Model Solutions

Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel International GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Thursday 6 June 2019

Morning (Time: 2 hours) | Paper Reference **4MA1/2FR**

Mathematics A

Level 1/2

Paper 2FR

Foundation Tier

You must have:
Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
  Anything you write on the formulae page will gain NO credit.

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

P60262A

1/1/1/

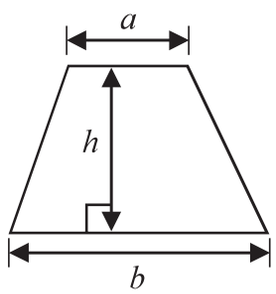
P 6 0 2 6 2 A 0 1 2 4

Pearson

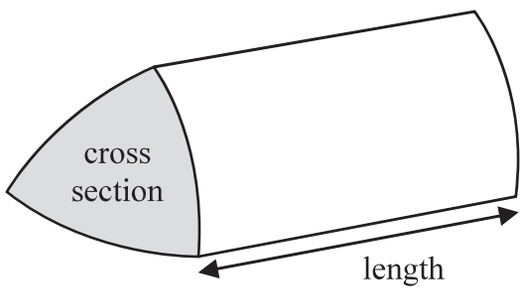
International GCSE Mathematics

Formulae sheet – Foundation Tier

Area of trapezium = $\frac{1}{2}(a + b)h$

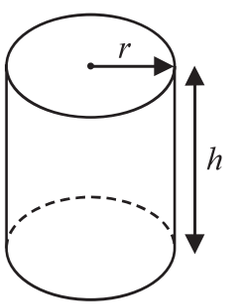


Volume of prism = area of cross section × length



Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi rh$



Answer ALL TWENTY SEVEN questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The table shows the distance, in kilometres, from London to each of five cities.

City	Distance (km)
Rio de Janeiro	9280
New York	5567
Manila	10 734
Sydney	16 983
Kolkata	7962

(a) Write the number 9280 in words.

Nine thousand two hundred and eighty

(1)

(b) Which of the five cities is nearest to London?

least distance

New York

(1)

(c) Write down the value of the 7 in 10 734

=700

700

(1)

(d) Which of the five cities is **seven thousand nine hundred and sixty two** kilometres from London?

7 9 6 2

7962 km

Kolkata

(1)

(e) Write the number 16 983 correct to the nearest thousand.

9>5 round up

17,000

(1)

(Total for Question 1 is 5 marks)

2 The pictogram shows information about the number of naan breads sold in a restaurant each day from Wednesday to Saturday.

Wednesday	8 8 8	24
Thursday	8 8 4	8+8+4 20
Friday	8 8	16
Saturday	8 8 8 2	26
Sunday	8 4	12

represents 8 naan breads

(a) How many naan breads were sold on Wednesday?

$8+8+8 =$ 24

(1)

More naan breads were sold on Saturday than were sold on Friday.

(b) How many more?

Sat : $8+8+8+2 = 26$
Fri : $8+8 = 16$ −
10

10

(2)

12 naan breads were sold in the restaurant on Sunday.

(c) Show this information on the pictogram. 8+4

(1)

The manager of the restaurant says,

"More than 100 naan breads were sold in the restaurant from Wednesday to Sunday."

(d) Is the manager correct?
You must show your working.

$24+20+16+26+12 = 98$

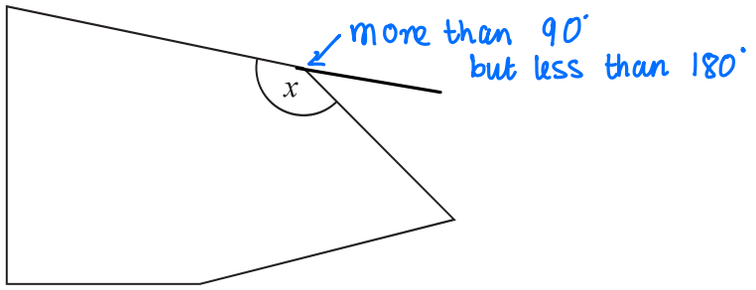
$98 < 100$

No, only 98 naan breads were sold.

(2)

(Total for Question 2 is 6 marks)

3 Here is a pentagon.



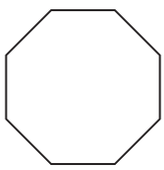
acute	obtuse	reflex	right

(a) Write down the word from the box that describes the angle marked x.

obtuse angle

(1)

(b) Write down the mathematical name of the following polygon.



8 sides

Octagon

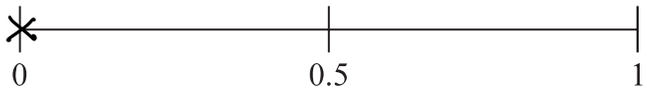
(1)

(Total for Question 3 is 2 marks)

4 Imran throws an ordinary fair dice.

(a) On the probability scale, mark with a cross (×) the probability that the dice will land on 10

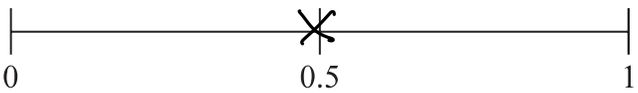
No 10 on a dice



(1)

(b) On the probability scale, mark with a cross (×) the probability that the dice will land on an odd number.

50:50 chance



(1)

(Total for Question 4 is 2 marks)

5 Here is a list of eight numbers.

10 23 27 30 42 52 74 81

From the list, write down

(i) a square number

$9 \times 9 = 81$

81

(ii) a factor of 50

'goes into 50

$50 \div 10 = 5$

10

(iii) a prime number.

1
only divisible by
1 and itself

23

(Total for Question 5 is 3 marks)

6 (a) Work out the value of $\dfrac{9.24 \times 4.35}{6.57 + 2.19}$

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

$= \dfrac{40.194}{8.76}$

$= 4.588356164$

(2)

(b) Give your answer to part (a) correct to 2 significant figures.

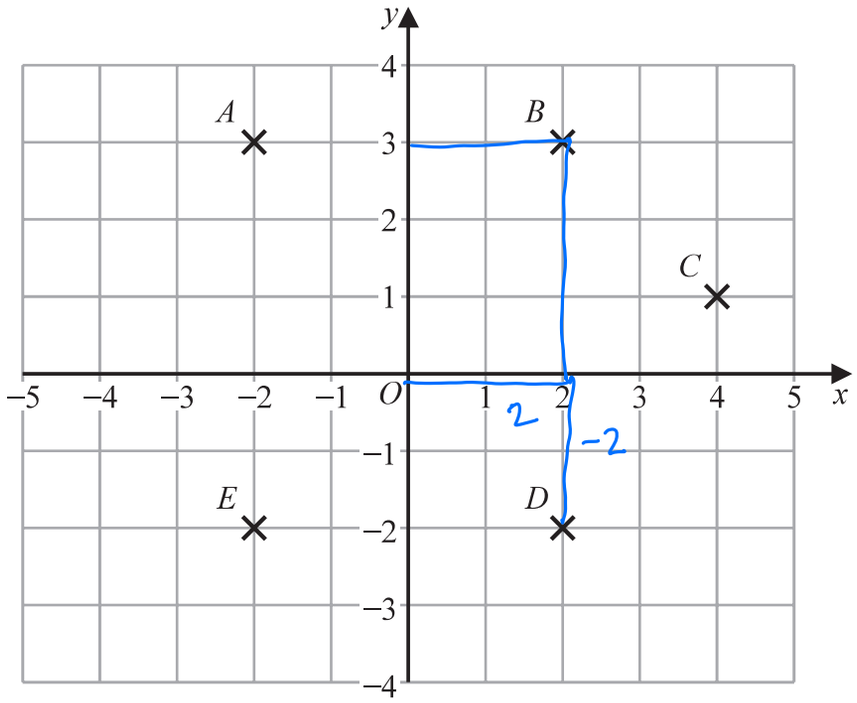
$4.588\ldots$
8 > 5
round up

4.6

(1)

(Total for Question 6 is 3 marks)

7



(a) Write down the coordinates of point B.

(2 , 3)

(1)

(b) Write down the letter of the point with coordinates $(2, -2)$

$x = 2$
$y = -2$

D

(1)

(c) Find the coordinates of the midpoint of AC.

A : (-2, 3)
C : (4, 1)

$\text{Mid} = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

Midpoint : $\left(\frac{4-2}{2}, \frac{1+3}{2} \right)$

(1 , 2)

(2)

(Total for Question 7 is 4 marks)

8 Sandeep has 1200 rupees to spend on pencils.
Each pencil costs 45 rupees.

Sandeep buys as many pencils as he can.

Work out how much change Sandeep should get.

$1200 \div 45 = 26.66...$

Sandeep can buy up to 26 pencils.

This costs: $26 \times 45 = 1170$ rupees.

Change: $1200 - 1170 = 30$

30 rupees

(Total for Question 8 is 3 marks)

9 Anjali travels from Beijing to Shanghai by train.

The train leaves Beijing at 0725
The train arrives in Shanghai at 1315 the same day.

Work out how long the train takes to travel from Beijing to Shanghai.
Give your answer in hours and minutes.

$07:25 + 6\text{hours} = 13:25$ — Anjali arrives before this

$13:25 - 13:15 = 10\text{min} - 10\text{min}$ before.

$6\text{ hours} - 10\text{ min} =$

$5\text{h } 50\text{min}$

5 hours 50 minutes

(Total for Question 9 is 2 marks)

10 The diagram shows kite *ABCD*.

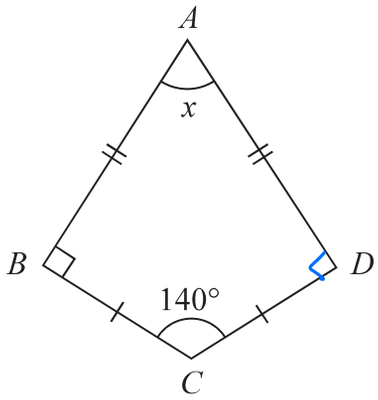


Diagram **NOT** accurately drawn

(a) Work out the size of the angle marked *x*.

Kite : $\angle ABC = \angle ADC$

Angles in a kite add up 360°.

$x = 360 - 90 - 90 - 140 =$

40 °

(2)

The diagram shows kite *PQRS*.

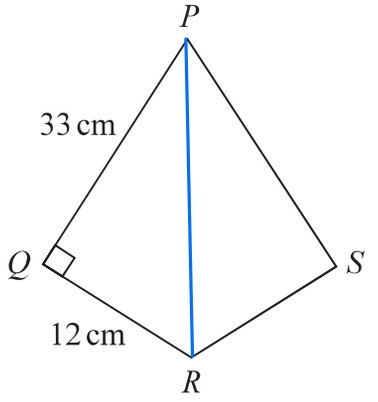


Diagram **NOT** accurately drawn

(b) Work out the area of kite *PQRS*.

Area of triangle : $\frac{1}{2} \times b \times h$

Area of PQR : $\frac{1}{2} \times 12 \times 33 = 198\ cm^2$ +

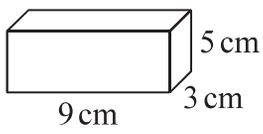
Area of PSR : $= 198\ cm^2$

396 cm^2

(2)

(Total for Question 10 is 4 marks)

11 Karl has 5700 bricks.
He wants to put all the bricks into crates.



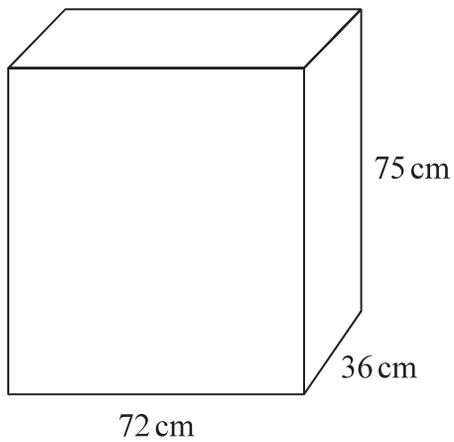


Diagram **NOT** accurately drawn

Each brick is a cuboid measuring 9 cm by 3 cm by 5 cm.
Each crate is a cuboid measuring 72 cm by 36 cm by 75 cm.

Karl has 4 crates.

Is there enough room in the 4 crates for 5700 bricks?
Show your working clearly.

Volume of 1 brick : $9 \times 3 \times 5 = 135\,cm^3$

Volume of 1 crate : $72 \times 36 \times 75 = 194,400\,cm^3$

4 crates : $194,400 \times 4 = 777,600\,cm^3$

4 crates can hold : $777,600 \div 135 = 5760$ bricks

$5760 > 5700$

4 crates can hold up to 5760 bricks, therefore Yes, the crates can hold 5700 bricks.

(Total for Question 11 is 4 marks)

12 Ravina counts the number of matches in each of 40 boxes of matches.
The table shows information about her results.

Number of matches x	Frequency f	fx
21	13	273
22	8	176
23	8	184
24	6	144
25	5	125

20.5 is between this and 21

(a) Find the median of the numbers of matches in the boxes.

$\frac{n+1}{2}$ th value

Median : $\frac{40+1}{2} = 20.5$

22

(2)

(b) Work out the mean number of matches.

Mean $= \frac{\Sigma fx}{\Sigma f} = \frac{273+176+184+144+125}{40}$

$= \frac{902}{40}$

22.55

(3)

(Total for Question 12 is 5 marks)

13 (a) Solve $3f - 5 = 11$

+5

$3f = 16$

÷3

$f = \frac{16}{3}$

$f =$ $\frac{16}{3}$

(2)

(b) Expand $w(w + 3)$

$w^2 + 3w$

(1)

$y = 5e^2 + 20$

(c) Work out the value of y when $e = -3$

$y = 5(-3)^2 + 20$

$= 5 \times 9 + 20$

$= 45 + 20$

$y =$ 65

(2)

(d) Factorise $x^2 - 5x - 36$

2 numbers x to −36 and + to −5

−9 and 4

$x^2 + 4x - 9x - 36$

$x(x+4) - 9(x+4)$

$(x-9)(x+4)$

(2)

(Total for Question 13 is 7 marks)

DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA DO NOT WRITE IN THIS AREA

14 Maria is going to make blackcurrant pies.
Here is a list of ingredients to make 6 blackcurrant pies.

Blackcurrant pies
Ingredients for 6 pies

150 g flour
420 g blackcurrants
170 g sugar
95 g butter

Maria has the following ingredients.

755 g of flour 1265 g of blackcurrants

685 g of sugar 950 g of butter

Work out the greatest number of blackcurrant pies that Maria can make using her ingredients.
Show your working clearly.

Flour: $755 \div 150 = 5.0\dot{3}$ = 5 batches

Blackcurrants: $1265 \div 420 =$ 3.01... batches

Sugar : $685 \div 170 =$ 4.029... batches

Butter : $950 \div 95 =$ 10 batches

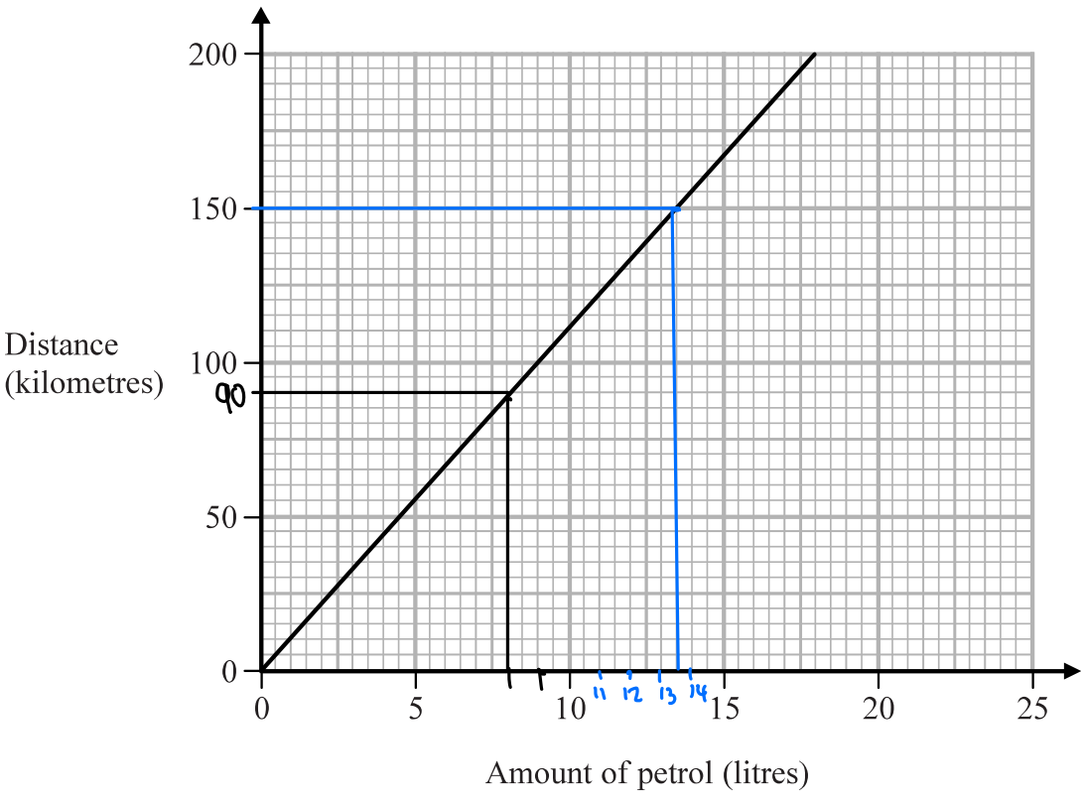
Can only make 3 batches as the maximum batches for blackcurrants is 3.

Pies: 6 pies × 3 batches

18

(Total for Question 14 is 4 marks)

15 This graph can be used to find the distance travelled, in kilometres, by Chuck's car and the amount of petrol, in litres, used.



Chuck travels 150 kilometres in his car.

(a) Using the graph, find the amount of petrol used.

13.5 litres

(1)

Chuck lives in Fiji.
He puts petrol into the petrol tank of his car.
This petrol costs him 16.24 Fiji dollars.

1 litre of petrol in Fiji costs 2.03 Fiji dollars.

(b) Find the distance that Chuck's car travels on the petrol he put in his car.

1ℓ : 2.03 Fiji $ (×8 ↓, ÷8 ↑)
8ℓ : 16.24

16.24 ÷ 2.03 = 8

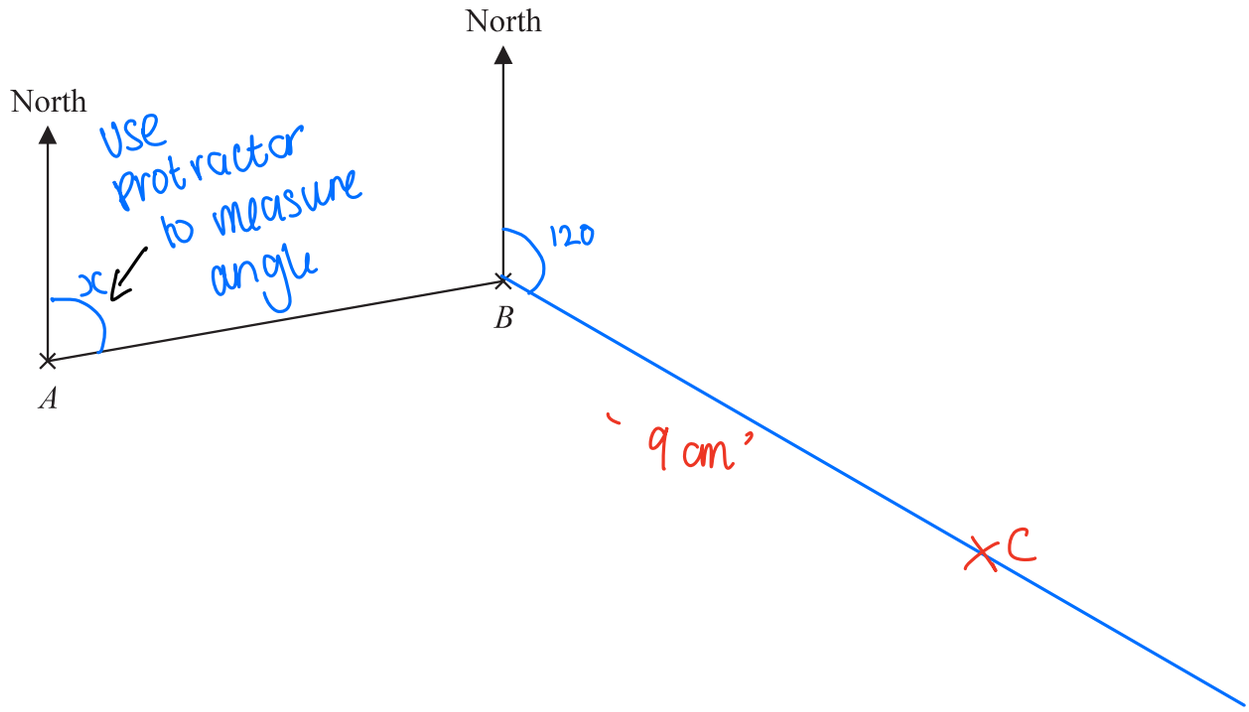
Using graph, 8ℓ = 90

90 kilometres

(3)

(Total for Question 15 is 4 marks)

16 The scale diagram shows the position of two statues, A and B, on a map.



Scale: 2 cm represents 1 km

(a) Measure the bearing of B from A.

angle x

080 °

(1)

Another statue C is on a bearing of 120° from B.
Statue C is 4.5 km from B.

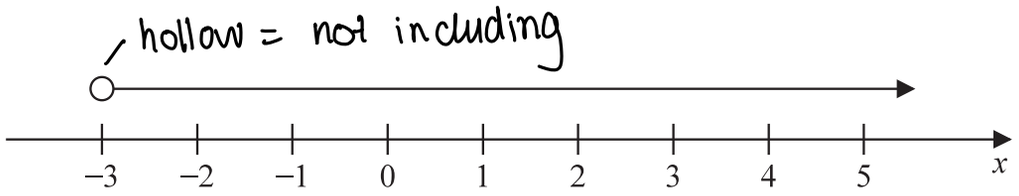
2 cm : 1 km
x4.5 ↓ ↓ x4.5
9 cm : 4.5 km

(b) Mark the position of statue C with a cross (×).
Label your cross C.

(3)

(Total for Question 16 is 4 marks)

17 (a)



Write down the inequality shown on the number line.

$x > -3$

(1)

(b) Solve the inequality $4y - 13 \leqslant y + 8$

$4y - 13 \leqslant y + 8$

$+13$

$4y \leqslant y + 21$

$-y$

$3y \leqslant 21$

$\div 3$

$y \leqslant 7$

$y \leqslant 7$

(2)

(Total for Question 17 is 3 marks)

18 Show that $5\frac{2}{3} - 2\frac{3}{4} = 2\frac{11}{12}$

$5\frac{2}{3} = \frac{17}{3}$

$2\frac{3}{4} = \frac{11}{4}$

$\frac{17}{3} \quad \frac{11}{4}$

$\times$

$= \frac{68 - 33}{12} = \frac{35}{12}$

$\frac{24}{12} = 2$

$\frac{24 + 11}{12} = 2\frac{11}{12}$

$35 - 24 = 11$

(Total for Question 18 is 3 marks)

19 (a) Complete the table of values for $y = 1 + 5x - x^2$

$1+5(6)-6^2$

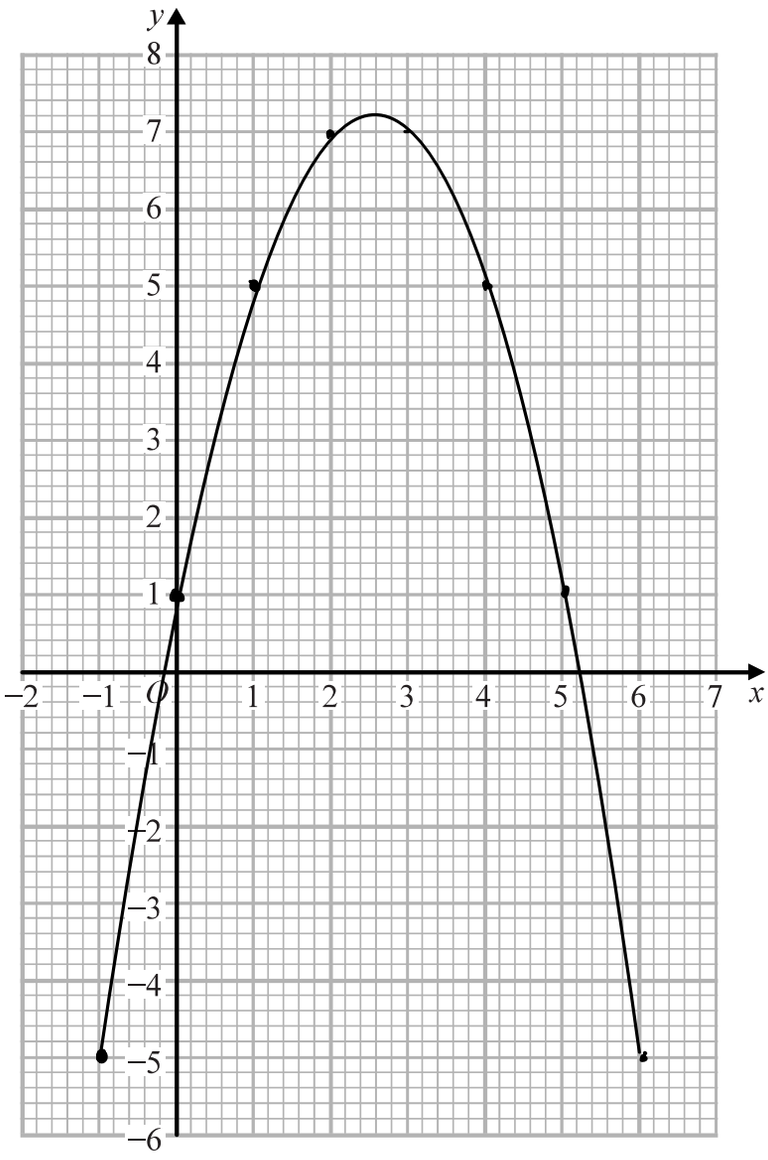
x	-1	0	1	2	3	4	5	6
y	-5	1	5	7	7	5	1	-5

$1+5(-1)-(-1)^2$ $1+5(1)-(1)^2$ $1+5(4)-(4)^2$

$1-5-1=-5$

(2)

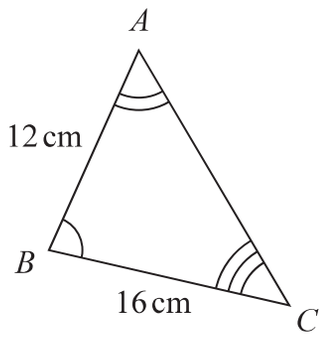
(b) On the grid, draw the graph of $y = 1 + 5x - x^2$ for values of x from -1 to 6



(2)

(Total for Question 19 is 4 marks)

20 *ABC* and *DEF* are similar triangles.



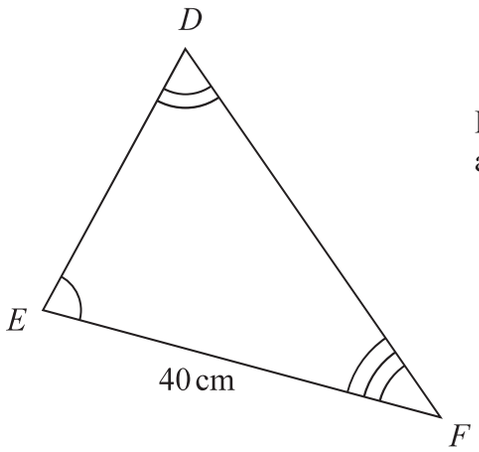


Diagram **NOT** accurately drawn

(a) Work out the length of *DE*.

Scale factor: $\frac{40}{16} = 2.5$

$12 \times 2.5 = DE$

$= 30$

30 cm

(2)

The area of triangle *DEF* is 525 cm^2

(b) Find the area of triangle *DEF* in m^2

cm $\xrightarrow[\div 100]{}$ m

cm^2 $\xrightarrow[\div 100^2]{}$ m^2

$525 \div 100^2 = 0.0525$

0.0525 m^2

(2)

(Total for Question 20 is 4 marks)

21 There are some ice lollies in a freezer.

The flavour of each ice lolly is banana or strawberry or mint or chocolate.

Julius takes at random an ice lolly from the freezer.

The table shows the probabilities that the flavour of the ice lolly that Julius takes is banana or strawberry or chocolate.

Flavour	banana	strawberry	mint	chocolate
Probability	0.35	0.32	0.21	0.12

Work out the probability that the flavour of the ice lolly that Julius takes is either strawberry or mint.

Probability adds to 1

$0.35 + 0.32 + 0.12 + P(\text{mint}) = 1$

$0.79 + P(\text{mint}) = 1$

$P(\text{mint}) = 0.21$

Strawberry or mint: $0.32 + 0.21 = 0.53$

(Total for Question 21 is 3 marks)

22 A football team played 55 games.
Each game was won, drawn or lost.

number of games won : number of games drawn : number of games lost = 6 : 3 : 2

Work out how many more games the team won than the team lost.

won : draw : lost

6 : 3 : 2

×5 → 30 : 15 : 10

Total

11

55 ÷5

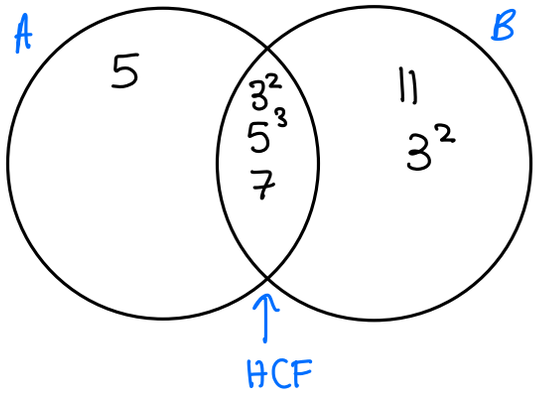
won 30 − lost 10 = 20

20

(Total for Question 22 is 3 marks)

23 $A = 3^2 \times 5^4 \times 7$ $B = 3^4 \times 5^3 \times 7 \times 11$

(a) Find the highest common factor (HCF) of A and B.



$3^2 \times 5^3 \times 7$

7875

(2)

(b) Find the lowest common multiple (LCM) of A and B.

LCM = $7875 \times 5 \times 11 \times 3^2$

= 3 898 125

(2)

(Total for Question 23 is 4 marks)

24 (a) Write 840 000 in standard form.

12345

8.4×10^5

(1)

(b) Work out $(6 \times 10^7) \div (8 \times 10^{-2})$
Give your answer in standard form.

$\frac{6 \times 10^7}{8 \times 10^{-2}} = \frac{6}{8} \times 10^{7--2}$ $\frac{a^b}{a^c} = a^{b-c}$

$= 0.75 \times 10^9$

$= 7.5 \times 10^8$

between 1 and 10

7.5×10^8

(2)

(Total for Question 24 is 3 marks)

25 Henri buys a yacht for 150 000 euros.

The yacht depreciates in value by 18% each year.

Work out the value of the yacht at the end of 3 years.
Give your answer correct to the nearest euro.

Multiplier: $100 - 18 = 82\% = \times 0.82$

$150{,}000 \times 0.82^{3}$ ← number of years

$= 82705.2$ $2 < 5$ round down

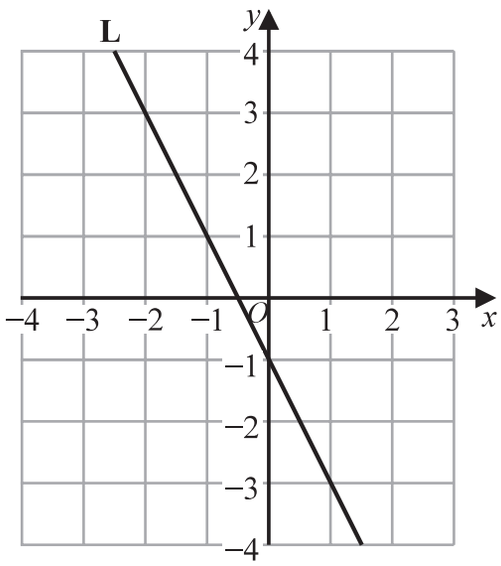
$= 82705$

starting value / multiplier

82705 euros

(Total for Question 25 is 3 marks)

26 Line **L** is drawn on the grid.



$y = mx + c$

Find an equation for **L**.

(0, −1)
(1, −3)

gradient (m) $= \frac{y_1 - y_2}{x_1 - x_2}$

$= \frac{-1 - -3}{0 - 1} = \frac{2}{-1} = -2$

(c) y intercept: −1

$y = -2x - 1$

(Total for Question 26 is 3 marks)

27

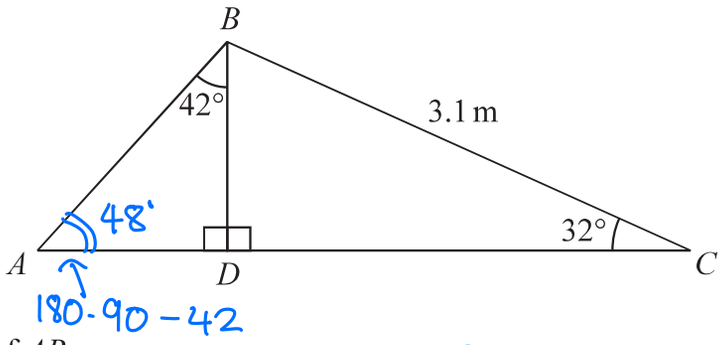


Diagram **NOT** accurately drawn

Calculate the length of AB.
Show your working clearly.
Give your answer correct to 3 significant figures.

$\frac{a}{\sin A} = \frac{b}{\sin B}$

Triangle ABC:

$$\frac{AB}{\sin 32} = \frac{3.1}{\sin 48}$$

$\times \sin 32$

$$AB = \frac{3.1 \sin 32}{\sin 48}$$

$$= 2.2105\ldots \text{ m}$$

$=$ 3sf round down

2.21 m

(Total for Question 27 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS

BLANK PAGE

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

BLANK PAGE