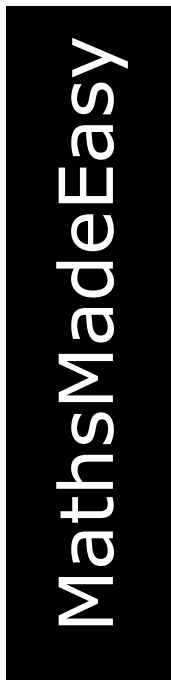


First Name	
Last Name	
Date	
Total Marks	/ 100 marks



GCSE Mathematics
Calculator
Foundation Tier
Mock 3, paper 2
1 hour 45 minutes



Instructions

Write your name and other details in the boxes above.
Answer all the questions
Take π to be 3.142

Information

Marks are shown in brackets for each question (2)
Calculators may be used

Advice

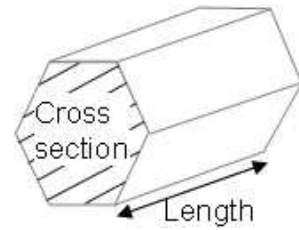
Don't spend too long on one question
Show all your working in calculations for full marks
You will get marks for method even if your answer is incorrect
Leave a question until later if you cannot answer it

Materials needed for examination

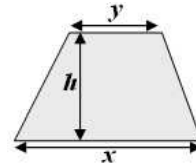
Ruler marked in centimetres and millimetres, calculator
protractor, compasses, pen, pencil, rubber
Tracing paper may be used

Formulae sheet — Higher tier

Volume of prism = area of cross-section \times length



Area of trapezium = $\frac{1}{2}(x + y)h$



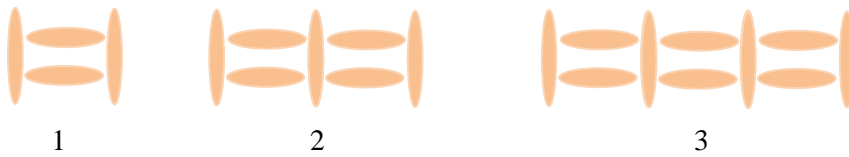
Authors Note

Every possible effort has been made to ensure that everything in this paper is accurate and the author cannot accept responsibility for any errors.

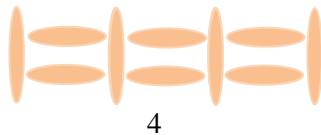
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1. Look at these patterns made from shapes



a) Complete Pattern number 4 below



b) Complete the table

Pattern	2	3	4	5	6
Number of shapes	7	10			

c) How many shapes are in pattern 8

.....

(1)

(1)

(1)

2. Put these numbers in order of size starting with the smallest.

$\frac{3}{4}$ 70% $\frac{7}{9}$ 0.72 $\frac{5}{7}$

.....

(2)

3. a) What is 365 to the nearest 10.

.....

(1)

b) What is 45678 to the nearest 1000

.....

(1)

4. a) Use your calculator to work out.

$$\frac{55}{17 - 13.2}$$

Write down all the figures on your calculator display.
Give your answer as a decimal.

..... (2)

- b) Use your calculator to work out.

$$\frac{\sqrt{19.6}}{7.3 \times 0.52}$$

Write down all the figures on your calculator display.
Give your answer as a decimal.

..... (2)

- c) Write your answer to b) correct to 1 decimal place

..... (1)

5. The equation

$$x^3 + 4x = 61$$

has a solution between 3 and 4

Find this solution using a trial and improvement method.

Give your answer correct to 1 decimal place.

You must show **all** your working.

..... (4)

6. Laura goes on holiday to Thailand
The exchange rate is £1 = 64.5 Baht

She changes £350 into Baht

a) How many Baht will she get?

.....Baht (2)

On her return Laura changes 1600 back in pounds.
The exchange rate is now £0.015 = 1 Baht.

b) How much money did she get?
Give your answer to the nearest penny.

£..... (2)

7. a)

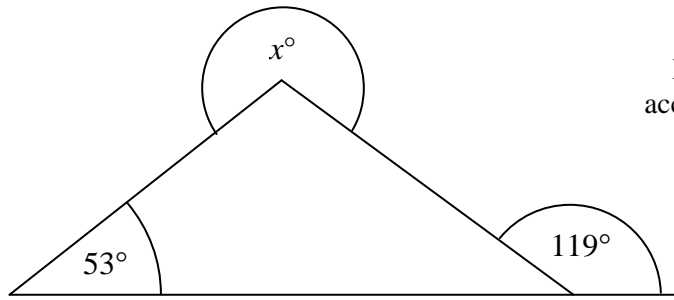


Diagram **NOT** accurately drawn

Work out the value of x .

$x = \dots\dots\dots$ (3)

b) A regular pentagon has an angle x as shown.

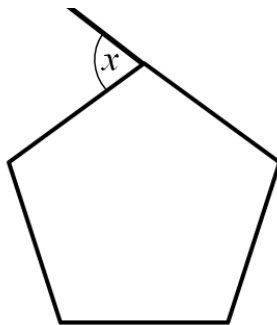


Diagram not drawn accurately

i) What type of angle is the angle at x .

$\dots\dots\dots$ angle (1)

ii) Calculate the size of the angle x
Show all your working.

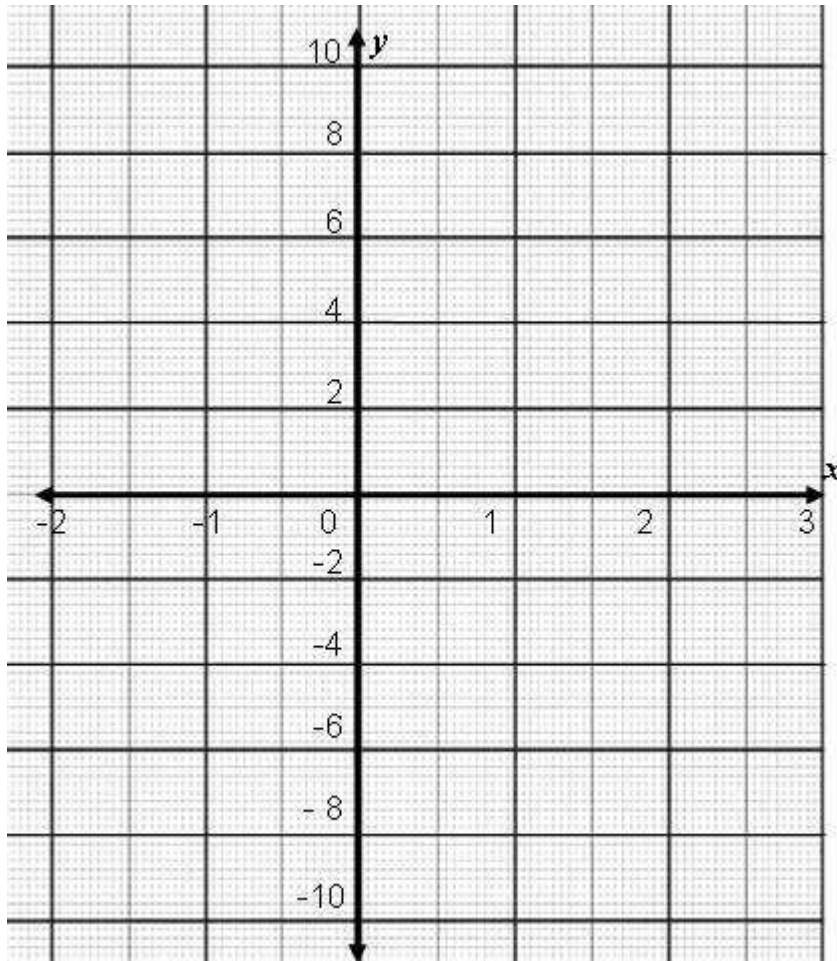
$\dots\dots\dots^\circ$ (2)

8. a) Complete the table of values for $y = 3x - 2$

x	-2	-1	0	1	2	3
y	-9		-2			

(2)

- b) On the grid below draw the graph of $y = 3x - 2$



(2)

- c) What is the value of the gradient of this graph

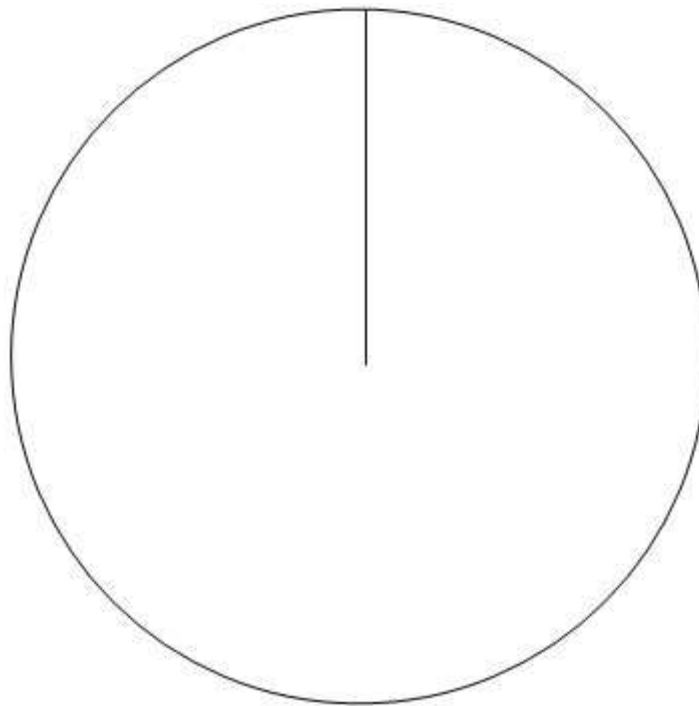
.....

(1)

9. Maurice recorded the types of beverages that 72 of his customers bought in his off-license for Christmas

Beverage	Frequency
Wine	15
Beer	35
Spirits	10
Champagne	12

Draw an accurate pie chart to show this information



(4)

10. Aunty Alice left £320 in her will to share between Harry, Luke and Phina

They share the money in the ratio 1: 2 : 5

a) How much do they each get

Harry.....

Luke.....

Phina.....

(2)

Uncle Jack left some money in his will to share between Bill and Ben in the ratio 2:3

Bill got £120.

b) How much did Ben get

.....

(2)

11. Laura counted the number of sweets in each of 31 bags of sweets.

She put her results in a stem and leaf diagram.

0		8	8	9				
1		1	2	3	4	4	8	9
2		0	3	5	5	6	6	8
3		2	2	3	3	6	6	8
4		1	2	3	3	5	8	8

Key 4 | 1 stands for 41 sweets

- a) What percentage of the bags have more than 38 sweets.
Give your answer to 1 decimal place

..... (2)

- b) Write down the mode.

..... (1)

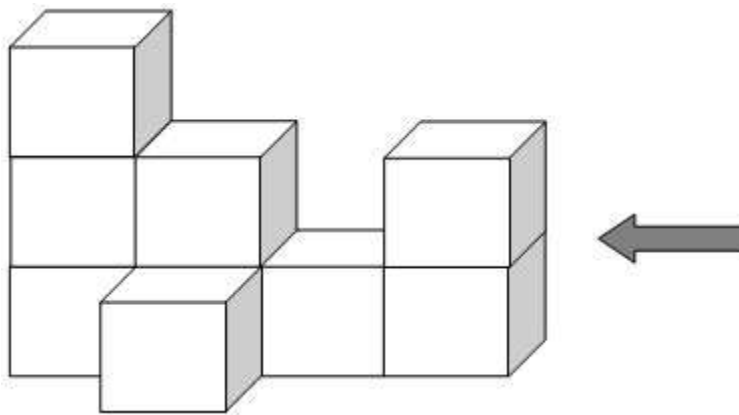
- c) Work out the range.

..... (1)

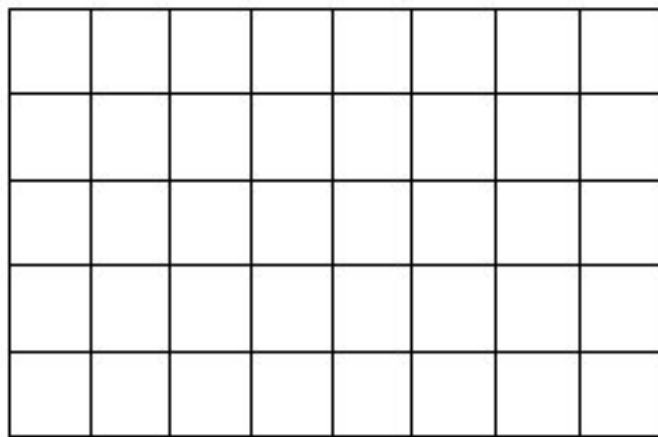
- d) Work out the median.

..... (1)

12. The diagram shows some identical cubes arranged to make a solid object.

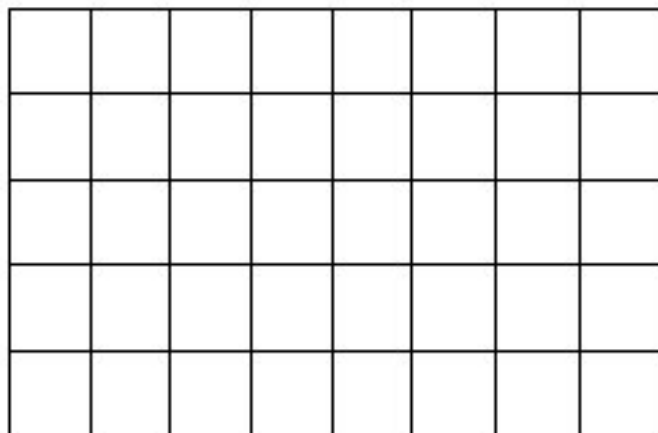


a) On the grid shown below draw the side elevation of the solid object as seen from the direction of the arrow.



(2)

b) Draw a plan of the solid object on the grid below.



(2)

13. Jane carried out a survey of her friends' favourite colours as below:

Pink	Green	Red	Blue
Green	Yellow	Pink	Pink
Green	Pink	Red	Pink
Yellow	Red	Pink	Green
Red	Pink	Blue	Pink

a) Complete the table to show Jane's results.

Colours	Tally	Frequency
Pink		
Red		
Green		
Yellow		
Blue		

b) How many of Jane's friends liked blue.

.....

c) Which was the favourite colour of Jane's friends?

.....

(3)

(1)

(1)

14. Matthew thinks of a number.

He multiplies this number by **11**, then subtracts **63**

The result is twice the number that he was thinking of.

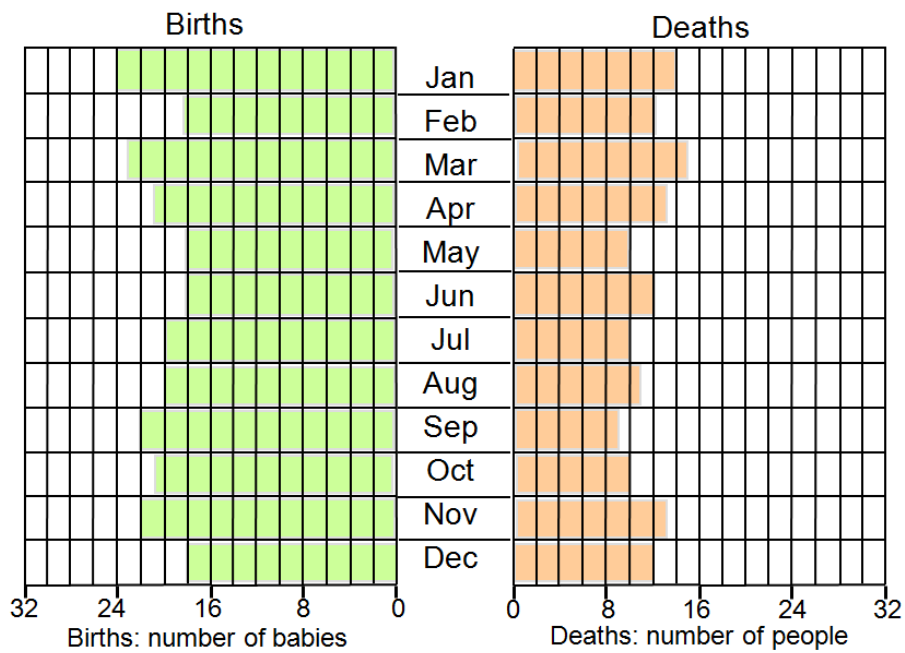
Use algebra to find the number Matthew was thinking of.

.....

(2)

15. Some information was collected about births and deaths in a town

The diagram shows how many people died and how many babies were born.



- a) In which month did the greatest number of people die. (1)
- b) How many babies were born in **September**. (1)
- c) In **November**, more babies were born than people died.
How many more? (1)

16.



Luke wanted a TV with a diagonal screen of 72cm.

Harry thought that a TV with a screen of height 42 cm and width 56 cm would be OK.

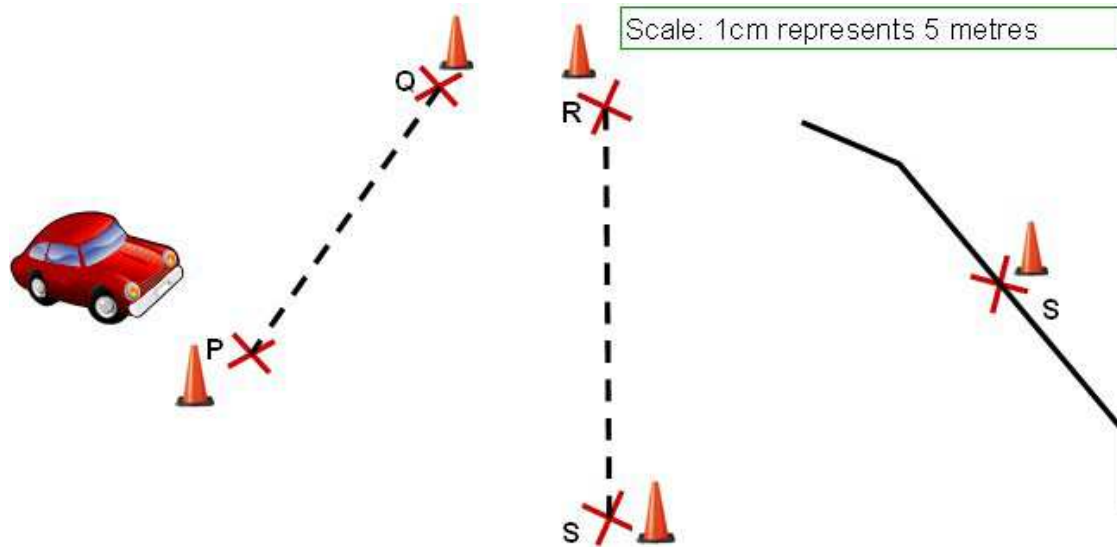
Is Harry correct?

Show all your working.

(3)

17. In a driving competition cars had to be driven so that:
 The car travelled in a straight line between PQ and RS
 The car had to always be the same distance from P and Q.

On the diagram, draw the route that the car should take.



As part of the competition drivers have to park their car within 15 metres of a mark S on a wall.

- b) Using the scale of 1cm represents 5 metre shade this parking area.

(2)

(1)

18. The table below provides information about the time taken for 100 teachers to complete a numeracy test.

Time (t minutes)	Frequency		
$10 < t \leq 15$	8		
$15 < t \leq 20$	18		
$20 < t \leq 25$	25		
$25 < t \leq 30$	44		
$30 < t \leq 35$	5		

- a) Write down the median class interval

..... (1)

- b) Calculate an estimate for the mean time taken by the teachers.

.....mins (4)

19. Lewis Hamilton drove 350 miles around a racing circuit in 2 hours 30 minutes.
Calculate his average speed in miles per hour.

.....mph

(2)

20. The mass of 4 m^3 of copper is 35840 kg.
a) Work out the density of copper.

..... kg/m^3

(2)

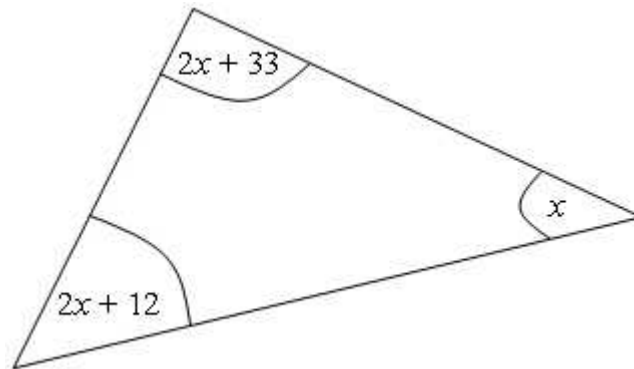
The density of zinc is 7130 kg/m^3 .

b) Work out the mass of 4 m^3 of zinc.

.....kg

(2)

21.



Not drawn accurately

The angles shown in the triangle above are:

$2x + 33$;

x

$2x + 12$

a) Write down an equation in terms of x using this information

..... (2)

b) Using your answer above work out the value of x

$x =$ (2)

22. Laura is buying stationary for school.
She needs pens and small whiteboards

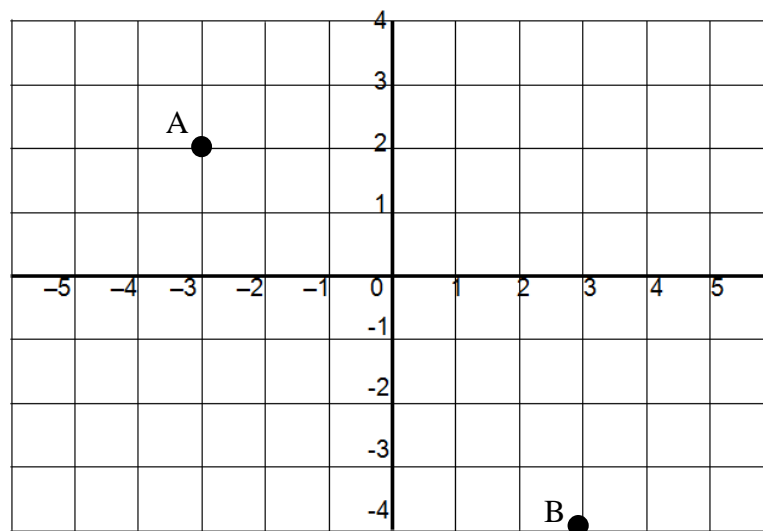
The pens are sold in packs of 12 pens per pack.
The small whiteboards come in boxes with 16 small whiteboards each.
Laura buys exactly the same number of pens as whiteboards.

What is the least number of packs and boxes Laura needs to buy?

.....boxes

.....packs (3)

23. Look at the graph



a) What are the co-ordinates of point A and B
A

(1)

B

(1)

b) Mark point C at $(-2, -3)$ on the graph (1)

24.

a) Simplify

$$y - 3 + 2y - 3$$

..... (1)

a) Simplify

$$5 \times y \times 3 \times y$$

..... (1)

c) Solve

$$y - 3 = 16$$

..... (1)

d) Ryan thought that this equation is impossible.
Is he right or can you get an answer for y

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

..... (2)

e) Make x the subject of the formula

$$y - 3 = 2x + 4$$

..... (2)

f) Solve the inequality $3x - 2 < 13$

..... (2)

25.

Shop A sold potatoes at £5 for 6kg
Shop B sold potatoes at £4.25 for 5kg

Which shop was the cheapest?

..... (3)

26.

Express 54 as a product of its prime factors by drawing a prime factor tree

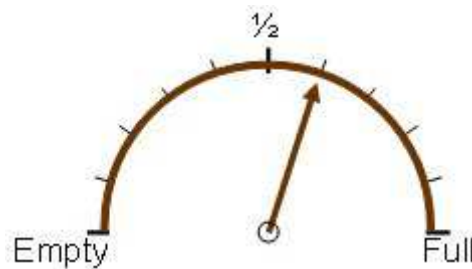
Write your answer in index form

..... (3)

27.

The fuel tanks of a space rocket could hold 4500000 litres of fuel.

Tim Peake looked at the fuel dial soon after launch.
How much fuel was left in the fuel tank?



..... (2)