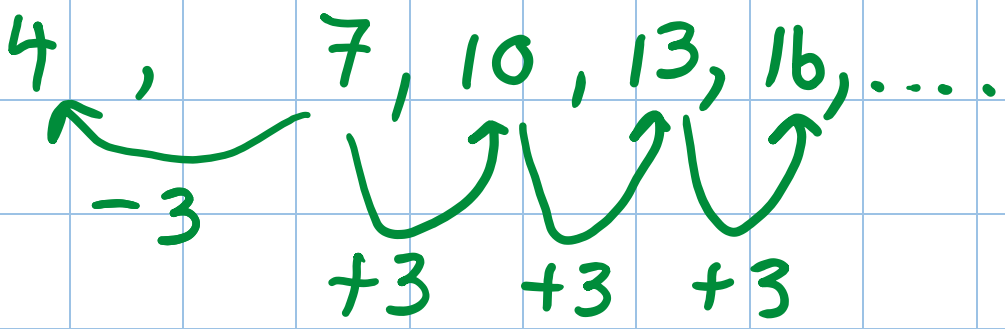
B

C

D

Example 4

What is the nth term of the sequence 7, 10, 13, 16, ...?



Nth term: $3n + 4$

Exercise 4

What is the nth term of the sequence 15, 17, 19, 21, ...?

___ out of 2

Quiz 5

Factorise the following algebraic expressions.

1) $6x + 30$	2) $14 - 7y$	3) $x^2 + 5x$
4) $4y - 2y^2$	5) $12xy - 8x^2$	6) $x^2 + 10x + 16$
7) $x^2 - 10x + 16$	8) $x^2 + 6x - 16$	9) $x^2 - 6x - 16$

____ out of 9

Changing the Subject

1) Make a the subject of the formula.

2) Make b the subject of the formula.

$$d = \frac{2c + b}{a}$$

3) Make c the subject of the formula.

4) If $a = 5, b = 4, c = 3,$ what is the value of d?

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Evaluating the Workbook

Notes

Name:

Measuring Solids

Additional Tasks

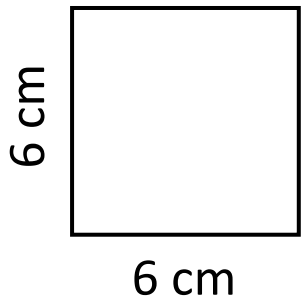
YSGOL CREUDDYN
DAWN DYSG DAIONI

Contents

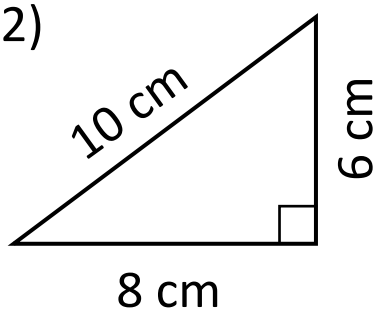
Quiz 1

Calculate the area of the following shapes.

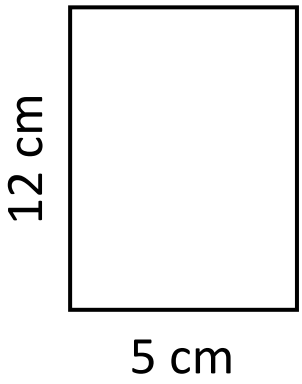
1)



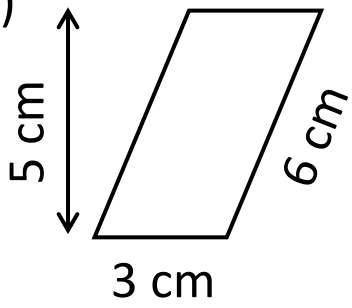
2)



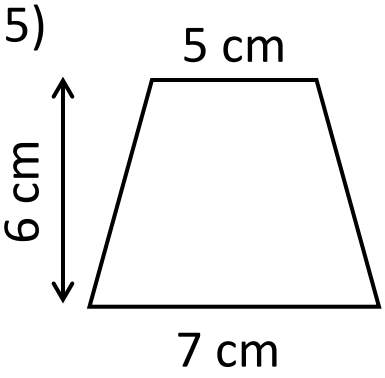
3)



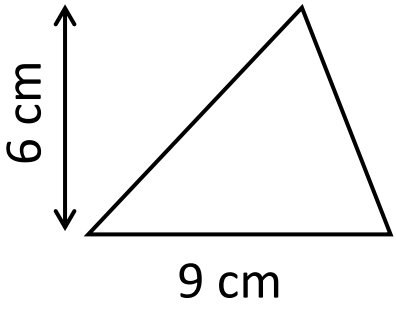
4)



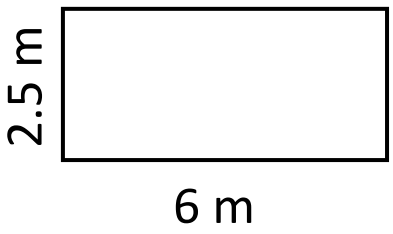
5)



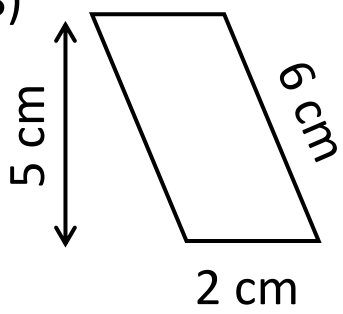
6)



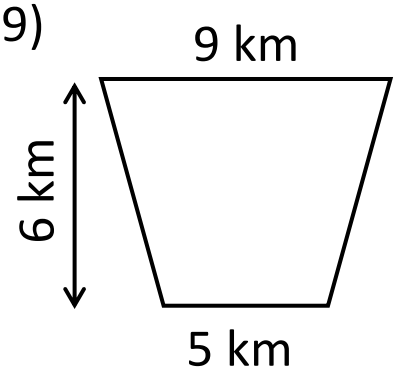
7)



8)



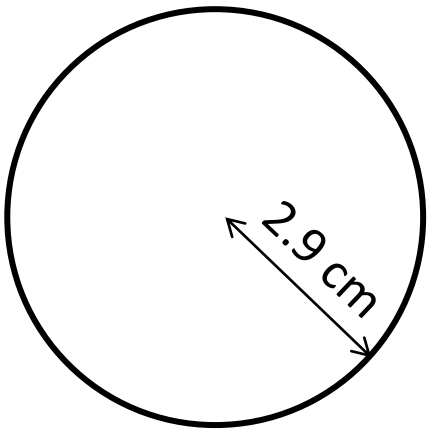
9)



___ out of 9

Example 1

What is the circumference and area of the circle?



Radius of the circle: 2.9 cm

Diameter of the circle: $2 \times 2.9 = 5.8$ cm

Circumference $= \pi \times$ Diameter

$= \pi \times 5.8$

$= 18.22$ cm to 2 decimal places

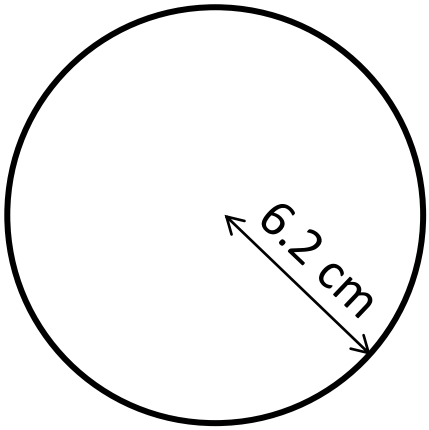
Area $= \pi \times \text{Radius}^2$

$= \pi \times 2.9^2$

$= 26.42\ \text{cm}^2$ to 2 decimal places

Exercise 1

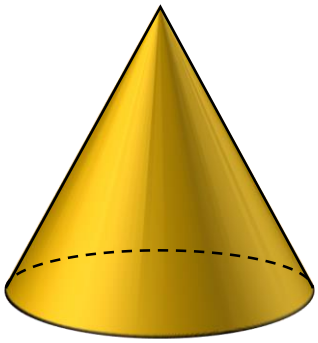
What is the circumference and area of the circle?

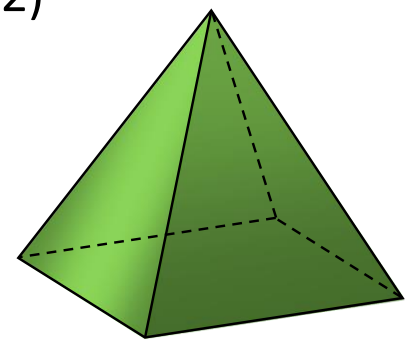


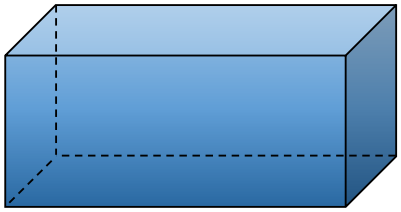
___ out of 6

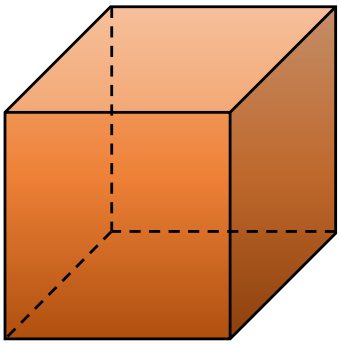
Quiz 2

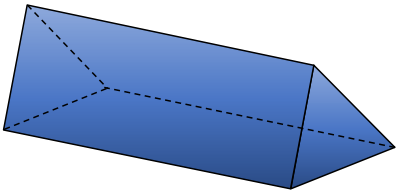
What are the names of the following solids?

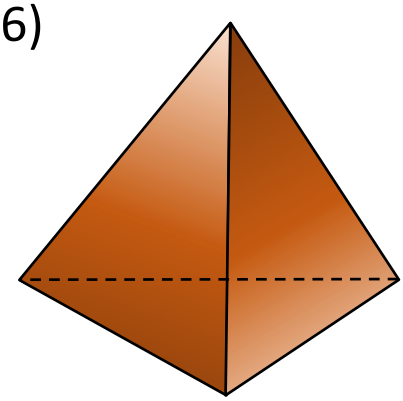
1) 

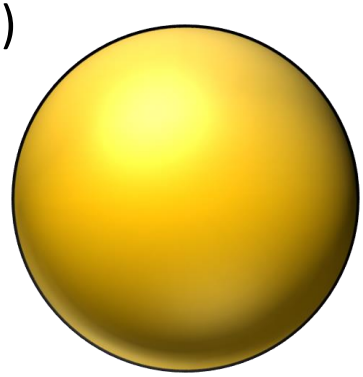
2) 

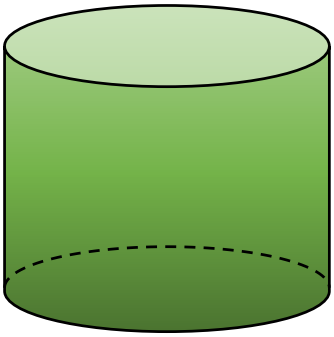
3) 

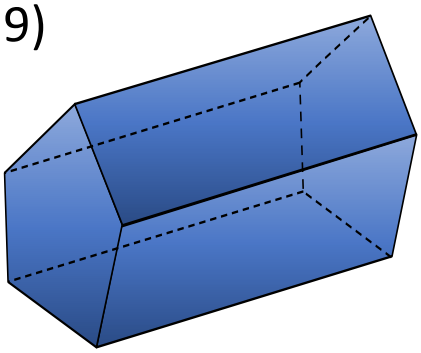
4) 

5) 

6) 

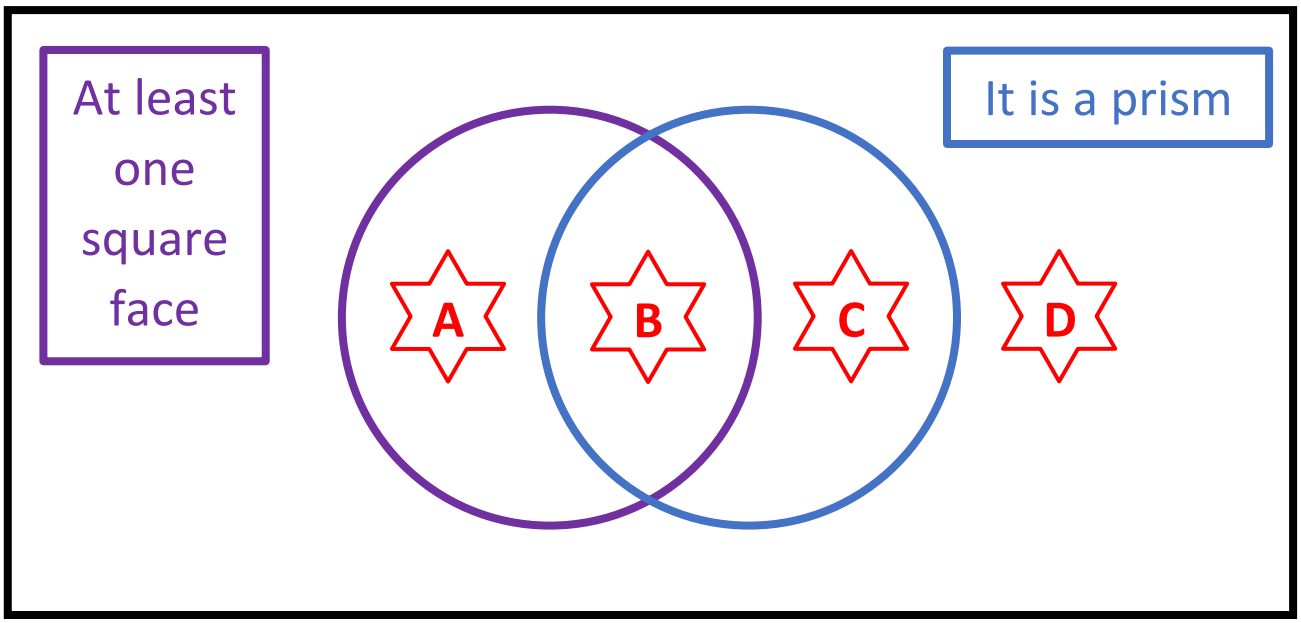
7) 

8) 

9) 

___ out of 9

Venn Diagram Challenge 1



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

A

B

C

D

Example 2

Solve the equation $x^2 + 3x - 28 = 0$

$x^2+3x-28=0$

$(x+7)(x-4)=0$

Factorising: $7\times-4=-28$,

$7+-4=3$

Either $x+7=0$ or $x-4=0$

$x=-7$ $x=4$

Exercise 2

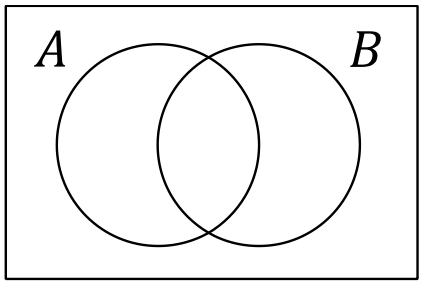
Solve the equation $x^2 + 6x - 27 = 0$.

___ out of 3

Quiz 3

1) $\sqrt{64}$

2) Shade $A \cap B$.



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

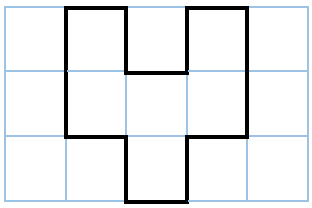
4) Draw a kite.

5) The mode of 4, 7, 2, 6, 7, 3, 2, 5

6) What is the probability of obtaining a prime number when rolling a normal fair die?

7) Write down all the factors of 22.

8) Does this net fold to make a cube?



9) Evaluate 2^4

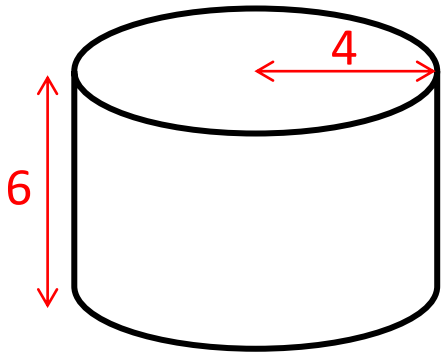
____ out of 9

The Cylinder

The diagram shows a cylinder.

The measurements are given in centimetres.

What can you find from this information?



Example 3

Make x the subject of the formula $y = 4x - 7$.

$y = 4x - 7$

$4x - 7 = y$ [swap sides]

$4x = y + 7$ [add 7]

$x = \frac{y+7}{4}$ [divide by 4]

x is the subject of the formula as only x appears on the left hand side of the formula

Exercise 3

Make x the subject of the formula $y = 3 + 5x$.

___ out of 2

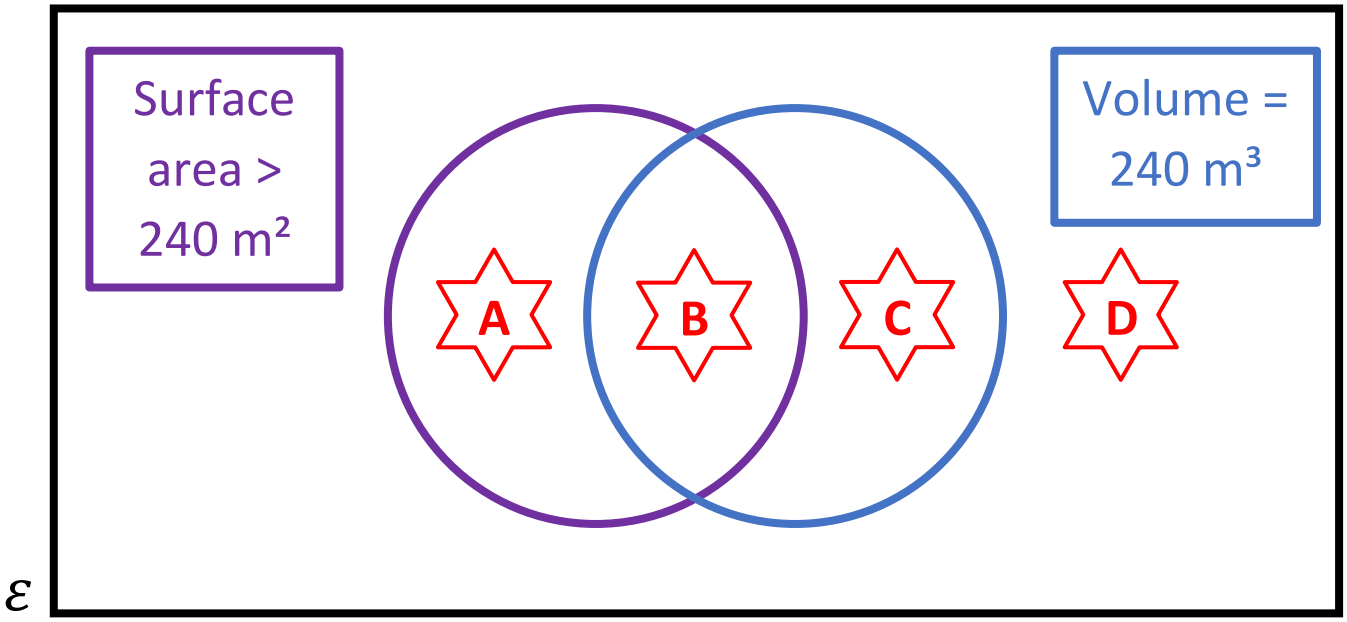
Quiz 4

What is the formula?

1) Area of a rectangle =	2) Circumference of a circle =	3) Volume of a cuboid =
4) Area of a triangle =	5) Area of a circle =	6) Volume of a prism =
7) Area of a parallelogram =	8) Area of a trapezium =	9) Volume of a cylinder =

___ out of 9

Venn Diagram Challenge 2



Write down the dimensions of a cuboid that could fit into each region. If you think a region is impossible to fill, explain why!

A

B

C

D

Example 4

Solve the following simultaneous equations.

$$3x + 7y = 46$$
$$2x + 6y = 36$$

$3x+7y=46$ ×2 → $6x+14y=92$

$2x+6y=36$ ×3 → − $6x+18y=108$

$-4y=-16$

$y=\frac{-16}{-4}$

$y=4$

METHOD A

$3x+7y=46$ ×6 → $18x+42y=276$

$2x+6y=36$ ×7 → − $14x+42y=252$

$4x=24$

$x=\frac{24}{4}$

$x=6$

METHOD B

Substitute $y=4$ into $2x+6y=36$

$2x+24=36$

$2x=12$

$x=6$

Exercise 4

Solve the following simultaneous equations.

$$4x + 3y = 49$$
$$2x + 4y = 32$$

___ out of 4

Quiz 5

Each of the following quantities has a specific number of dimensions. Give the number of dimensions for each quantity.

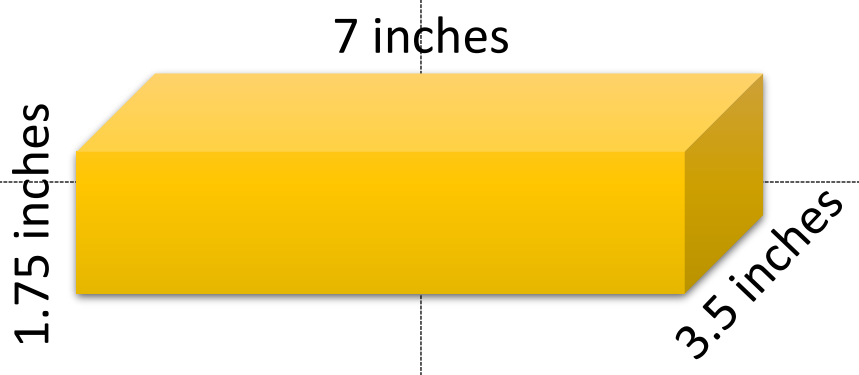
1) Perimeter of a rectangle	2) Capacity of a bottle of water	3) Circumference of a circle
4) Surface area of a cuboid	5) The distance between Eglwysbach and Llanrwst	6) The volume of a basketball
7) The size of a carpet	8) Area of a parallelogram	9) The amount of oil in a tank

___ out of 9

The Gold Bar

1) Calculate the volume of the gold bar.

2) Calculate the surface area of the gold bar.



3) The value of gold is £12,000 per cubic inch. What is the value of the gold bar above?

4) Calculate the length of the diagonal of the front of the gold bar.

___ out of 8

Evaluating the Workbook

Notes

Name:

Accuracy of Measurements

Additional Tasks

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DAWN DYSG DAIONI

Contents

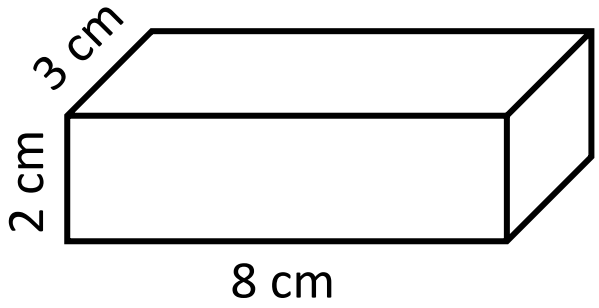
Quiz 1

1) Evaluate 2^4	2) Write 40% as a decimal.	3) Complete the ratio: $\sin\theta$ $=$ _____
4) The mean of 8, 2, 6, 8	5) Solve the equation $2x - 3 = 9$	6) Sketch a tetrahedron.
7) 25% of £50	8) Simplify $y^4 \times y^3$	9) Evaluate 6^0

___ out of 9

Example 1

What is the surface area of the cuboid?

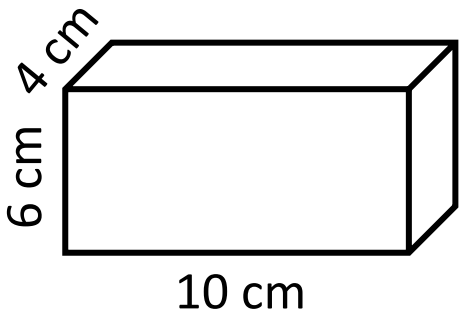


Front	8	×	2	=	1	6	
Back					1	6	
Left	2	×	3	=		6	
Right						6	
Top	8	×	3	=	2	4	
Bottom					2	4	
Total					9	2	cm^2

3

Exercise 1

What is the surface area of the cuboid?



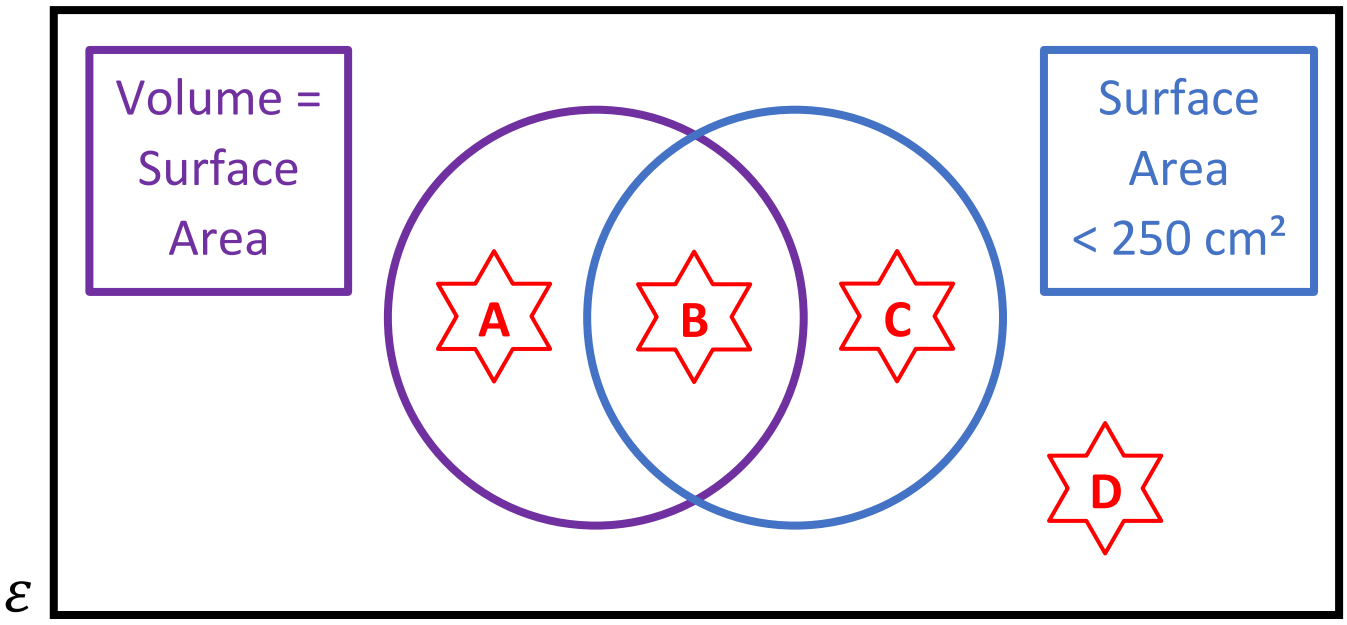
___ out of 4

Quiz 2

1) Round off 7,280 to the nearest 100.	2) Round off 43.283 to 2 decimal places.	3) Round off 735 to one significant figure.
4) Round off 7,386 to the nearest 10.	5) Round off 98.45 to one decimal place.	6) Round off 8,478 to two significant figures.
7) Round off 87.28 to the nearest unit.	8) Round off 835,928.4 to the nearest 1,000.	9) Round off 8.39 to the nearest 100.

____ out of 9

Venn Diagram Challenge 1



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

A

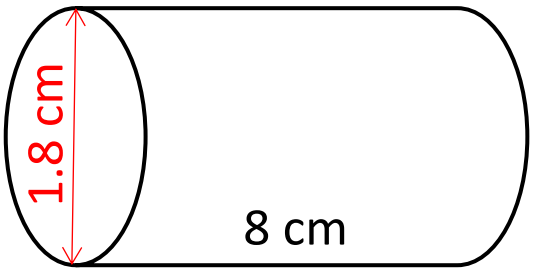
B

C

D

Example 2

Calculate the volume of the cylinder.



Diameter = 1.8cm

Radius = 1.8 ÷ 2

= 0.9 cm

Volume of the cylinder = $\pi \times \text{radius}^2 \times \text{length}$

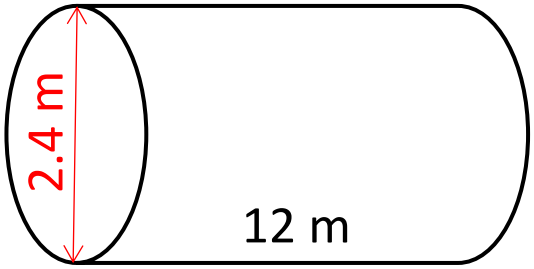
= $\pi \times 0.9^2 \times 8$

= 20.3575204...

= 20.36cm^3 to 2 d.p.

Exercise 2

Calculate the volume of the cylinder.



___ out of 4

Quiz 3

In the following formulae, a, b and c represent lengths. Decide whether each formula represents a length; an area; a volume; or none of these.

1) $M = a + c$	2) $M = 3ab$	3) $M = abc$
4) $M = 2\pi a + bc$	5) $M = \frac{ab}{c}$	6) $M = a^2 + b^2$
7) $M = 3bc - a^3$	8) $M = b(a + c)$	9) $M = 4bc^2$

____ out of 9

The Photograph

Ceinwen enlarges a photograph in a local shop.

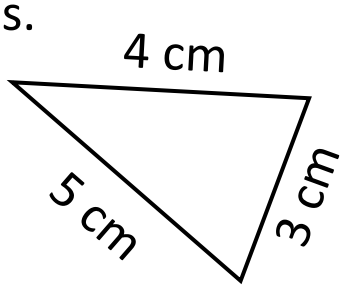
Original Photograph

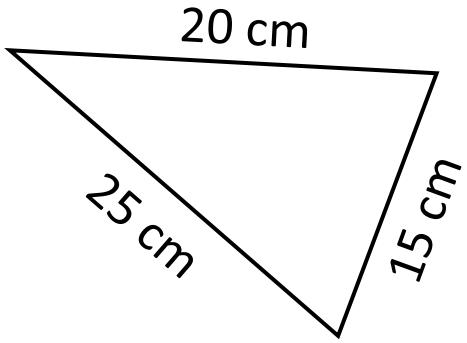
New Photograph (not to scale)

What can you find from this information?

Example 3

Prove whether the following triangles are similar triangles.





Dividing corresponding edges:

$20 \div 4 = 5$

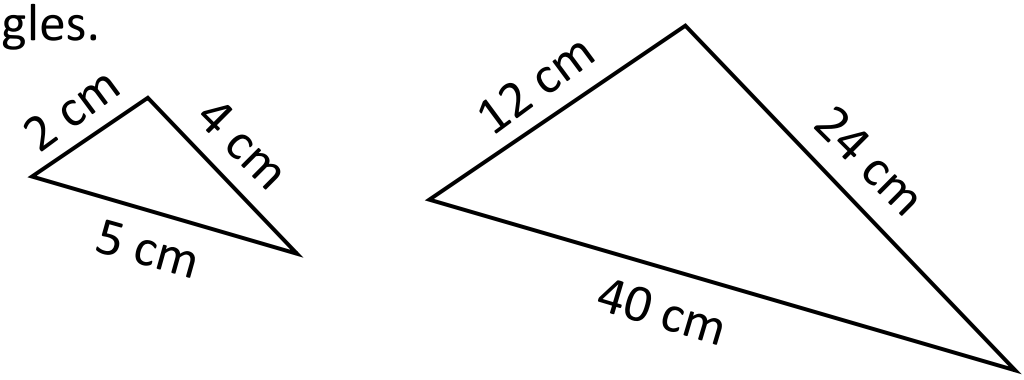
$25 \div 5 = 5$

$15 \div 3 = 5$

The corresponding edges are in the same ratio so the triangles <u>are</u> similar triangles.

Exercise 3

Prove whether the following triangles are similar triangles.



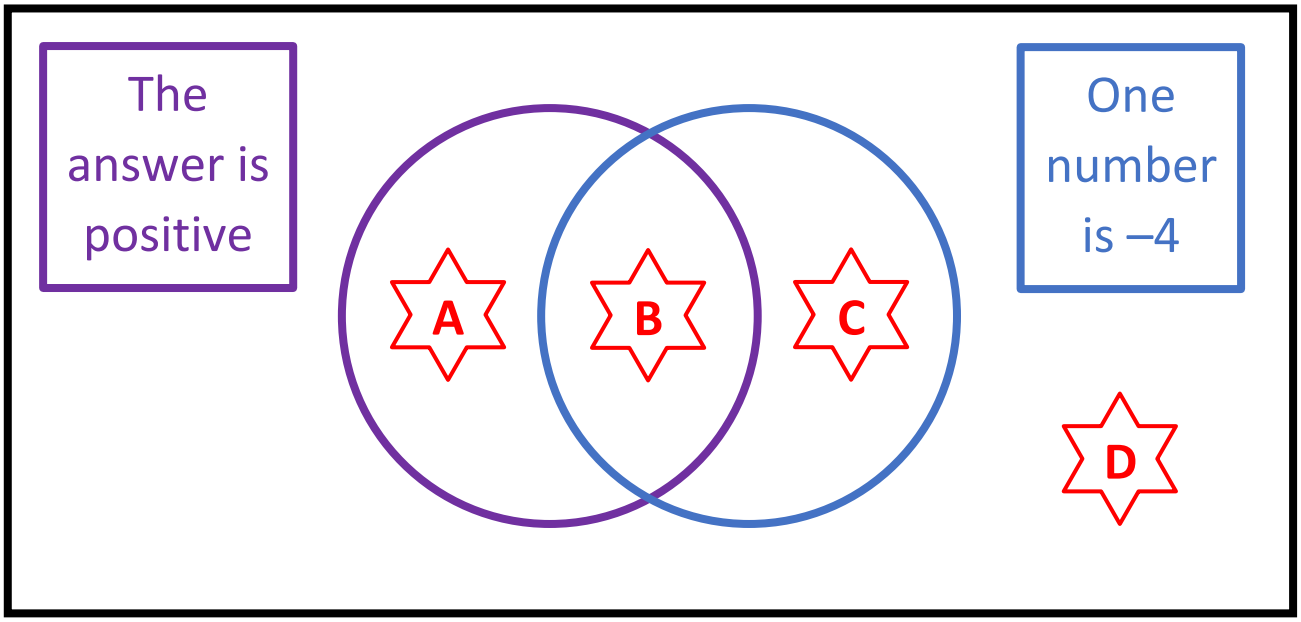
___ out of 3

Quiz 4

1) What is the lower bound of the measurement 34 cm, measured to the nearest cm?	2) What is the upper bound of the measurement 35 m, measured to the nearest 5 m?	3) What is the lower bound of the measurement 700 ml, measured to the nearest 100 ml?
4) Simplify $\frac{x^8}{x^2}$	5) How many days are in November?	6) Sketch a sphere.
7) Write $\frac{2}{5}$ as a decimal.	8) $3 + 4 \times 5$	9) Which is longer: 2 inches or 4 cm?

___ out of 9

Venn Diagram Challenge 2



Write down a subtraction sum (using two numbers) that could fit into each region. If you think a region is impossible to fill, explain why!

A

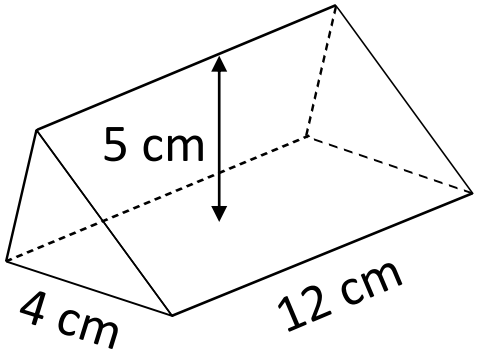
B

C

D

Example 4

Calculate the volume of the triangular prism.



Area of the cross-section

$= \frac{\text{base} \times \text{height}}{2} = \frac{4 \times 5}{2}$

$= \frac{20}{2}$

$= 10\ cm^2$

Volume of the prism

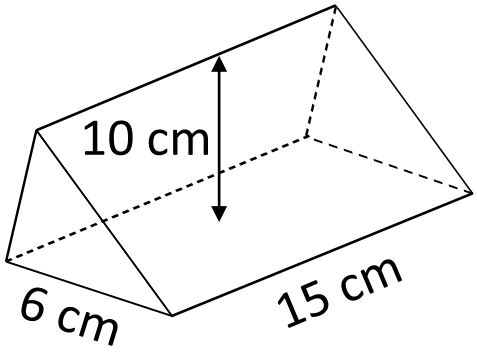
= Area of cross-section × length

$= 10 \times 12$

$= 120\ cm^3$

Exercise 4

Calculate the volume of the triangular prism.



___ out of 4

Quiz 5

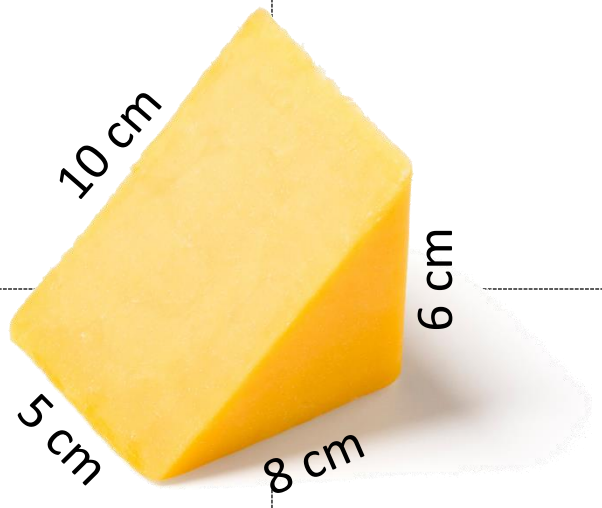
1) $10 + -4$	2) $10 - -4$	3) 10×-4
4) $10 \div -4$	5) Write 42% as a decimal.	6) Write 42% as a fraction, in its simplest form.
7) Evaluate π^0	8) Evaluate 7^3	9) Evaluate $1^2 + 2^2 \times 3^2$

____ out of 9

The Piece of Cheese

1) Calculate the area of the triangle that is the cheese's cross-section.

2) Calculate the volume of the piece of cheese.



3) Calculate the surface area of the piece of cheese.

4) If the cheese's mass is 150 g, what is its density?

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Evaluating the Workbook

Notes