

Question 1

Work out:

a) $(5 - 2)^2 + 3 =$

Answer _____
[1 mark]

b) $24 \div (7 - 5)^2 =$

Answer _____
[1 mark]

c) $(20 + 16) \div 3^2 =$

Answer _____
[1 mark]

d) $(5 \times 6) \div (4 - 7) =$

Question 2

a) List the prime numbers between 30 and 50

Answer _____
[1 mark]

b) List the prime numbers between 70 and 90

Answer _____
[1 mark]

c) The product of two prime numbers is always odd. Is this True or False?

Answer _____
[1 mark]

Question 3

Find the highest common factor of:

a) 18 and 45

Answer _____
[1 mark]

b) 12, 36 and 54

Answer _____
[1 mark]

Question 4

Three cars are going around a rally racetrack. The first car completes a circuit every 0.25 hours, the second car every 0.4 hours and the third car every 0.5 hours. They start together at 2pm. How long is it before all three cars are level again?

Answer _____

[2 marks]

Question 5

Write these as powers of 7:

a) $7^3 \times 7^2 =$

Answer _____

[1 mark]

b) $7^8 \div 7^5 =$

Answer _____

[1 mark]

c) $7^4 \times 7^5 \div 7 =$

Answer _____

[1 mark]

d) $(7^4)^2 =$

Answer _____

[1 mark]

Question 6

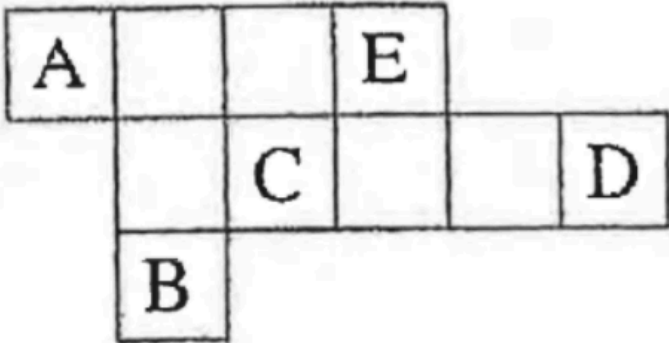
Ian weighs a box which contains 16 glue sticks. It weighs 652g. He then empties the box and weighs it. It weighs 140g. What is the weight of each glue stick?

Answer _____

[2 marks]

Question 7

The diagram shows a shape made from 10 square tiles. Which labelled tile (A, B, C, D or E) could be removed without changing the perimeter of the shape?



Answer _____

[1 mark]

Question 8

Simplify:

a) $m + m + m - m + m =$

Answer _____

[1 mark]

b) $3g \times 5 =$

Answer _____

[1 mark]

c) $5s + 4t + 2s + t =$

Answer _____

[1 mark]

Question 9

$$p = 9, q = -3, r = 5$$

Work out the value of:

a) $3p - 4$

Answer _____

[1 mark]

b) $4q + 9r$

Answer _____

[1 mark]

Question 10

Pat has x cards.

Jim has 4 more cards than Pat.

- a) Write down an expression, in terms of x , for the number of cards Jim has.

Answer _____

[1 mark]

Lex has 2 times as many cards as Pat.

- b) Write down an expression, in terms of x , for the number of cards Lex has.

Answer _____

[1 mark]

Question 11

This chart shows the time, in minutes, it takes Mrs Annery to walk between villages around Petersfield.

Petersfield				
17	Stroud			
15	15	Steep		
12	25	8	Sheet	
47	31	35	52	East Meon

- a) How long does it take for her to walk between Steep and East Meon?

Answer _____

[1 mark]

Mrs Annery walks from Stroud to East Meon. 17 minutes into the journey, she stops for a 13-minute rest.

- b) Work out how much longer she must walk to reach East Meon.

Answer _____

[1 mark]

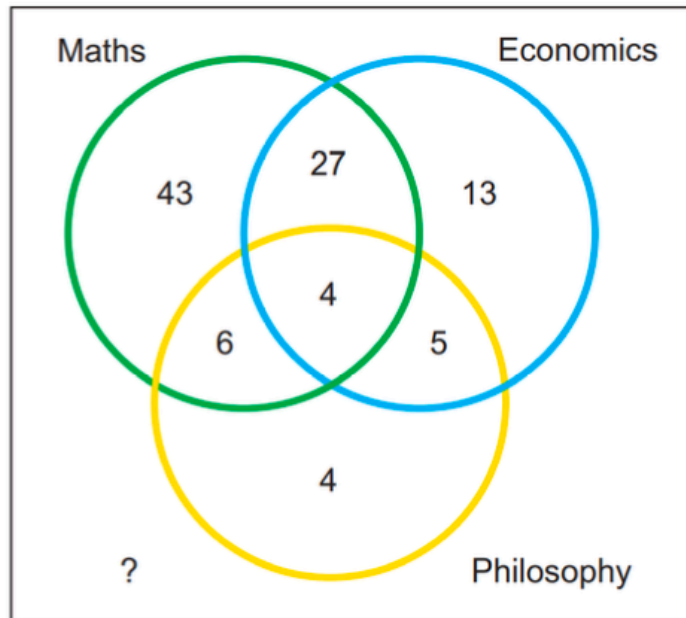
- c) What was her total journey time between Stroud and East Meon?

Answer _____

[1 mark]

Question 12

Temi has chosen to study maths, economics and philosophy for A-levels. There are 120 students in Year 12. The Venn diagram shows the students that have chosen at least one subject in common with Temi.



- a) How many students take exactly the same three subjects as Temi?

Answer _____

[1 mark]

- b) What fraction of year 12 take maths

Answer _____

[1 mark]

c) How many students do not take any of the subjects Temi takes?

Answer _____

[1 mark]

d) What percentage have only one subject in common with Temi?

Answer _____

[1 mark]

Question 13

A group of students went to an outdoor centre. $\frac{1}{4}$ of them went canoeing and $\frac{2}{5}$ of them went sailing. The rest went mountain biking. What fraction of the group went mountain biking?

Answer _____

[1 mark]

Question 14

Write :

a) 35 as a percentage of 50

Answer _____
[1 mark]

b) 520 as a percentage of 800

Answer _____
[1 mark]

c) 75p as a percentage of £2.50

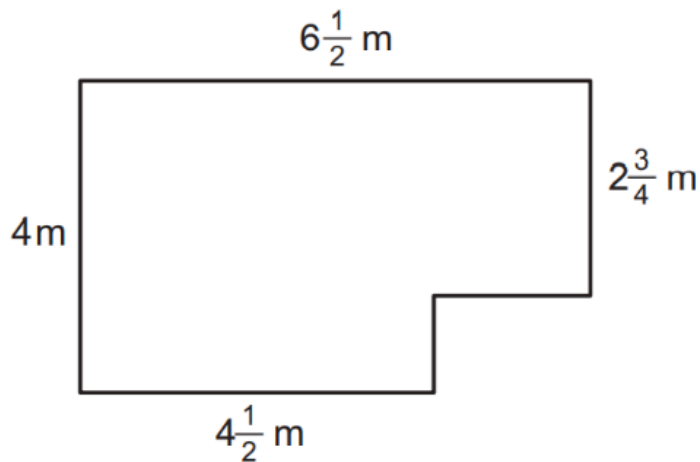
Answer _____
[1 mark]

d) 900m as a percentage of 3.6km

Answer _____
[1 mark]

Question 15

This is a plan of Katie's bedroom.



She wants to buy covering to line all around the edges of the ceiling.

a) What length of covering does she need?

Answer _____

[1 mark]

She also wants to tile the floor. The tiles are 50cm by 50 cm.

b) How many tiles will she need to cover her floor?

Answer _____

[3 marks]

Question 16

Calculate the size of the smallest angle



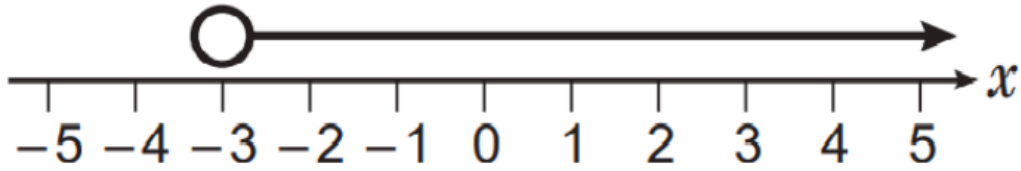
Answer _____

[2 marks]

Question 17

Write down the inequalities represented on these number lines.

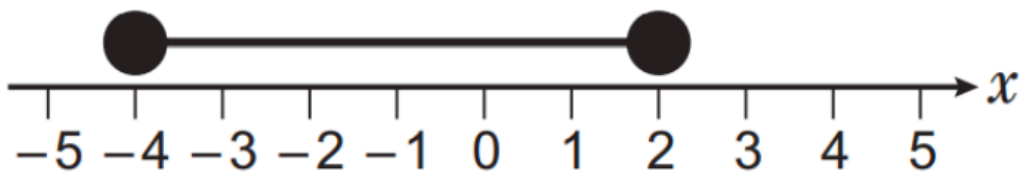
a)



Answer _____

[1 mark]

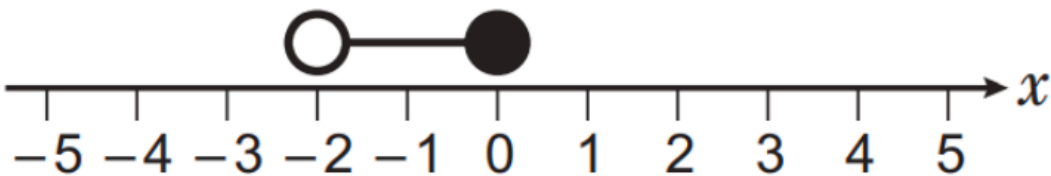
b)



Answer _____

[1 mark]

c)

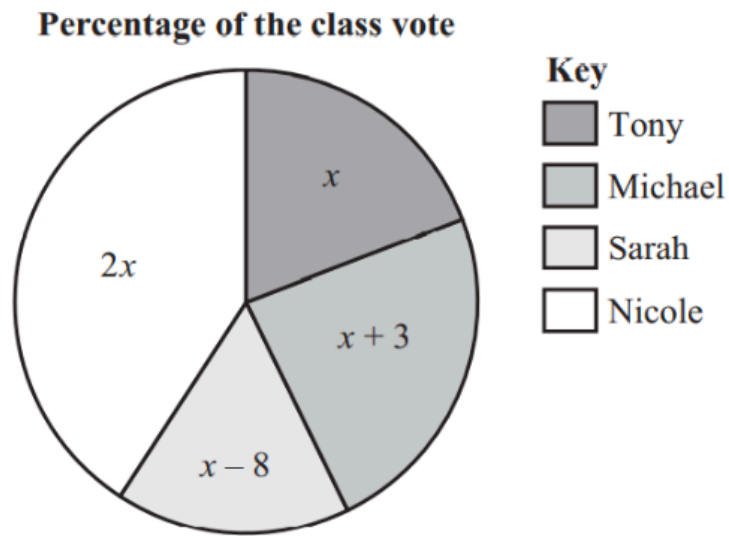


Answer _____

[1 mark]

Question 18

The pie chart shows the percentages of votes four nominees received.



a) What fraction of the votes did Sarah get?

Answer _____
[3 marks]

b) What fraction of the votes did Michael get?

Answer _____
[1 mark]

Question 19

Some students compared how many pets they have.

Pets	
Name	Number of pets
Travis	6
Fernando	4
Gwen	4
Hanson	4
Maya	5

a) What is the median value?

Answer _____

[1 mark]

b) What is the mode?

Answer _____

[1 mark]

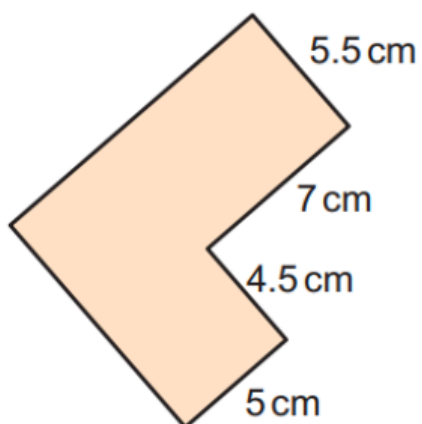
c) What is the range?

Answer _____

[1 mark]

Question 20

Look at this shape



a) What is the area?

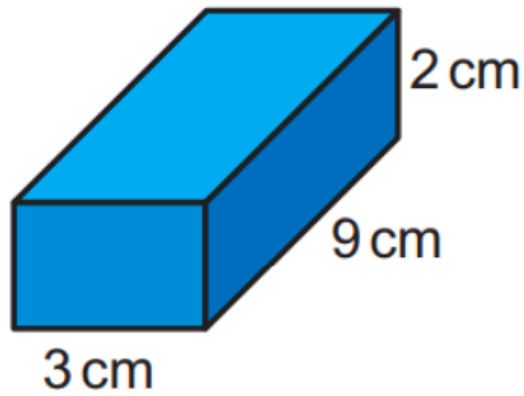
Answer _____
[1 mark]

b) What is the perimeter?

Answer _____
[1 mark]

Question 21

Look at this shape



a) What is the volume?

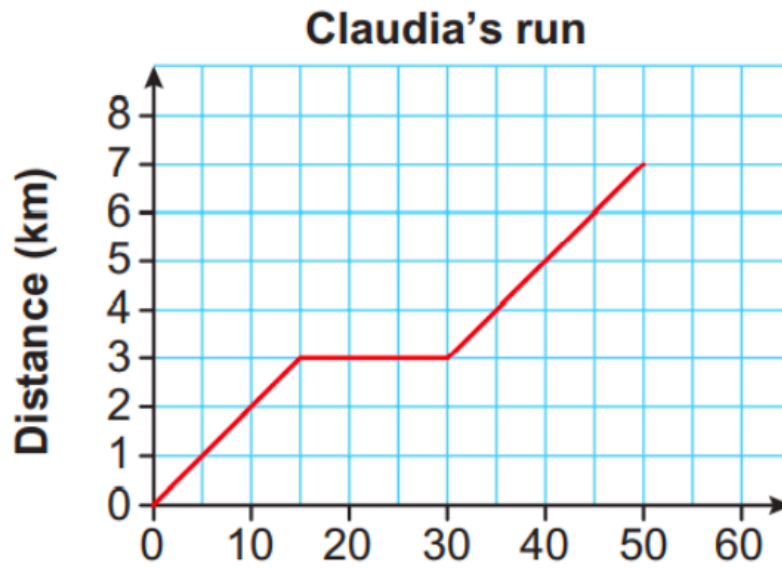
Answer _____
[1 mark]

b) What is the surface area?

Answer _____
[1 mark]

Question 22

This distance-time graph shows Claudia's morning run.



- a) How far did Claudia jog on the first part of the run?

Answer _____

[1 mark]

- b) How long did she jog for before she stopped for a break?

Answer _____

[1 mark]

c) How long did she rest for?

Answer _____

[1 mark]

d) What was her average speed in km/h for the first part of her run?

Answer _____

[1 mark]

e) How long did the last part of the run take?

Answer _____

[1 mark]

f) How far did she jog on the last part of the run?

Answer _____

[1 mark]

g) What was her average speed for the last part of the run?

Answer _____

[1 mark]

End of paper. Remember to check your workings.

Question		Answer All answers are worth one mark, unless stated otherwise.
1	a	12
	b	6
	c	4
	d	-10 $30 / -3 = -10$ <i>(2 marks)</i>
2	a	31, 37, 41, 43, 47
	b	71, 73, 79, 83, 89
	c	False 2 is a prime number. Anything multiplied by 2 is always even.
3	a	9
	b	6
4		4 pm The LCM of 0.25, 0.4 and 0.5 is 2.0. <i>(2 marks)</i>
5	a	7^5 When multiplying, add the powers.
	b	7^3 When dividing, subtract the powers.
	c	7^8
	d	7^8 When using brackets, the powers are multiplied.
6		32g $652 - 140 = 512$ $512 / 16 = 32$ <i>(2 marks)</i>
7		E 2 sides are removed, but 2 sides are exposed, so the perimeter is unchanged.

8	a	3m
	b	15g
	c	7s + 5t
9	a	23 $3 \times 9 - 4$
	b	33 $4 \times -3 + 9 \times 5$
10	a	$x + 4$
	b	2x
11	a	35 minutes
	b	14 minutes $31 - 17$
	c	44 mins $31 + 13$
12	a	4
	b	2/3 $46 + 6 + 4 + 27 = 80$ $80/120 = 2/3$
	c	18 $80 + 13 + 5 + 4 = 102$ $120 - 102 = 18$
	d	50% $43 + 13 + 4 = 60$ $60/120 = 50\%$
13		7/20 $\frac{1}{4} + \frac{1}{5} = \frac{13}{20}$ $1 - \frac{13}{20} = \frac{7}{20}$
14	a	70%
	b	65%
	c	30%
	d	25%

15	a	<p style="text-align: center;">21 m</p> $6.5 + 6.5 + 4 + 4 = 21$
	b	<p style="text-align: center;">94 tiles</p> $\text{Area} = 4 \times 4.5 + 2.75 \times 2 = 23.5$ $0.5 \times 0.5 = 0.25$ $23.5 / 0.25 = 94$ <p style="text-align: right;"><i>(3 marks)</i></p>
16		<p style="text-align: center;">60°</p> $4a + 5a + 6a + 3a = 360$ $a = 360 / 18 = 20$ $3a = 60$ <p style="text-align: right;"><i>(2 marks)</i></p>
17	a	$x > -3$
	b	$-4 \leq x \leq 2$
	c	$-2 < x \leq 0$
18	a	<p style="text-align: center;">$65/360 = 13/72$</p> $2x + x - 8 + x + 3 + x = 360$ $5x - 5 = 360$ $5x = 365$ $x = 73$ $73 - 8 = 65$ <p style="text-align: right;"><i>(3 marks)</i></p>
	b	<p style="text-align: center;">$76/360 = 19/90$</p> $x = 73$ $73 + 3 = 76$
19	a	4
	b	4
	c	2 $6 - 4$
20	a	<p style="text-align: center;">88.5 cm²</p> $5.5 \times 7 + 5 \times 10 = 88.5$
	b	<p style="text-align: center;">44 cm</p> $5.5 + 7 + 4.5 + 5 + 10 + 12 = 44$
21	a	<p style="text-align: center;">54 cm³</p> $3 \times 9 \times 2 = 54$
	b	<p style="text-align: center;">102 cm²</p> $27 \times 2 + 18 \times 2 + 6 \times 2 = 102$

22	a	3 km
	b	15 mins
	c	15 mins
	d	12 km/h 3 km in 15 mins, so 12 km in 1 hour
	e	20 mins
	f	4 km
	g	12 km/h 4 km in 20 mins, so 12 km in 1 hour
<i>Total</i>		<i>/65</i>