W/C: 6/11/17

Mock week 1

F

ANSWERS

Year 11 Foundation Tier Maths GCSE

Paper 2 – Calculator

Time allowed: 1 hour 30 minutes

Maximum mark: 80

Answer **all** questions in the spaces provided

1 Which unit is most suitable for measuring the length of a tennis court?

Circle your answer.

[1 mark]

kilometres | metres | centimetres | millimetres

2 Circle the multiple of both 8 and 12

[1 mark]

4 | 32 | 72 | 108

3 What is $\frac{3}{2}$ as a decimal?

Circle your answer.

[1 mark]

1.05 | 1.1 | 1.5 | 3.2

4 Circle the correct statement.

[1 mark]

$-4 < -3$ $\quad 1 \leqslant -2$ $\quad -6 > 5$ $\quad -1 \geqslant 0$

5 (a) Use your calculator to work out $\sqrt{701}$ as a decimal.

Write down your full calculator display.

[1 mark]

Answer 26.476404 59

5 (b) Give your answer to part (a) to 1 decimal place.

[1 mark]

Answer 26.5

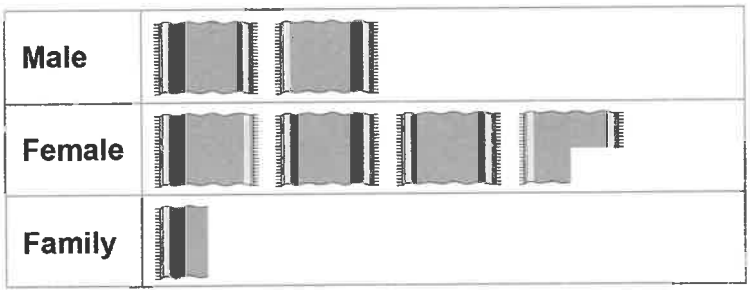
Turn over for the next question

6

6 A swimming pool has three changing rooms, Male, Female and Family.

The pictogram shows the number of people using each changing room during one hour.

Key:  represents 4 people



8 people used the Male changing room.

6 (a) Complete the key.

[1 mark]

6 (b) How many people used the Female changing room?

[1 mark]

4 + 4 + 4 + 3 = 15

Answer 15

6 (c) The manager has bought lockers for the changing rooms.

Why should she **not** use these results to decide where to put them?

[1 mark]

The sample size is too small. ie not enough people in the pictogram

or

This only represents the number of people in 1 hour, not long enough

7 Here is a list of numbers.

~~21~~ ~~17~~ ~~23~~ ~~21~~ ~~29~~ ~~32~~ ~~21~~ ~~25~~ ~~36~~

Work out the median.

[2 marks]

17, 21, 21, 21, (23), 25, 29, 32, 36

Median = Middle number

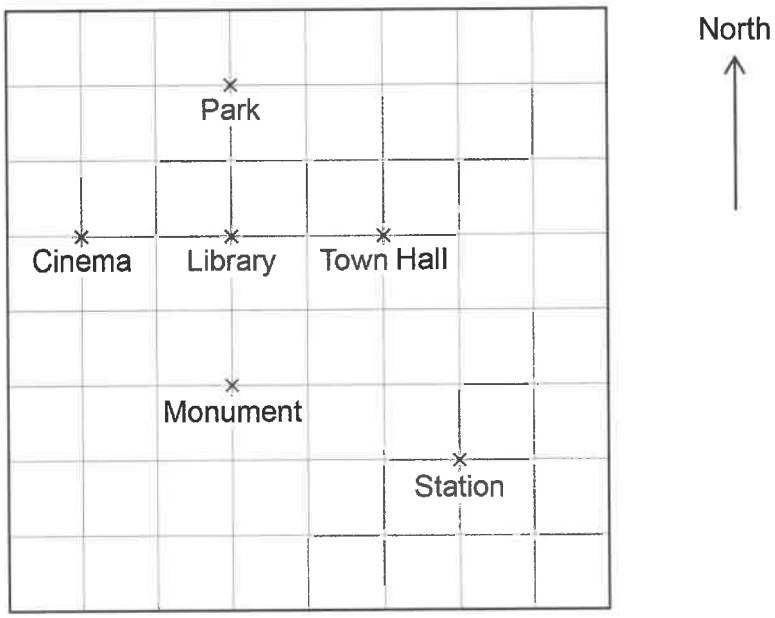
Answer 23

Turn over for the next question

5

8 Here is a map of a town.

Scale: 1 cm represents 200 m



8 (a) Which place is exactly North West of the Station?

Circle your answer.

[1 mark]

Cinema Town Hall Library Park Monument

8 (b) Circle the three-figure bearing of the Monument from the Park.

[1 mark]

090° 180° 270° 360°

Do not write outside the box

8 (c) What is the distance, in metres, from the Cinema to the Station?

[3 marks]

Distance = 5.8 cm

5.8 × 200 = 1160

Answer 1160 metres

8 (d) Why might the shortest **walking** distance from the Cinema to the Station be greater than your answer to part (c)?

[1 mark]

Because we may not walk in a straight line in real life

Turn over for the next question

6

Do not write outside the box

9 Complete the bank statement.

[2 marks]

Date	Description	Credit (£)	Debit (£)	Balance (£)
13/12/2016	Starting balance			212.48
14/12/2016	Council tax		128.39	84.09
15/12/2016	Salary	856.21		940.30

$$\begin{array}{r} 212.48 \\ -\ 128.39 \\ \hline 84.09 \end{array} \qquad \begin{array}{r} 856.21 \\ +\ 84.09 \\ \hline 940.30 \end{array}$$

10 The average age of teachers at a school is 36 years.

Mr Smith's age is $\frac{11}{9}$ of the average.

How old is Mr Smith?

[2 marks]

$36 \times \frac{11}{9} = 36 \div 9 \times 11$

$= 4 \times 11$

$= 44$

Answer 44 years

11 Solve $4x - 3 = 14$

[2 marks]

$4x - 3 = 14$

$+3 \quad +3$

$\frac{4x}{4} = \frac{17}{4}$

$x = \frac{17}{4}$ $x = \frac{17}{4}$

Turn over for the next question

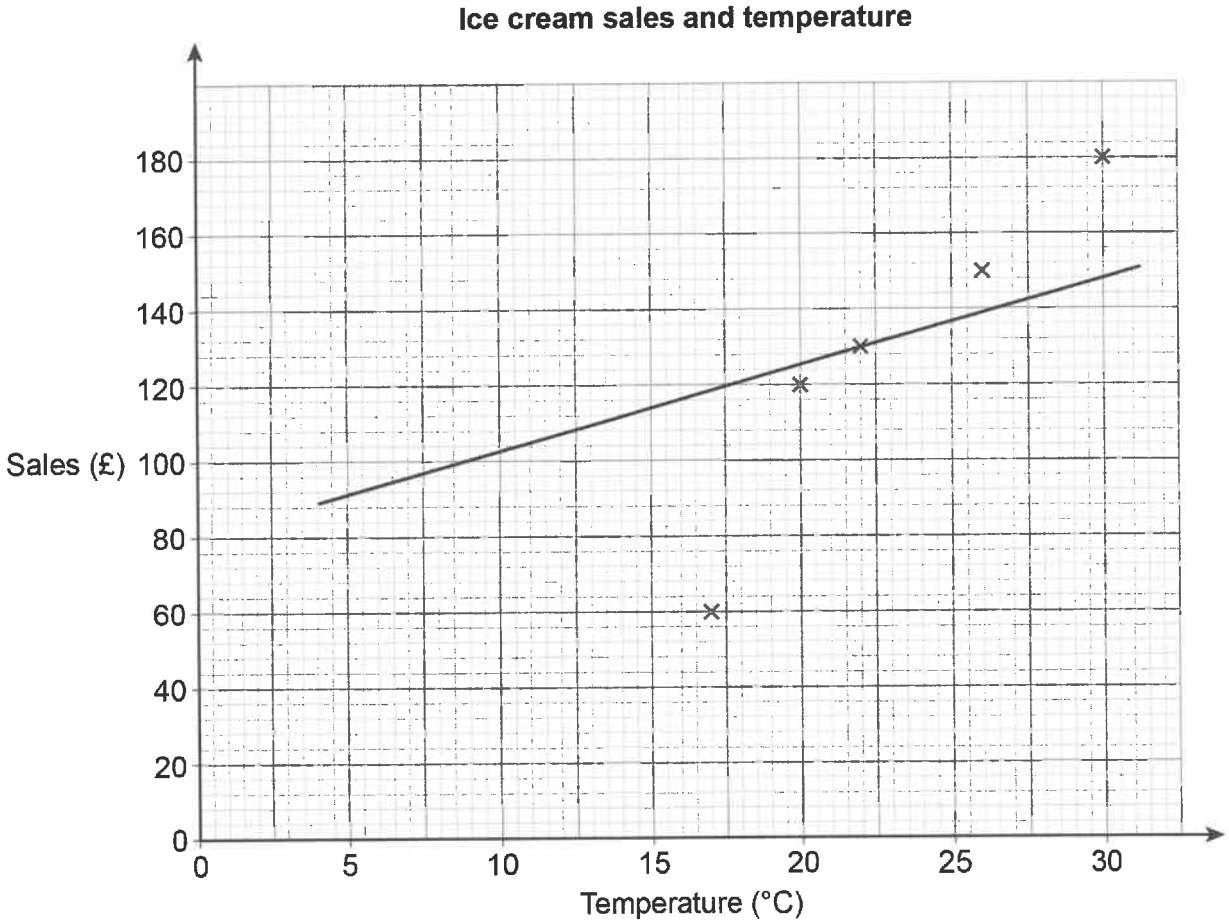
6

12 Lee sells ice creams.

The table shows the midday temperature and his sales for five days.

	Day 1	Day 2	Day 3	Day 4	Day 5
Temperature (°C)	30	26	17	22	20
Sales (£)	180	150	80	130	120

12 (a) He draws this scatter graph and line of best fit.



Write down **two** mistakes he has made.

[2 marks]

Mistake 1 He has plotted (17, 60), but it should be (17, 80)

Mistake 2 The line of best fit does not fit all the points It should go roughly in the middle of all the points

12 (b) Lee wants to work out the range of the five temperatures.

His calculation is 30 – 20 = 10

Is his method correct?

Tick a box.

[1 mark]

Yes ☐ No ☑

Give a reason to support your answer.

30 - 17 = 13

Should use the maximum - minimum

12 (c) The table shows Lee's costs.

Ingredients	15% of sales
Fuel	£7 per day

Work out his total profit for the five days.

[5 marks]

Total fuel cost : £7 × 5 = £35 //

Total sales : 180 + 150 + 80 + 130 + 120 = 660 //

Cost of ingredient : 10% of 660 = 660 ÷ 10 = 66

5% of 660 = 66 ÷ 2 = 33

15% = 66 + 33 = £99 //

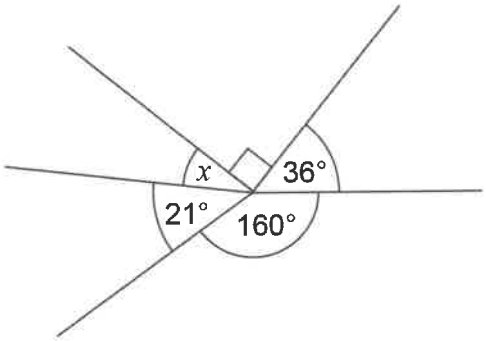
Profit = £660 - £35 - £99

= £526

Answer £ 526

8

13



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Work out the size of angle x.

[2 marks]

21 + 160 + 36 + 90 = 307

x = 360 − 307 = 53

Answer 53 degrees

14 In this question, use

1 kilogram = 2.2 pounds

1 stone = 14 pounds

Change 70 kilograms into stones.

[3 marks]

×70 (1 kg = 2.2 pounds) ×70

70 kg = 154 pounds

154 ÷ 14 = 11 stones

Answer 11 stones

15 Here are some numbers.

10 13 15 20 27 39

+5 +5

10 15 20 is an arithmetic progression.

Use **three** of the numbers to make a different arithmetic progression.

Describe the rule.

[2 marks]

Answer 15 27 39

+12 +2

Rule Add 12

7

16 The counters in a bag are red or blue.

One fifth of the counters are red.

Assume 5 in total.

$\frac{1}{5}$ of 5 = 1 red, so 4 blue

Work out the ratio red counters : blue counters

Circle your answer.

[1 mark]

(1 : 4) 1 : 5 4 : 5 1 : 6

17 Circle the fraction equal to 0.1%

[1 mark]

$\frac{1}{10}$ $\frac{1}{100}$ $\frac{1}{1000}$ $\frac{1}{10\,000}$

$\frac{0.1 \times 10}{100 \times 10} = \frac{1}{1000}$

18 Ellen works for a company that sells cars.

Her **monthly** pay is

- a salary of £1470
- 28% of the total **profit** the company makes from her sales
- a £250 bonus **if** she sells at least 15 cars.

The table shows information about the cars she sold last year.

Total cost to the company	Total income for the company	Number of months when she sold at least 15 cars
£464 500	£538 000	3

Was Ellen's total pay for the **year** more than £40 000?

You **must** show your working.

[6 marks]

Profit : £538 000 - £464500 = £73500

28% of £73500 = 0.28 × 73500 = £20580

12 months pay = £1470 × 12 = £17640

Bonus = £250 × 3 = £750

Total salary : £20580 + £17640 + £750

= £38970

£38970 is less than £40 000

Answer No

8

19 Ben and Katy throw darts at a target.

Ben's ratio of hits to misses is 5 : 1

Katy's ratio of hits to misses is 3 : 1

Ben says,

"5 is bigger than 3, so I must have more hits than Katy."

Give an example to show that this might **not** be true.

[2 marks]

Ben could have 5 hits.
Katy could have 6 hits and 2 missed which also can be simplified to 6 : 2 = 3 : 1
But katy has more hits than Ben

20 A code has 4 digits.

Each digit is a number from 0 to 9

Digits may be repeated.

The code starts 5 4 1

5	4	1	

20 (a) Joe chooses a number at random for the last digit.

Write down the probability that he chooses the correct number.

[1 mark]

Answer $\frac{1}{10}$

20 (b) Amy knows the last digit is odd but **not** 7

She chooses a different odd number at random.

What is the probability that she chooses the correct number?

[1 mark]

5 odd numbers in total (1, 3, 5, 7, 9)

Answer $\frac{1}{4}$

Turn over for the next question

4

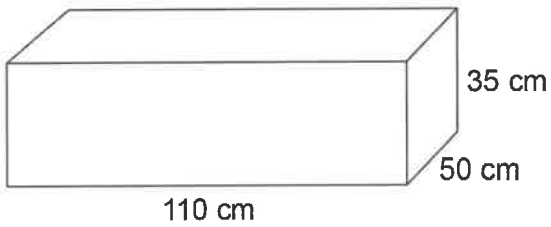
21 Eva thinks she can save water by having a shower instead of a bath.

Eva's shower

uses 10.8 litres per minute

lasts for 8 minutes.

Eva assumes that the water in her bath is in the shape of this cuboid.



1000 cm^3 = 1 litre

21 (a) Using Eva's assumption, work out how many litres of water she saves by having a shower instead of a bath.

[5 marks]

Shower : $10.8 \times 8 = 86.4$ litres

Bath : $110 \times 50 \times 35 = 192500\ cm^3$

$192500 \div 1000 = 192.5$ litres

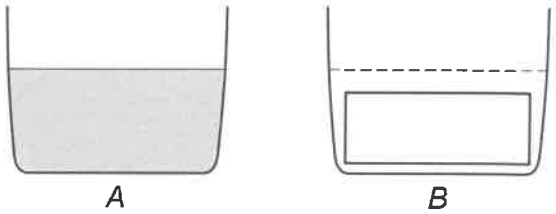
$192.5 - 86.4 = 106.1$

Answer 106.1 litres

21 (b) *A* shows the water level before Eva gets into the bath.

B shows the cuboid in the empty bath.

Not drawn accurately



What does this tell you about the amount of water saved?

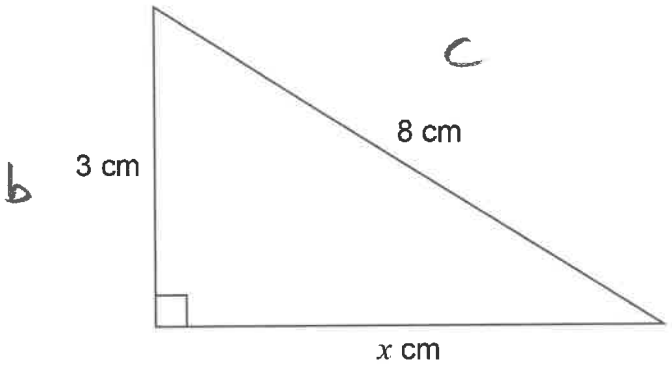
[1 mark]

More water is saved

Turn over for the next question

6

22



Not drawn accurately

Work out the value of x as a decimal.

[3 marks]

$a^2 + b^2 = c^2$

$x^2 + 3^2 = 8^2$

$x^2 + 9 = 64$

$-9 \quad -9$

$x^2 = 55$

$x = \sqrt{55}$

$x = 7.42$

Answer 7.42

23 Lily goes on a car journey.

For the first 30 minutes her average speed is 40 miles per hour. → Distance = $\frac{1}{2} \times 40 = 20$ miles

She then stops for 15 minutes.

She then completes the journey at an average speed of 60 miles per hour.

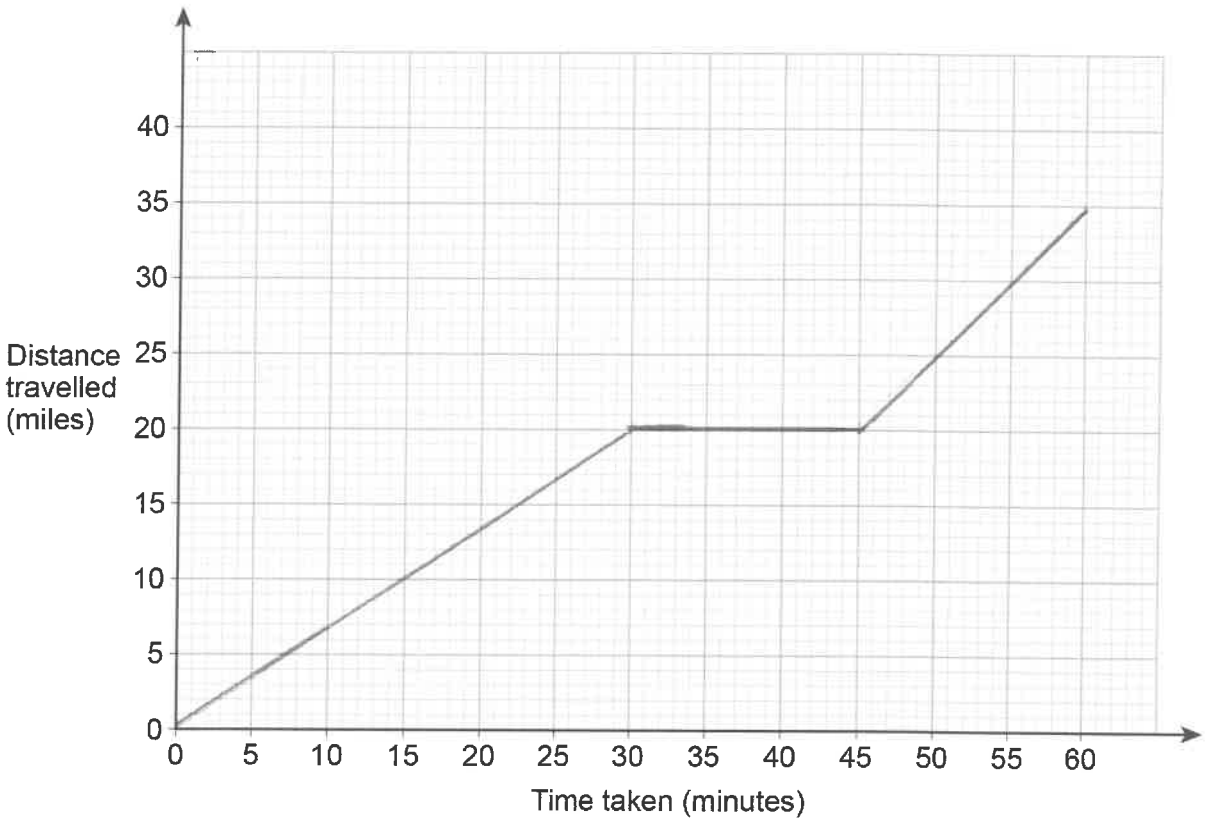
The total journey time is 1 hour. → 60 mins - 30 mins - 15 mins

= 15 min for 60 miles

Distance = $60 \div 4 = 15$ miles

23 (a) Draw a distance-time graph for her journey.

[3 marks]



23 (b) Write down the average speed for the total journey.

[1 mark]

Distance = 35 miles. Time = 60 minutes = 1 hour

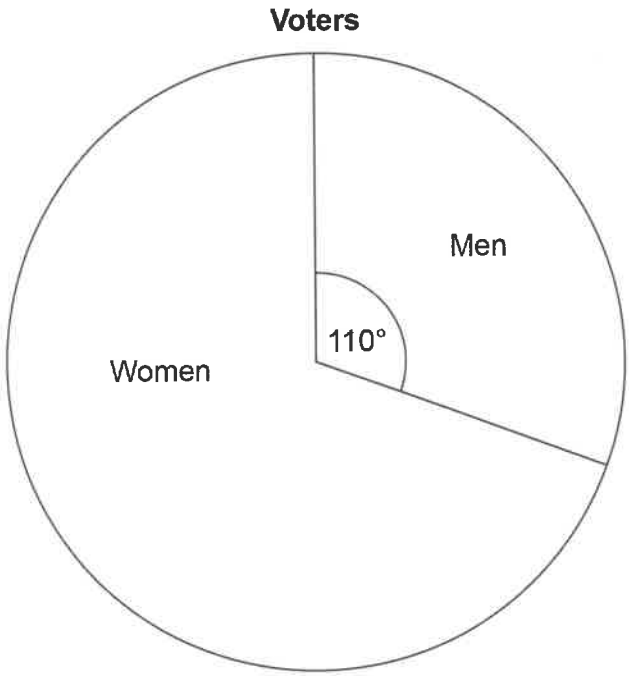
$S = \frac{D}{t} = \frac{35}{1} = 35$

Answer 35 mph

Turn over for the next question

7

24 The pie chart shows information about voters in an election.



3360 **more** women voted than men.

Work out the total number of voters.

[3 marks]

Men : 110°

Women = 360 - 110 = 250°

Difference = 250° - 110° = 140°

3360 voters = 140°

So 1° = 3360 ÷ 140 = 24 voters

360° = 360 × 24 = 8640

Answer 8640

25 The table shows information about some CDs.

Type	Rock	Pop	Jazz
Number of CDs	2	x	$2x + 5$

A CD is chosen at random.

The probability it is **rock** is $\frac{1}{20}$

Work out the probability it is jazz.

[4 marks]

Rock : $\frac{2}{\square} = \frac{1}{20}$ ($\div 2$, $\div 2$) $\Rightarrow$ No. of total CDs = 40.

$40 - 2 = 38$

$x + 2x + 5 = 38$

$3x + 5 = 38$ (-5, -5)

$3x = 33$

$x = 11$

Pop CDs = 11

Jazz CDs = $2 \times 11 + 5$

$= 22 + 5$

$= 27$

Probability of Jazz = $\frac{27}{40}$

Answer $\frac{27}{40}$

Turn over for the next question

7

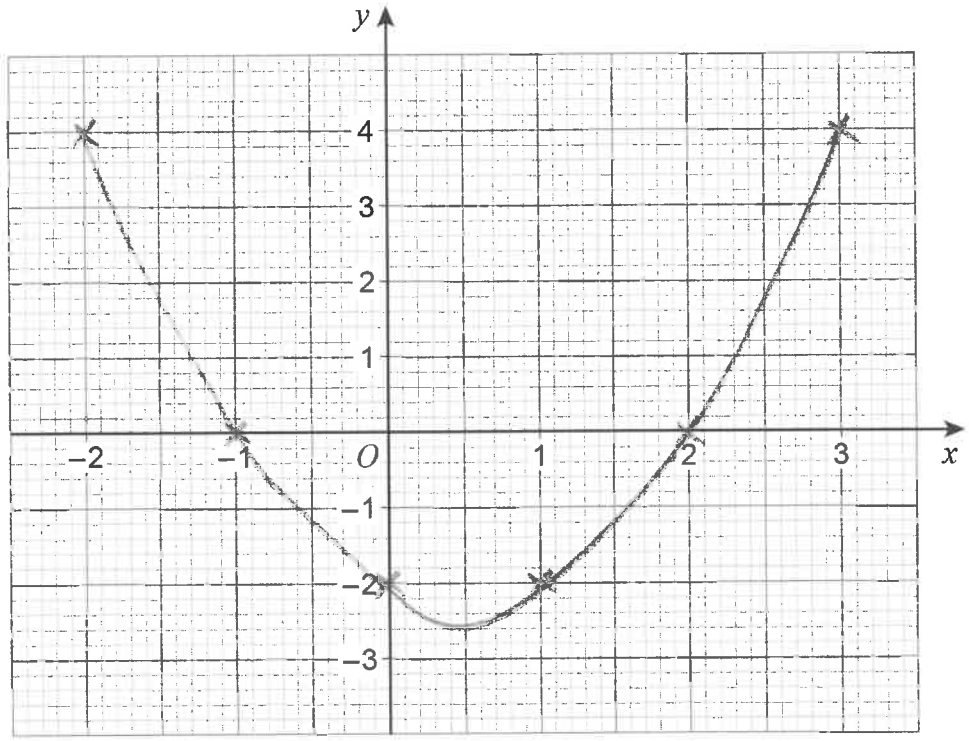
26 (a) Complete the table of values for $y = x^2 - x - 2$

[2 marks]

x	–2	–1	0	1	2	3
y	4	0	–2	–2	0	4

26 (b) Draw the graph of $y = x^2 - x - 2$ for values of x from –2 to 3

[2 marks]



27 Write these numbers in **descending** order.

9563 9.56×10^3 9.56×3^{10}

[2 marks]

$9.56 \times 10^3 = 9560$

$9.56 \times 3^{10} = 564508.44$

Answer 9.56×3^{10}, 9563, 9.56×10^3

28 Rearrange $y = \frac{x}{3} + 9$ to make x the subject.

[2 marks]

$y = \frac{x}{3} + 9$

-9 -9

$3 \times (y - 9) = \frac{x}{3} \times 3$

$3(y - 9) = x$

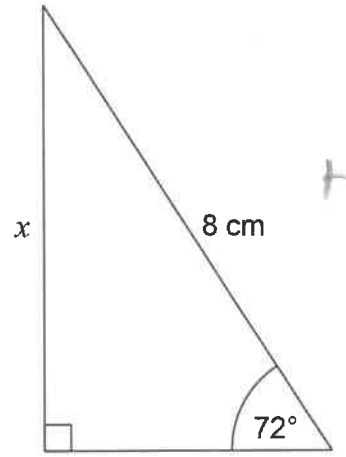
$3y - 27 = x$

Answer $x = 3y - 27$

Turn over for the next question

8

29 Use trigonometry to work out the length x.



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[2 marks]

$\sin 72° = \frac{x}{8}$ $\times 8$

$8 \times \sin 72° = x$

$x = 7.61$

Answer 7.61 cm

END OF QUESTIONS

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