a

Find the highest common factor of 54 and 84.

b

Calculate 2.5% of 170.

c

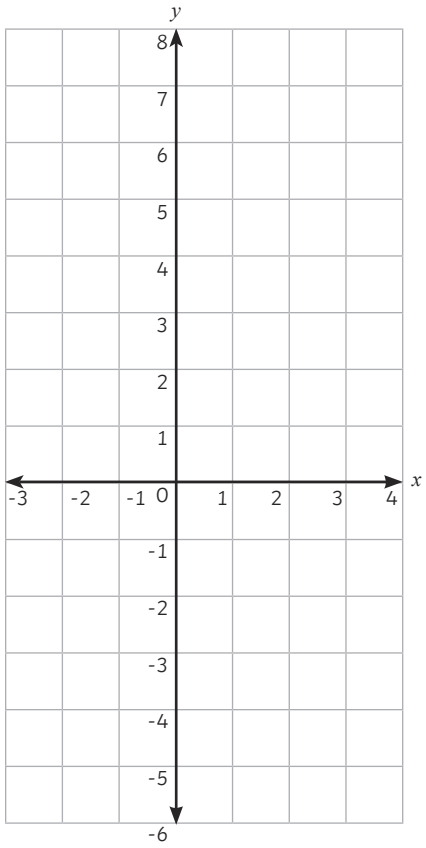
Simplify $4a^4 \times 2a^7$

d

i) Complete the table of values for $y = x^2 - 2x - 4$

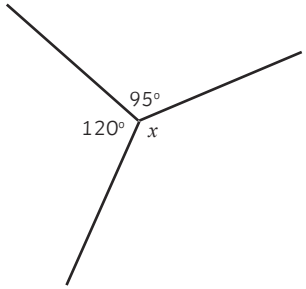
x	-2	-1	0	1	2	3
y						

ii) Hence draw the graph of $y = x^2 - 2x - 4$ for the values $-2 \leq x \leq 3$.



e

a) Work out the size of the angle marked x, giving a reason for your answer.



b) Work out the size of the angle marked y.

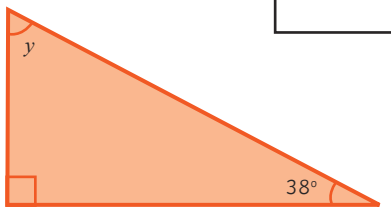


*Diagram not drawn accurately

f

The mean number of goals scored in 3 football matches is 2. After the 4th match, the mean increases to 3. Find the number of goals scored in the 4th game.

a

Write 5×10^4 as an ordinary number.

b

Write $\frac{7}{25}$ as:

i) a decimal;

ii) a percentage.

c

The function $f(x)$ is given by the following:

$f(x) = 3x + 2$

Find the value of f(2).

d

For any integer n, 2n is always an even number. Explain why.

e

A circle has a radius of 5cm. Find the area of the circle, giving your answer correct to 2 decimal places.

f

Two fair six-sided dice are rolled. The numbers are added together.

Complete the sample space diagram to show all possible outcomes.

Dice 2 \ Dice 1	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

a

Write the following numbers in order of size, starting with the smallest.

0.37, 0.307, 0.317, 0.037, 0.3

b

Solve

$3(a - 5) = -18$

c

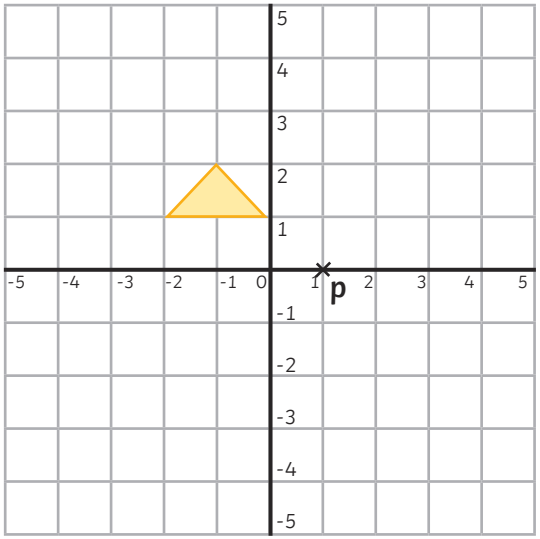
Solve the simultaneous equations:

$3x + y = 10$

$x + y = 4$

d

Rotate the shape 180° about the point P.



e

Claire played 15 netball matches for her school. The number of goals she scored in the matches are shown in the frequency table. Find the mean number of goals scored.

Number of Goals	Frequency
0	3
1	4
2	7
3	1

f

The table shows the probabilities of picking a chocolate at random from a bag.

Fairy Milk	Sneakers	Snars Bar	Kit Kit
0.1	0.35		0.4

Calculate the probability of picking a Snars bar.

a

Work out, without using a calculator:

i) 4 + -7.5

ii) 0.3 × -7

b

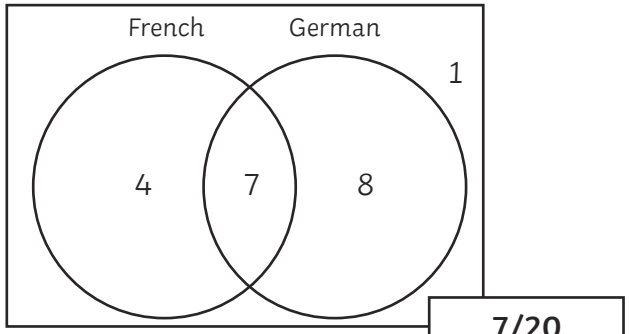
Eleanor thinks of a number, x, multiplies it by 3 and then adds 4.

Given that her answer is 25, form and solve an equation to find the value of x.

c

The Venn diagram shows information about subjects studied by 20 students.

Find the probability that someone picked at random will study both French and German.

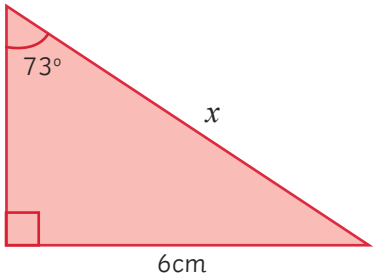


7/20

d

Below is a right-angled triangle.

Find the value of the letter x.



e

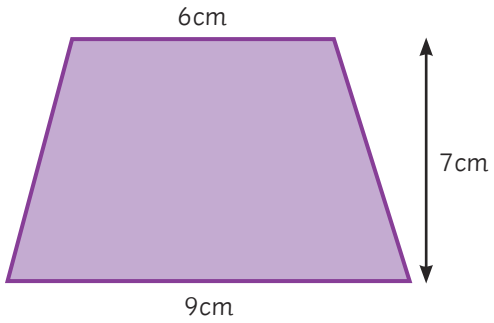
A car takes 15 minutes to travel 13 kilometres. Work out its average speed for the journey in km/h.

f

Factorise $10x^2y + 8xy^2$

a

Find the area of the trapezium.



b

Estimate the solution to √60 to 1 decimal place. Show all your reasoning.

c

Expand and simplify $4(2x + 7) + 3(x + 5)$

d

Find the next two terms of the sequence:

1, 4, 16, 64...

e

Find 17.5% of £25.

f

A piece of string measures 70cm to the nearest 10cm. Work out the smallest possible length of the piece of string.

a

Solve the simultaneous equations:

$2x + y = 5$

$x + y = 2$

c

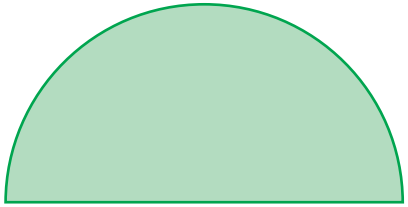
Factorise $x^2 + x - 12$

e

Simplify $(2x^4y^5)^3$

b

Find the perimeter of the shape. Give your answer correct to 1 decimal place.



6cm

d

Share £60 in the ratio 7:5

f

The table shows the favourite foods of 24 children. Draw a pie chart to represent the data.

Favourite Food	Frequency
Pizza	6
Curry	5
Chinese	4
Hamburgers	7
Chips	2

a

Find the highest common factor of 54 and 84.

6

b

Calculate 2.5% of 170.

4.25

c

Simplify $4a^4 \times 2a^7$

$8a^{11}$

d

i) Complete the table of values for $y = x^2 - 2x - 4$

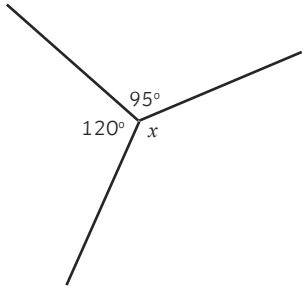
x	-2	-1	0	1	2	3
y	**4**	**-1**	**-4**	**-5**	**-4**	**-1**

ii) Hence draw the graph of $y = x^2 - 2x - 4$ for the values $-2 \leq x \leq 3$.

Correctly drawn graph

e

a) Work out the size of the angle marked x, giving a reason for your answer.



145° Angles around a point add to 360°

b) Work out the size of the angle marked y.

52°

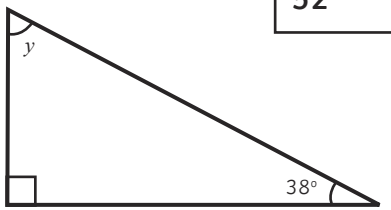


*Diagram not drawn accurately

f

The mean number of goals scored in 3 football matches is 2. After the 4th match, the mean increases to 3. Find the number of goals scored in the 4th game.

6

a

Write 5×10^4 as an ordinary number.

50 000

b

Write $\frac{7}{25}$ as:

i) a decimal;

0.28

ii) a percentage.

28%

c

The function $f(x)$ is given by the following:

$f(x) = 3x + 2$

Find the value of f(2).

8

d

For any integer n, 2n is always an even number. Explain why.

For any integer n, 2n is a multiple of 2 therefore it is even.

e

A circle has a radius of 5cm. Find the area of the circle, giving your answer correct to 2 decimal places.

78.54cm²

f

Two fair six-sided dice are rolled. The numbers are added together.

Complete the sample space diagram to show all possible outcomes.

Dice 2 \ Dice 1	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

a

Write the following numbers in order of size, starting with the smallest.

0.37, 0.307, 0.317, 0.037, 0.3

0.037, 0.3, 0.307, 0.317, 0.37

b

Solve

$3(a - 5) = -18$

a = -1

c

Solve the simultaneous equations:

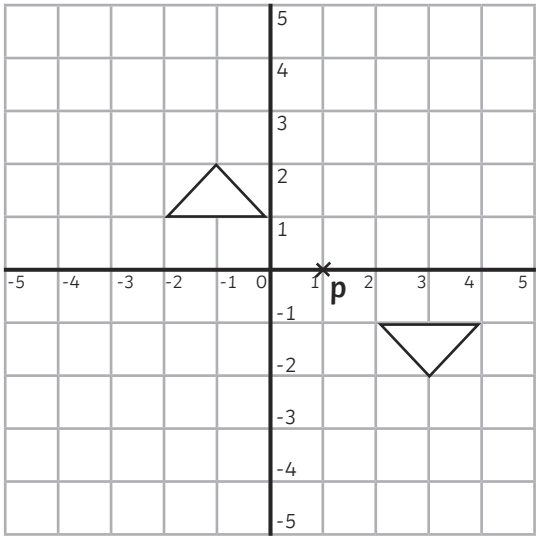
$3x + y = 10$

$x + y = 4$

$x = 3, \quad y = 1$

d

Rotate the shape 180° about the point P.



e

Claire played 15 netball matches for her school. The number of goals she scored in the matches are shown in the frequency table. Find the mean number of goals scored.

Number of Goals	Frequency
0	3
1	4
2	7
3	1

1.4

f

The table shows the probabilities of picking a chocolate at random from a bag.

Fairy Milk	Sneakers	Snars Bar	Kit Kit
0.1	0.35	**0.15**	0.4

Calculate the probability of picking a Snars bar.

a

Work out, without using a calculator:

i) 4 + -7.5

-3.5

ii) 0.3 × -7

-2.1

b

Eleanor thinks of a number, x, multiplies it by 3 and then adds 4.

Given that her answer is 25, form and solve an equation to find the value of x.

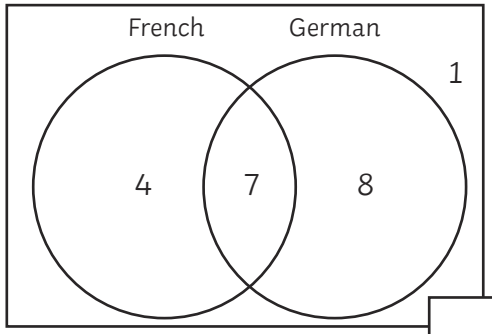
$3x + 4 = 25$

$x = 7$

c

The Venn diagram shows information about subjects studied by 20 students.

Find the probability that someone picked at random will study both French and German.

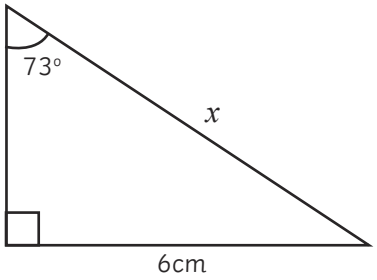


7/20

d

Below is a right-angled triangle.

Find the value of the letter x.



6.27cm (3sf)

e

A car takes 15 minutes to travel 13 kilometres. Work out its average speed for the journey in km/h.

52km/h

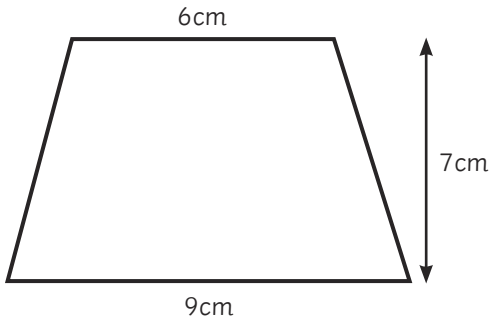
f

Factorise $10x^2y + 8xy^2$

$2xy(5x + 4y)$

a

Find the area of the trapezium.



52.5cm²

b

Estimate the solution to √60 to 1 decimal place. Show all your reasoning.

7^2 is 49

8^2 is 64

Therefore √60 is between the two (allow 7.5 – 7.9)

c

Expand and simplify $4(2x + 7) + 3(x + 5)$

$11x + 43$

d

Find the next two terms of the sequence:

1, 4, 16, 64...

128, 256

e

Find 17.5% of £25.

£4.38 (2dp)

f

A piece of string measures 70cm to the nearest 10cm. Work out the smallest possible length of the piece of string.

65cm

a

Solve the simultaneous equations:

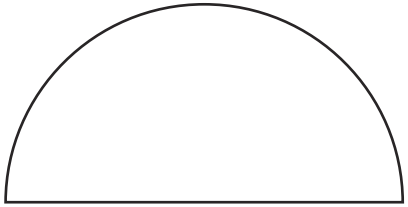
$2x + y = 5$

$x + y = 2$

$x = 3 \quad y = -1$

b

Find the perimeter of the shape. Give your answer correct to 1 decimal place.



6cm

15.4cm

c

Factorise $x^2 + x - 12$

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

d

Share £60 in the ratio 7:5

£35 : £25

e

Simplify $(2x^4y^5)^3$

$8x^{12}y^{15}$

f

The table shows the favourite foods of 24 children. Draw a pie chart to represent the data.

Pie chart with following angles:

Favourite Food	Angle
Pizza	90
Curry	75
Chinese	60
Hamburgers	105
Chips	30