Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Friday 8 November 2024

Morning (Time: 1 hour 30 minutes)

Paper reference **1MA1/2F**

Mathematics

PAPER 2: (Calculator)
Foundation Tier

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB or B pencil, eraser, calculator, Formulae Sheet (enclosed). Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used**.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 80
- 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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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V:1/1/1/1/1/1/

P 7 5 1 5 9 A 0 1 2 0

Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Write 17% as a fraction.

$\frac{17}{100}$

(Total for Question 1 is 1 mark)

2 Write 140 minutes in hours and minutes.

2 hrs 20 minutes

60 mins = 1 hr

140 − 60 = 80

80 − 60 = 20

2 hours 20 minutes

(Total for Question 2 is 1 mark)

3 Write these numbers in order of size.
Start with the smallest number.

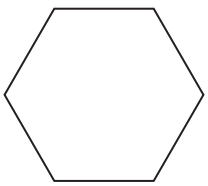
0.57 0.507 0.5 0.05

0.570
0.507
0.500
0.050

0.05, 0.5, 0.507, 0.57

(Total for Question 3 is 1 mark)

4 Write down the mathematical name of this polygon.



hexagon

(Total for Question 4 is 1 mark)

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5 Find the number that is exactly halfway between –2 and 8

8 − 5 = 3

8 − (−2)
8 + 2
10

10 ÷ 2
5

3

(Total for Question 5 is 1 mark)

6 Jo uses beads to make bracelets.
For each bracelet she uses 5 red beads and 7 white beads.

Jo has 52 red beads and 80 white beads.

Work out the greatest number of bracelets Jo can make.
You must show all your working.

R : W
5 : 7
×10 ( ) ×10
50 : 70

5 : 7
×11 ( ) ×11
55 : 77

52 < 55 required for 11

10

(Total for Question 6 is 3 marks)

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7 Here are the ages, in years, of 8 children.

14 10 10 13 15 9 15 10

(a) Work out the mean age.

$$\frac{14+10+10+13+15+9+15+10}{8}$$

12 ..... years

(2)

(b) Work out the range of the ages.

Max − Min

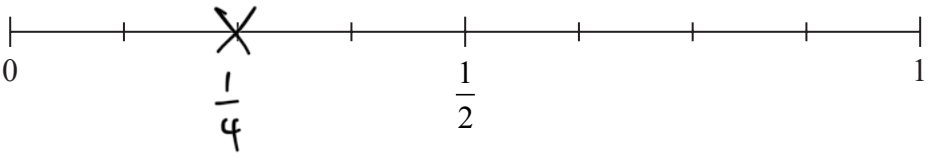
15 − 9 = 6

6 ..... years

(2)

One of the children is chosen at random.

(c) On the probability scale below, mark with a cross (×) the probability that this child has an age of 15



2/8 = 1/4

(1)

(Total for Question 7 is 5 marks)

8 Junaid says that 20 is a square number because $10^2 = 20$

(a) Is Junaid correct?
Give a reason for your answer.

No Junaid is incorrect because $10^2 = 100$
20 is not a square number

(1)

Chloe says,

"When you divide an even number by an even number the answer is always an even number."

(b) Write down an example to show that Chloe is wrong.

even → 12 ÷ 4 = 3 ← odd

(1)

(Total for Question 8 is 2 marks)

9 There are 90 red counters and 150 yellow counters in a bag.

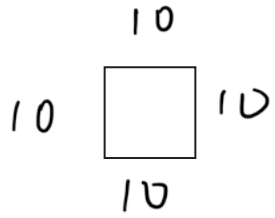
Write down the ratio of the number of red counters to the number of yellow counters.
Give your ratio in its simplest form.

R : Y
90 : 150
÷10 ↓ ↓ ÷10
9 : 15
÷3 ↓ ↓ ÷3
3 : 5

3 : 5

(Total for Question 9 is 2 marks)

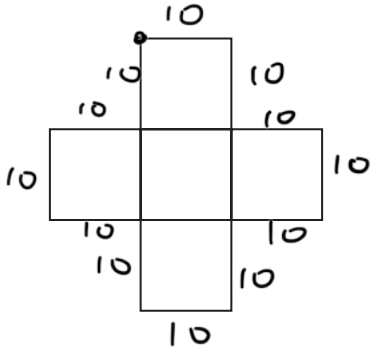
10 Here is a square.



$\frac{40}{4} = 10$

The square has a perimeter of 40 cm.

Five of these squares are used to make the shape below.



Work out the perimeter of this shape.

$10 \times 12 = 120\text{cm}$

120 ..... cm

(Total for Question 10 is 3 marks)

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11 (a) Simplify $2x \times 3y$

$2 \times 3 \quad x \times y \quad 6xy$

$6xy$

(1)

(b) Simplify $3d - 4e + 2d + e$

$3d + 2d \quad -4e + e$

$5d \quad -3e$

$5d - 3e$

(2)

(Total for Question 11 is 3 marks)

12 180 tickets are sold for a concert.

60% of the tickets are child tickets.
The rest of the tickets are adult tickets.

$60\% = 0.6$

The total cost of the 180 tickets is £1944
Each child ticket costs £8

Work out the cost of each adult ticket.

Children : $0.6 \times 180 = 108$

Adult : $180 - 108 = 72$

$1944 = (8 \times 108) + (a \times 72)$

$1944 = 864 + 72a$

$-864 \quad -864$

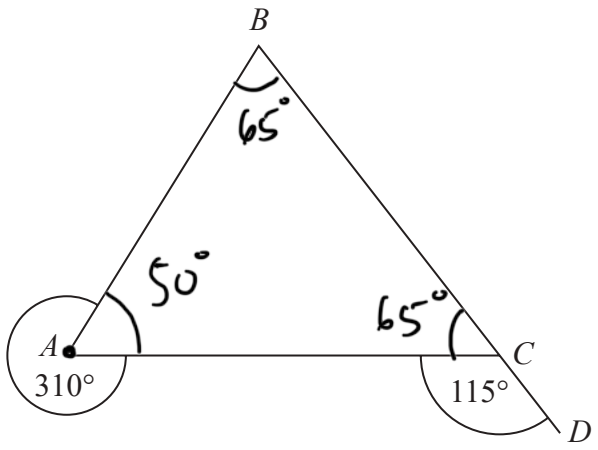
$\frac{1080}{72} = \frac{72a}{72}$

$£15 = a$

£ 15

(Total for Question 12 is 4 marks)

13 *ABC* is a triangle.



BCD is a straight line.

Show that triangle *ABC* is isosceles.
Give a reason for each stage of your working.

$B\hat{A}C = 360 - 310 = 50°$ Sum of angles at a point is 360°

$A\hat{C}B = 180 - 115 = 65°$ Sum of angles on a straight line is 180°

$A\hat{B}C = 180 - 50 - 65 = 65°$ Sum of angles in a triangle is 180°

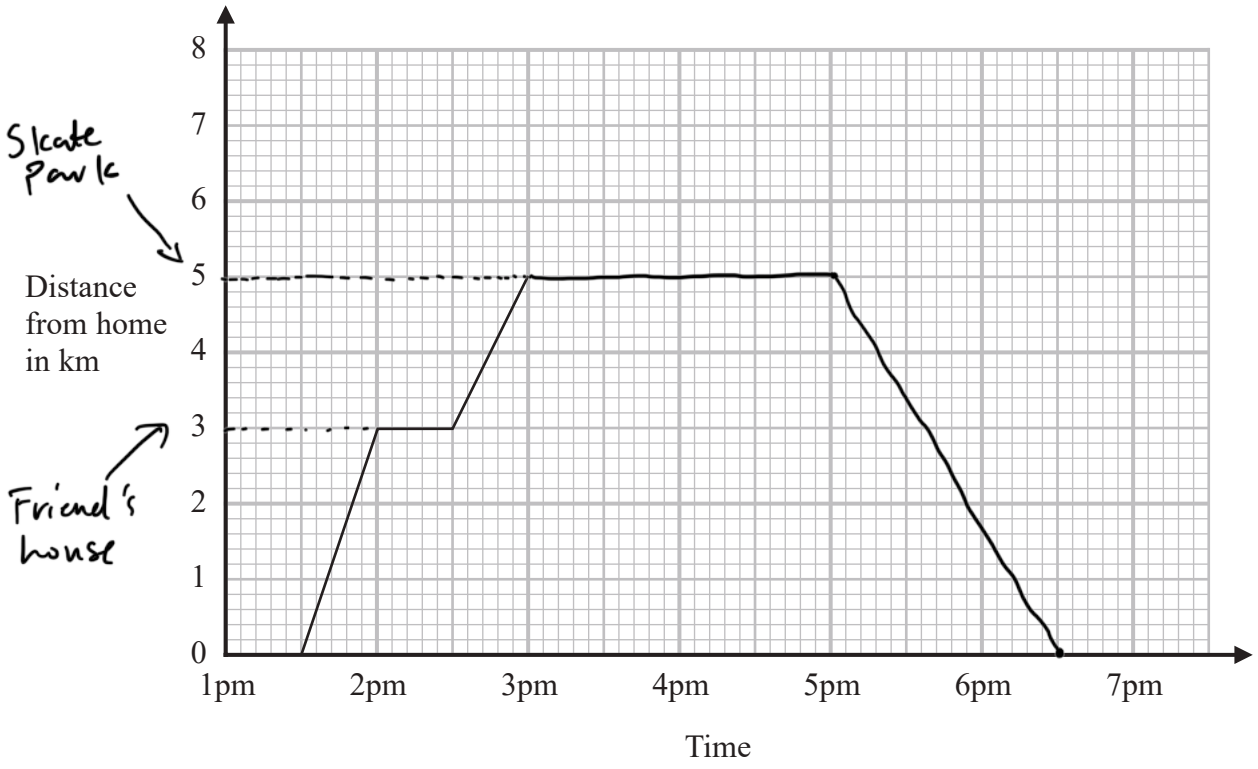
$A\hat{B}C = A\hat{C}B$

$\triangle ABC$ is an isosceles triangle because in an isosceles triangle 2 base angles are equal.

(Total for Question 13 is 4 marks)

14 Amy walked from her home to the skate park.

The travel graph of Amy's walk to the skate park is shown below.



On the way to the skate park Amy stopped at her friend's house.

(a) How far is it from her friend's house to the skate park?

$5 - 3 = 2$

2 km

(1)

Amy stayed at the skate park for 2 hours.
Then she walked home at a steady speed.
She took 1 hour 30 minutes to walk home.

(b) Complete the travel graph.

(2)

(Total for Question 14 is 3 marks)

15 A map has a scale of 1 : 25 000
On the map, a road has a length of 14 cm.

Work out the real length of the road.
Give your answer in kilometres.

Map : Real
1 : 25000
14 cm : x

$\frac{1}{25000} = \frac{14}{x}$

$x = 25000 \times 14$

$x = 350\,000$ cm

$\div 100$: 100 cm = 1 m

350,000 cm = 3500 m ($\div 100$)

$\div 1000$: 1000 m = 1 km

3500 m = 3.5 km ($\div 1000$)

3·5 kilometres

(Total for Question 15 is 3 marks)

16 Aisha has two boxes of sweets, box **A** and box **B**.

In box **A**, there are only 10 red sweets and 30 green sweets.
In box **B**, there are only 7 red sweets and 18 green sweets.

Aisha is going to take at random a sweet from box **A** and a sweet from box **B**.

Which box gives Aisha the greater probability of taking a red sweet, box **A** or box **B**?
You must show how you get your answer.

Box A

R	:	G
10	:	30

$P(R) = \frac{10}{40} = 0.25$

Box B

R	:	G
7	:	18

$P(R) = \frac{7}{25} = 0.28$

$0.28 > 0.25$ box B gives Aisha a greater probability of taking a red sweet.

(Total for Question 16 is 3 marks)

17 Last year Emma's car insurance cost £285

This year her car insurance costs 7% less.

(a) Work out the cost of Emma's car insurance this year.

100% − 7% = 93%

93% = 0.93

0.93 × 285 = £265.05

£ 265.05

(3)

Peter sells bikes.

Each month he is paid £1700 plus a bonus.
The bonus is 5% of the total value of the bikes he sells that month.

Last month Peter was paid £2100

(b) Work out the total value of the bikes he sold last month.

Bonus = 2100 − 1700 = £400

5% = £400) ×20

×20 (

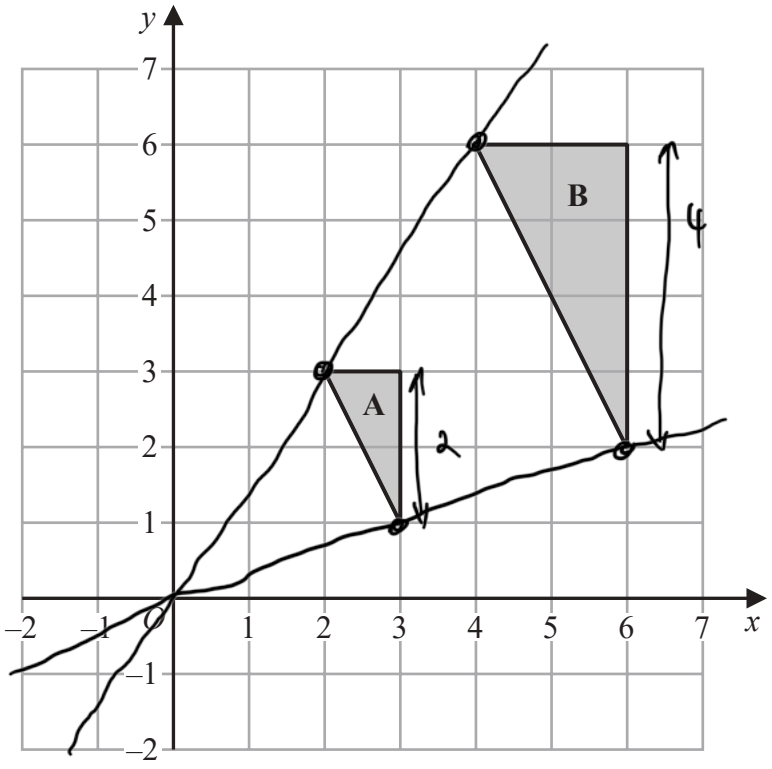
100% = £8000

£ 8000

(3)

(Total for Question 17 is 6 marks)

18



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

Describe fully the single transformation that maps triangle **A** onto triangle **B**.

Enlargement by a scale factor of 2 with a centre of enlargement at (0,0)

(Total for Question 18 is 2 marks)

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19 (a) Factorise fully $15w^2 - 5w$

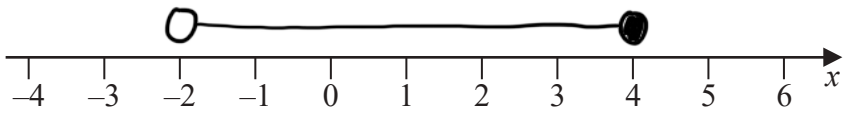
$5(3w^2 - w)$

$5w(3w-1)$

$5w(3w-1)$

(2)

(b) On the number line below, show the set of values of x for which $-2 < x \leqslant 4$



(2)

(Total for Question 19 is 4 marks)

20 Use your calculator to work out the value of

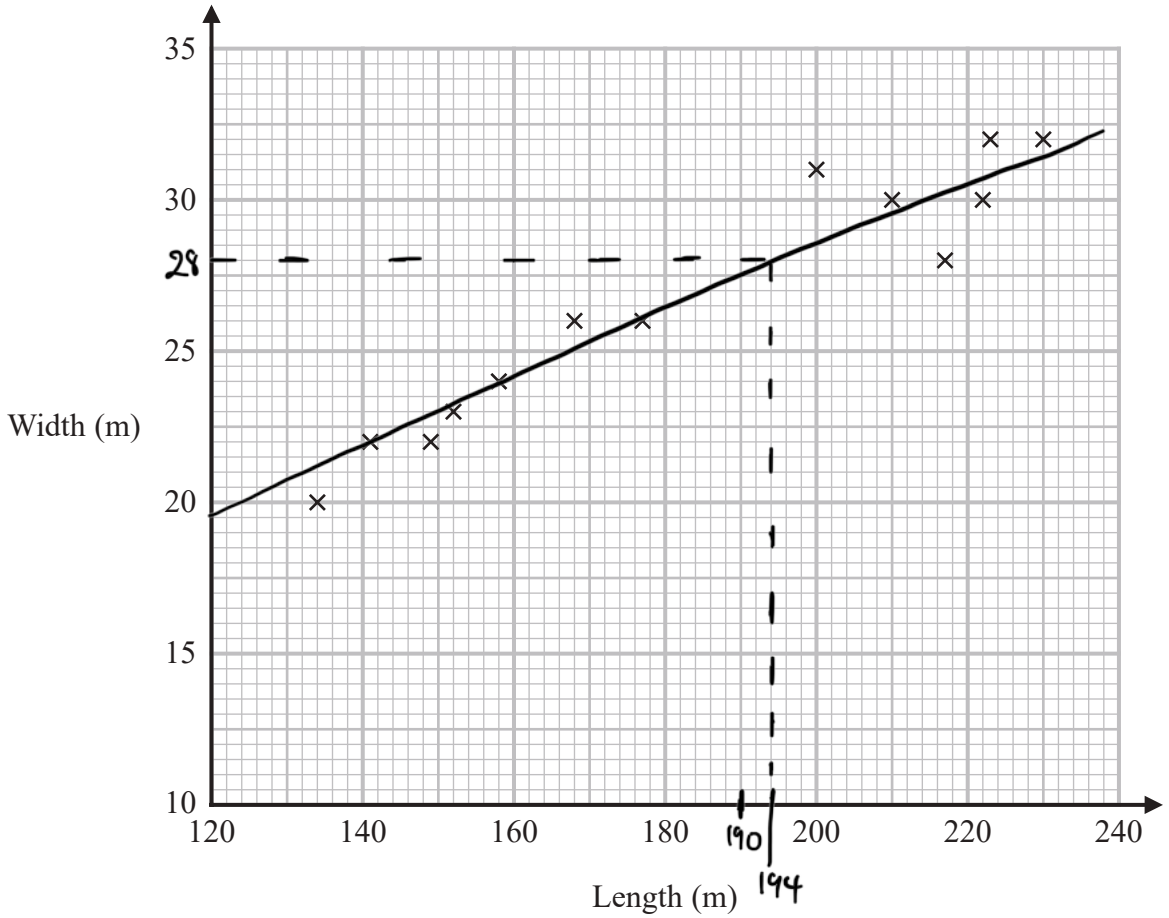
$$\sqrt{\frac{208.3 - 15.7}{5.694 + 1.8^2}}$$

Write down all the digits on your calculator display.

4.643069317

(Total for Question 20 is 2 marks)

21 The scatter graph shows information about some ships.
It shows the length and the width of each ship.



(a) What type of correlation does this scatter graph show?

positive

(1)

(b) Draw a line of best fit on the scatter graph.

(1)

A different ship has a length of 194 metres.

(c) Use your line of best fit to find an estimate for the width of this ship.

28 metres

(1)

(Total for Question 21 is 3 marks)

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22

Choci bar
200 g
£3.50

London

Choci bar
360 g
7.20 Swiss francs

Zurich

In London, a 200 g Choci bar costs £3.50
In Zurich, a 360 g Choci bar costs 7.20 Swiss francs.

The exchange rate is £1 = 1.25 Swiss francs.

In which city is the Choci bar the better value for money, in London or in Zurich?
You must show how you get your answer.

3600g cost 7.20 x 10 = 72 SF → Zwich

200 $\xrightarrow{\times 18}$ 3600

3600g Cost 3.50x18 = £63 → London

x63 (£1 : 1.25 SF) x63
£63 : 78.75 SF

Zwich → 72 SF for 3600g

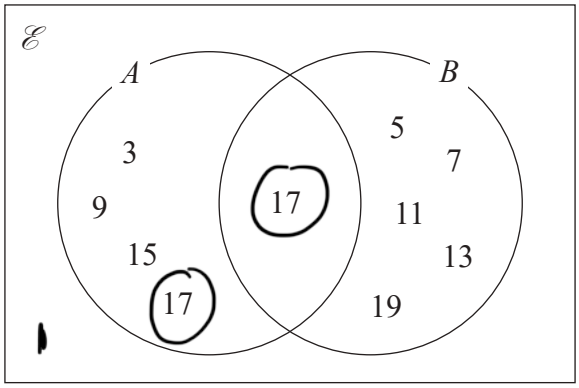
London → 78.75 SF for 3600g

Zwich offers better value for money 72 SF < 78.75 SF

(Total for Question 22 is 3 marks)

23 $\mathscr{E}$ = {odd numbers between 0 and 20}
A = {3, 9, 15, 17}
B = {5, 7, 11, 13, 17, 19}

Tom was asked to draw a Venn diagram for this information.
Here is his answer.



Write down two things Tom should do to make his answer fully correct.

1 17 should be in the middle only

2 I should be outside the set A and set B but in the venn diagram.

(Total for Question 23 is 2 marks)

24 (a) Complete the table of values for $y = x^2 - 2x - 3$

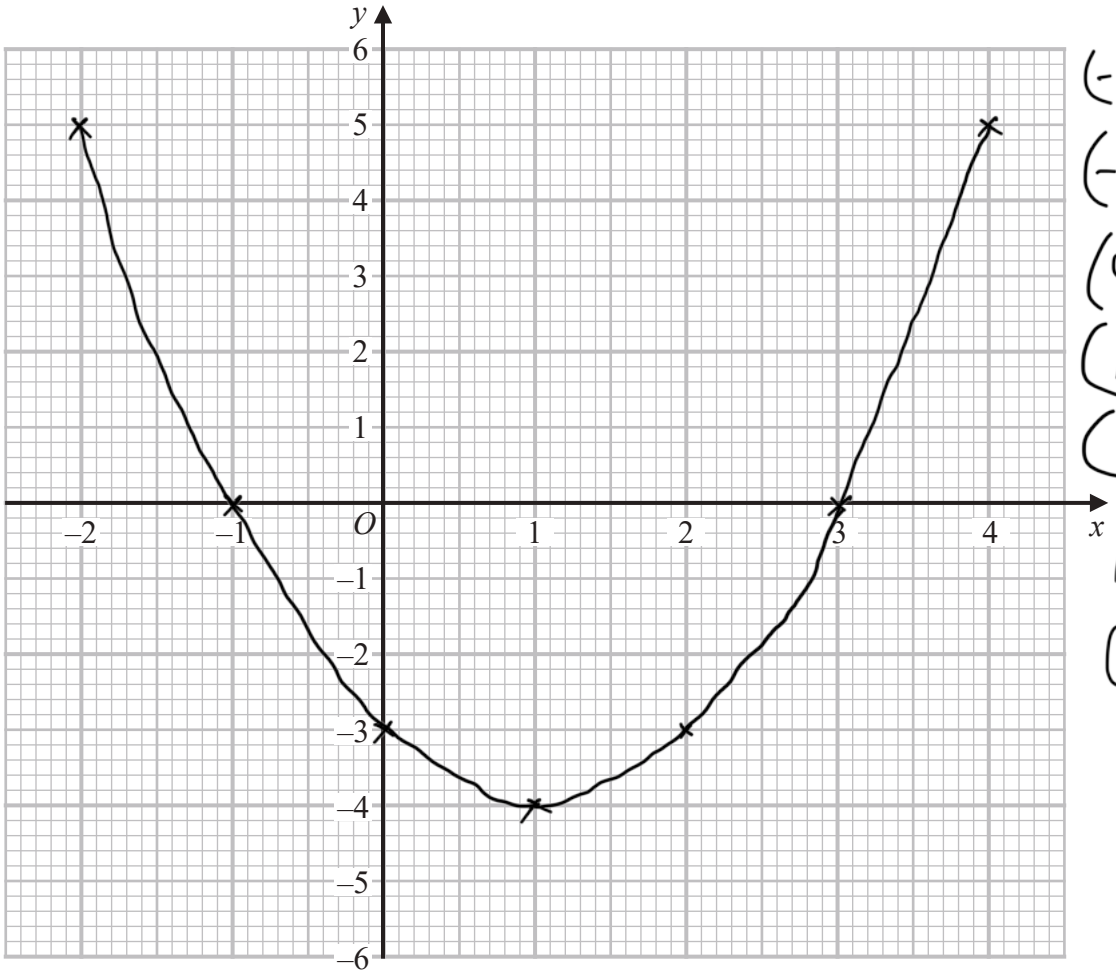
$y = (-2)^2 - 2(-2) - 3$

$y =$

x	–2	–1	0	1	2	3	4
y	5	0	–3	–4	–3	0	5

(2)

(b) On the grid, draw the graph of $y = x^2 - 2x - 3$ for values of x from –2 to 4



(–2, 5)
(–1, 0)
(0, –3)
(1, –4)
(2, –3)
(3, 0)
(4, 5)

(2)

(Total for Question 24 is 4 marks)

25 The cost of a first class stamp increased from 76p to 85p.
The cost of a second class stamp increased from 65p to 66p.

Filip says,

> "The percentage increase in the cost of a first class stamp is more than 7 times the percentage increase in the cost of a second class stamp."

Is Filip correct?
You must show all your working.

% increase = $\frac{\text{Final} - \text{Initial}}{\text{Initial}} \times 100$

1st Class Stamps

$\frac{85 - 76}{76} \times 100$

$\frac{225}{19}\% \approx 11.84\%$

2nd Class Stamps

$\frac{66 - 65}{65} \times 100$

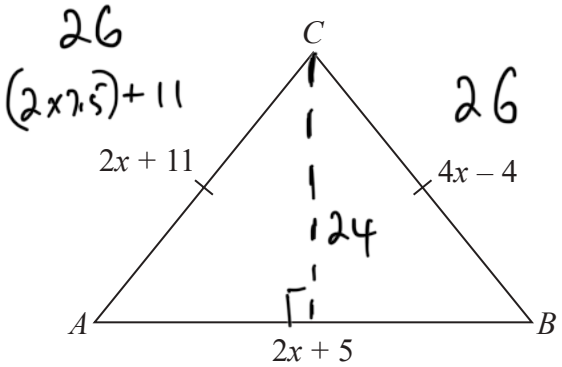
$\frac{20}{13}\%$

$7 \times \frac{20}{13} = \frac{140}{13}\% \approx 10.77\%$

$11.84\% > 10.77\%$ so Filip is incorrect.

(Total for Question 25 is 4 marks)

26 The diagram shows triangle ABC.



In the diagram, all measurements are in centimetres.

$AC = BC$

The perimeter of the triangle is 72 cm.

Work out the area of the triangle.

$2x + 11 = 4x - 4$

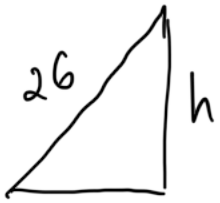
$-2x \quad -2x$

$11 = 2x - 4$

$+4 \quad +4$

$\frac{15}{2} = \frac{2x}{2}$

$7.5 = x$



$26^2 = h^2 + 10^2$

$676 = h^2 + 100$

$-100 \quad -100$

$576 = h^2$

$\sqrt{576} = \sqrt{h^2}$

$24 = h$

$A_{Triangle} = \frac{b \times h}{2}$

$A = \frac{20 \times 24}{2}$

$A = 240 \text{ cm}^2$

240 ..... cm^2

(Total for Question 26 is 5 marks)

27 $1.25 \times 10^{-12} = k \times (4 \times 10^{-20})$

Work out the value of k.
Give your answer in standard form.

$\frac{1.25 \times 10^{-12}}{4 \times 10^{-20}} = k$

$\frac{1.25}{4} \times \frac{10^{-12}}{10^{-20}}$

$0.3125 \times 10^{-12-(-20)}$

0.3125×10^{8}

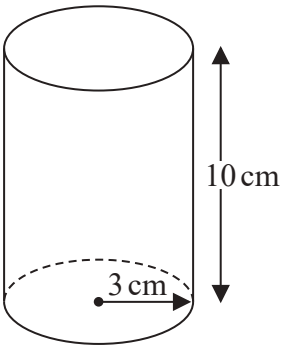
$10 \times 0.3125 \times \frac{10^{8}}{10^{1}}$

3.125×10^{7}

$k =$ 3.125×10^{7}

(Total for Question 27 is 2 marks)

28 The diagram shows a solid cylinder with base radius 3 cm and height 10 cm.



The cylinder is made from steel.
It has a mass of 2250 g.

Work out the density of the steel.
Give your answer correct to 3 significant figures.

$\text{Density} = \frac{\text{mass}}{\text{volume}}$

$V_{\text{cylinder}} = \pi r^2 h$

$V = \pi \times 3^2 \times 10$

$\text{Density} = \frac{2250}{\pi \times 3^2 \times 10}$

$\text{Density} = 7.96 \text{ g/cm}^3$

7.96 g/cm^3

(Total for Question 28 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS