Write your name here

Surname	Other Names

Mathematics

June 2025 Practice Paper 3 (Calculator)
Foundation Tier

Time: 1 hour 30 minutes

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of 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.
- Answer the questions in the spaces provided – there may be more space than you need.
- **Calculators may be used**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working.**

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.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Foundation Tier Formulae Sheet

Perimeter, area and volume

Where a and b are the lengths of the parallel sides and h is their perpendicular separation:

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

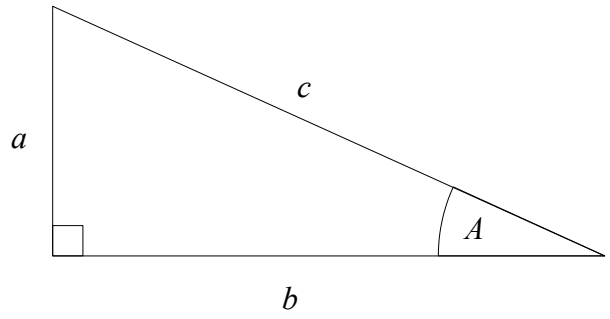
Volume of a prism = area of cross section × length

Where r is the radius and d is the diameter:

Circumference of a circle = $2\pi r = \pi d$

Area of a circle = πr^2

Pythagoras' Theorem and Trigonometry



In any right-angled triangle where a, b and c are the length of the sides and c is the hypotenuse:

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

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:

$$\sin A = \frac{a}{c} \qquad \cos A = \frac{b}{c} \qquad \tan A = \frac{a}{b}$$

Compound Interest

Where P is the principal amount, r is the interest rate over a given period and n is number of times that the interest is compounded:

Total accrued = $P\left(1 + \frac{r}{100}\right)^n$

Probability

Where P (A) is the probability of outcome A and P (B) is the probability of outcome B:

P (A or B) = P (A) + P (B) – P (A and B)

END OF EXAM AID

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Change 2.5 litres to millilitres

2500

(Total for Question 1 is 1 mark)

---

2 Write down the value of the 2 in the number 6024

20

(Total for Question 2 is 1 mark)

---

3 Write down two factors of 14

any two from: 1, 14, 2 and 7

2 and 7

(Total for Question 3 is 1 mark)

---

4 Here is a list of numbers

8 10 20 25 27 36

From the list, write down all the square numbers.

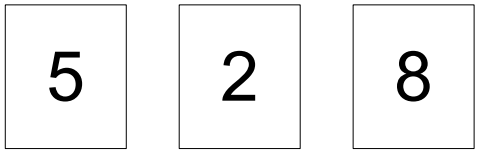
$5 \times 5 = 25$

$6 \times 6 = 36$

25 and 36

(Total for Question 4 is 1 mark)

5 Here are three number cards

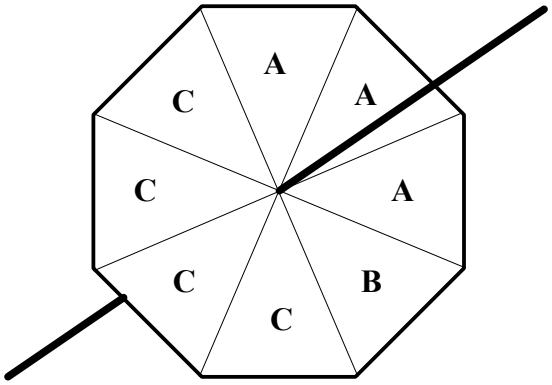


Write down all the possible **two-digit numbers** that can be made using the cards.

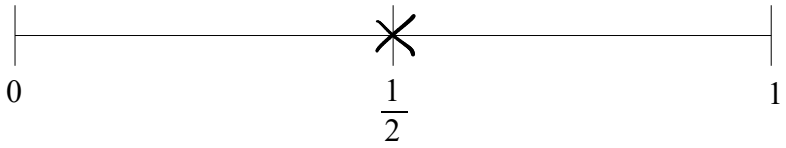
52 25 85
58 28 82

(Total for Question 5 is 2 marks)

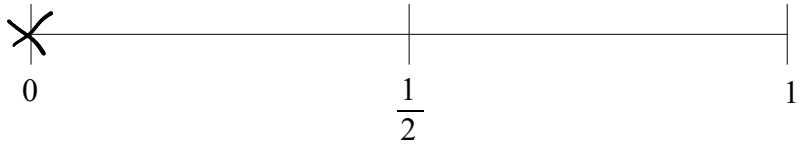
6 Gita spins a fair 8-sided spinner.



(a) On the probability scale, mark with a cross (X) the probability that the spinner will land on **C**.

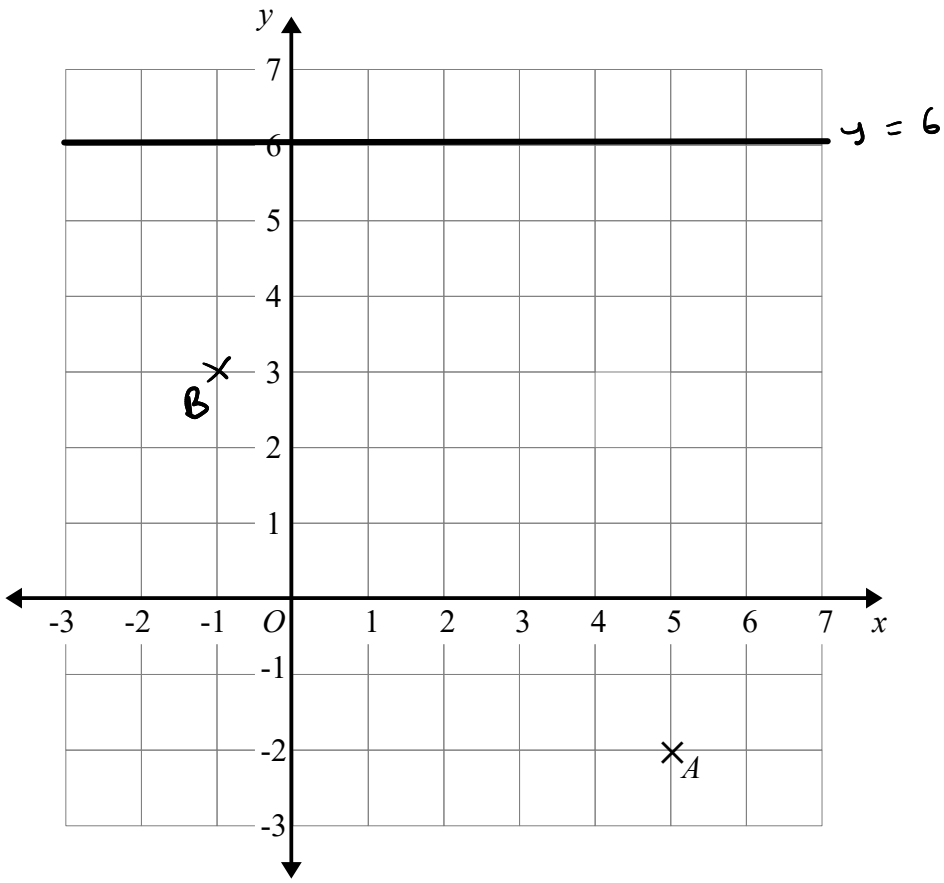


(b) On the probability scale, mark with a cross (X) the probability that the spinner will land on **D**.



(Total for Question 6 is 2 marks)

7



(a) Write down the coordinates of point A.

(5 , −2)

(1)

(b) On the grid mark with a cross (×) the point (–1, 3).
Label this point B.

(1)

(c) On the grid, draw the line with equation $y = 6$

(1)

(Total for question 7 is 3 marks)

8 Write the following fractions in order of size.
Start with the smallest fraction.

$\frac{19}{30}$ $\frac{5}{6}$ $\frac{2}{3}$ $\frac{11}{15}$ $\frac{3}{5}$

$\frac{25}{30}$ $\frac{20}{30}$ $\frac{22}{30}$ $\frac{18}{30}$

(2) (5) (3) (4) (1)

$\frac{3}{5}$ $\frac{19}{30}$ $\frac{2}{3}$ $\frac{11}{15}$ $\frac{5}{6}$

(Total for Question 8 is 2 marks)

9 On Monday, Lucy pays for 2 plane tickets, 7 nights in a hotel and 2 theme park tickets.

	dollars	
each plane ticket	750	× 2 = 1500
each night in a hotel	120	× 7 = 840
each theme park ticket	125	× 2 = 250

Show that Lucy pays more than 2500 dollars on Monday.

1500 + 840 + 250 = 2590

(Total for Question 9 is 3 marks)

10 Last year Kelly's car insurance cost £340

This year her car insurance costs 8% more.

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

340 × 1.08 = £367.20

£ 367.20

(3)

Charlie sells cars.

Each month he is paid £1800 plus a bonus.
The bonus is 2% of the total value of the cars he sells that month.

Last month Charlie was paid £2535

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

2535 − 1800 = 735 (Bonus)

2% of Total = 735

× 50 × 50

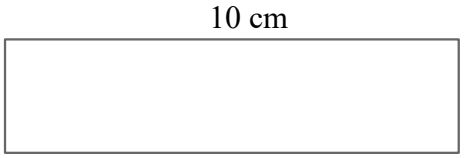
100% of Total = 36750

£ 36750

(3)

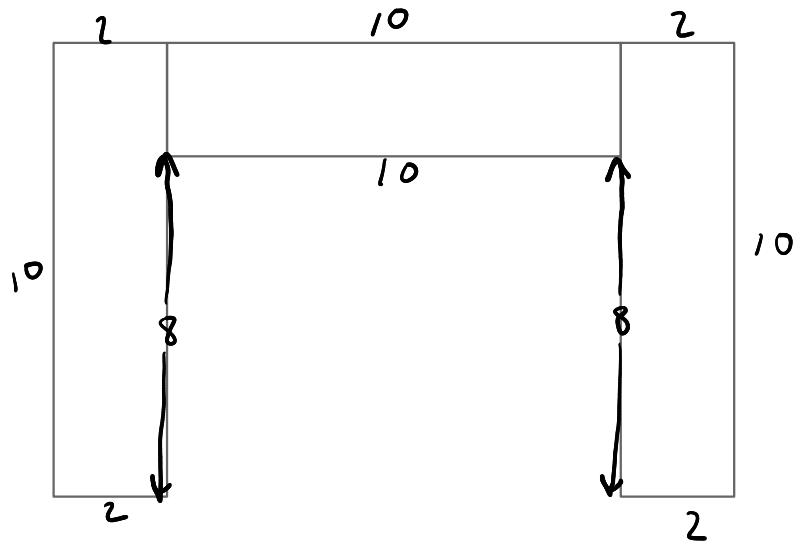
(Total for Question 10 is 6 marks)

11 The diagram shows a rectangle measuring 10 cm by 2 cm.



10 - 2 = 8

A shape is made by placing 3 of these rectangles together as shown in the diagram.



Work out the perimeter of the shape.

2 + 10 + 2 + 10 + 2 + 10 + 2 + 8 + 10 + 8

= 64 cm

64 cm

(Total for Question 11 is 3 marks)

12 (a) Expand and Simplify $2(x - 4) + 5(4 - 3x)$

$2x - 8 + 20 - 15x$

$12 - 13x$

(2)

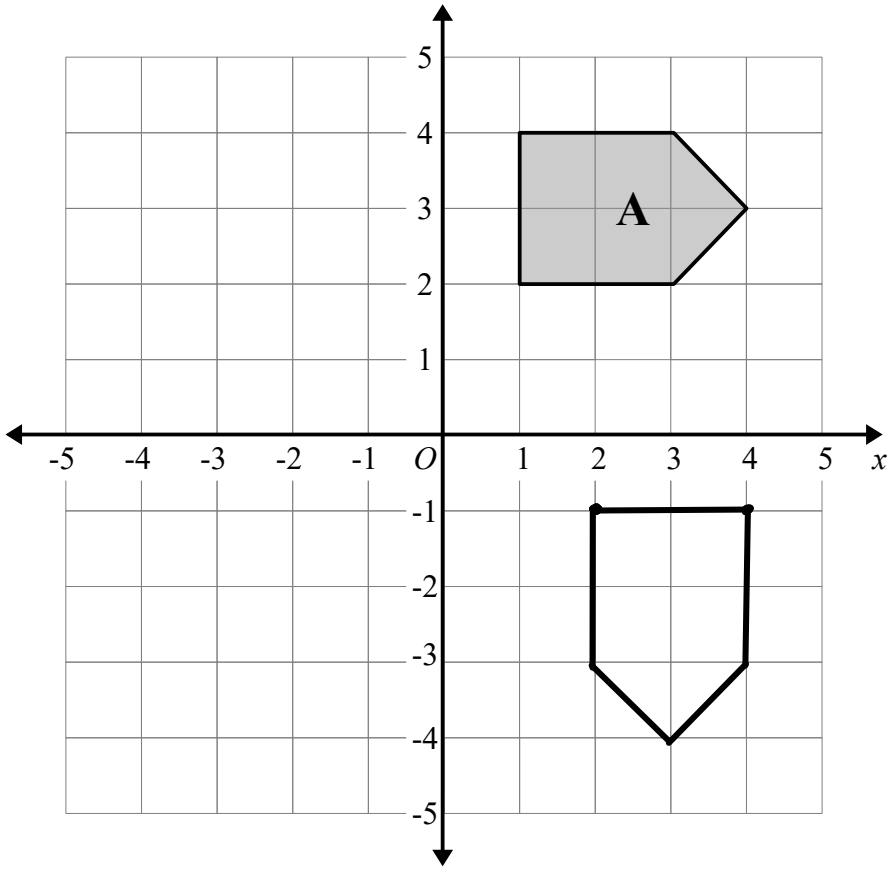
(b) Factorise fully $15x^3 + 6xy^2$

$3x(5x^2 + 2y^2)$

(2)

(Total for Question 12 is 4 marks)

13

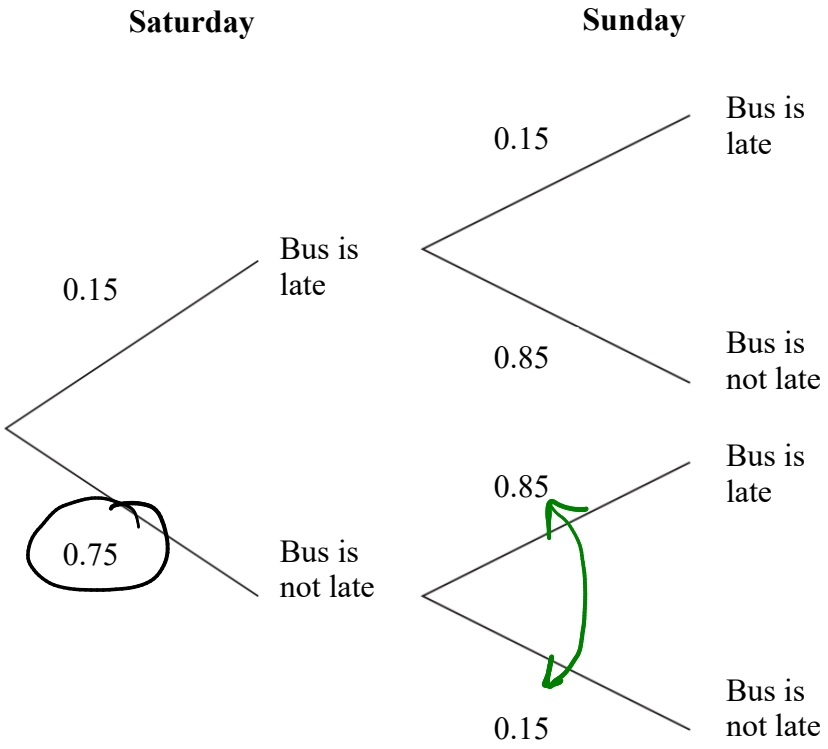


Rotate shape **A** 90° clockwise about (0, 0).

(Total for Question 13 is 2 marks)

14 Bradley gets the bus on Saturday and Sunday.
The probability that Bradley's bus will be late on any day is 0.15

Bradley draws this probability tree for this information.
The diagram is **not** correct.



Write down **two** things wrong with the probability tree diagram.

1 The probability the bus is not late should be 0.85 0.75 + 0.15 ≠ 1

2 On Sunday (after not late on Saturday) the probabilities are the wrong way around It should be late 0.15, not late 0.85

(Total for Question 14 is 2 marks)

15 $m = 5n + 2p$

Make p the subject of the formula.

$m - 5n = 2p$

$\frac{m - 5n}{2} = p$

$p = \frac{m - 5n}{2}$

(Total for Question 15 is 2 marks)

16 Gracie buys a house with a value of £350 000
The value of Gracie's house increases by 3% each year.

Teddy buys a house with a value of £360 000
The value of Teddy's house increases by 1.5% each year.

At the end of 2 years, whose house has the greater value?
You must show how you get your answer.

$350000 \times 1.03^2 = 371315$

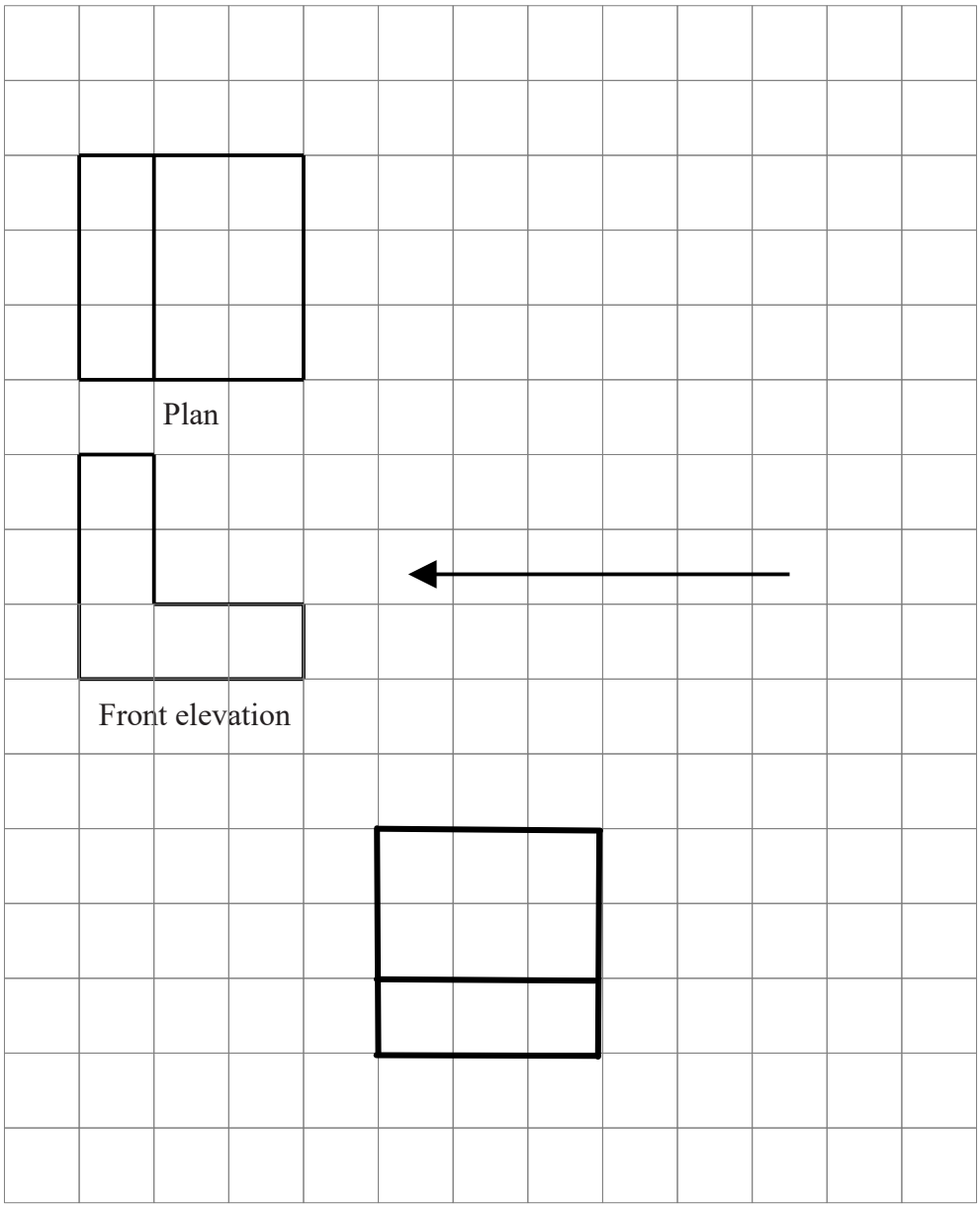
$360000 \times 1.015^2 = 370881$

Gracie's house

(Total for Question 16 is 4 marks)

17 The front elevation and the plan of a solid are shown on the grid.

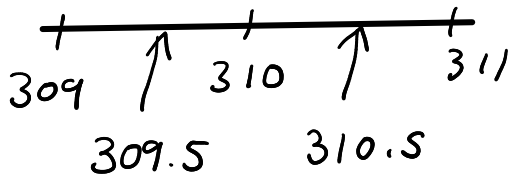
On the grid, draw the side elevation of the solid from the direction of the arrow.



(Total for Question 17 is 2 marks)

18 The height of a building is 310 metres, correct to the nearest metre.

Complete the error interval for the height of the building.



309.5 m ≤ length < 310.5 m

(Total for Question 18 is 2 marks)

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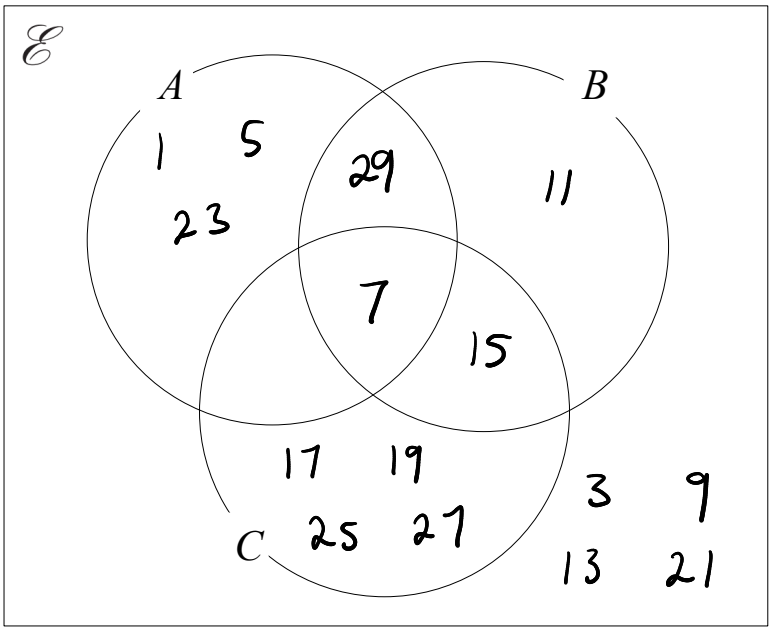
19 $\mathscr{E}$ = {odd numbers less than 30}
A = {~~1, 5, 7, 23, 29~~}
B = {~~7, 11, 15, 29~~}
C = {~~7, 15~~, 17, ~~19, 25~~, 27}

(a) Complete the Venn diagram to represent this information.



(2)

A number is chosen at random from $\mathscr{E}$.

(b) Find the probability that the number is a member of $(A \cap B)$.

$\frac{2}{15}$

(2)

(Total for Question 19 is 3 marks)

20 Use your calculator to work out $\sqrt{\dfrac{\tan 20^\circ + \sin 25^\circ}{\tan 25^\circ - \sin 20^\circ}}$

(a) Write down all the figures on your calculator display.

2.515706913

(2)

(b) Write your answer to part (a) correct to 2 decimal places.

2.52

(1)

(Total for Question 20 is 3 marks)

21

Potatoes
1.25 kg
£1.45

London

Potatoes
2 kg
€3.49

Dublin

In London, 1.25 kg of potatoes cost £1.45
In Dublin, 2 kg of potatoes cost €3.49

The exchange rate is £1 = €1.19
In which city are potatoes better value for money, in London or in Dublin?
You must show how you get your answer.

£1.45 for 1.25 kg
÷1.25

1.45 ÷ 1.25 = 1.16

£1.16 for 1kg

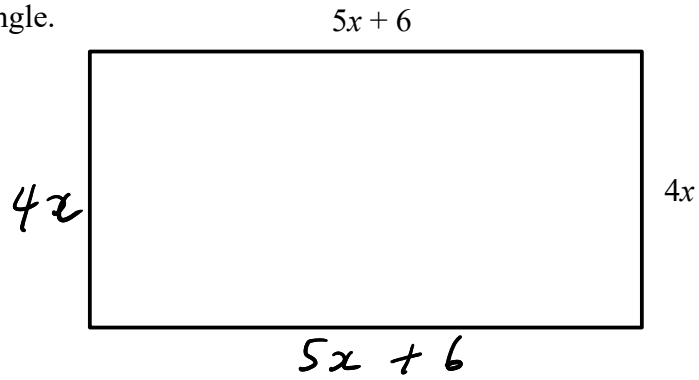
3.49 ÷ 1.19 = 2.93

£2.93 for 2kg ÷2
£1.47 for 1kg

London

(Total for Question 21 is 3 marks)

22 Here is a rectangle.



All measurements are in centimetres.

The perimeter of the rectangle is 57 cm.

Find the area of the rectangle.

$18x + 12 = 57$

$18x = 45$

$x = 2.5$

$4(2.5) = 10$ $\quad$ $5(2.5) + 6 = 18.5$

Area $= 10 \times 18.5$

$= 185$

185 cm^2

(Total for Question 22 is 4 marks)

23 Change a speed of 900 km per hour to metres per second.

900 000 m in 1 hour (60 mins)

÷ 60

15 000 m in 1 min (60 secs)

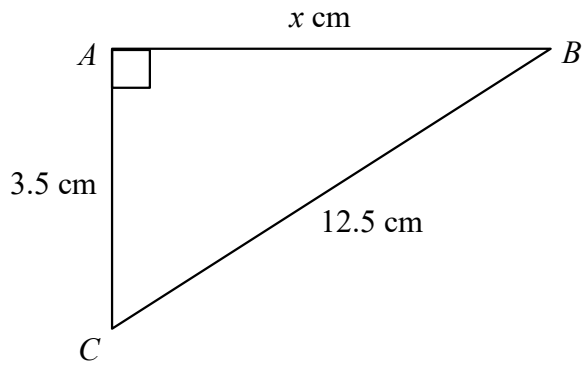
÷ 60

250 m in 1 second

250 metres per second

(Total for Question 23 is 2 marks)

24 Here is a right-angled triangle.



Work out the value of x.

$3.5^2 + x^2 = 12.5^2$

$x^2 = 12.5^2 - 3.5^2$

$x^2 = 144$

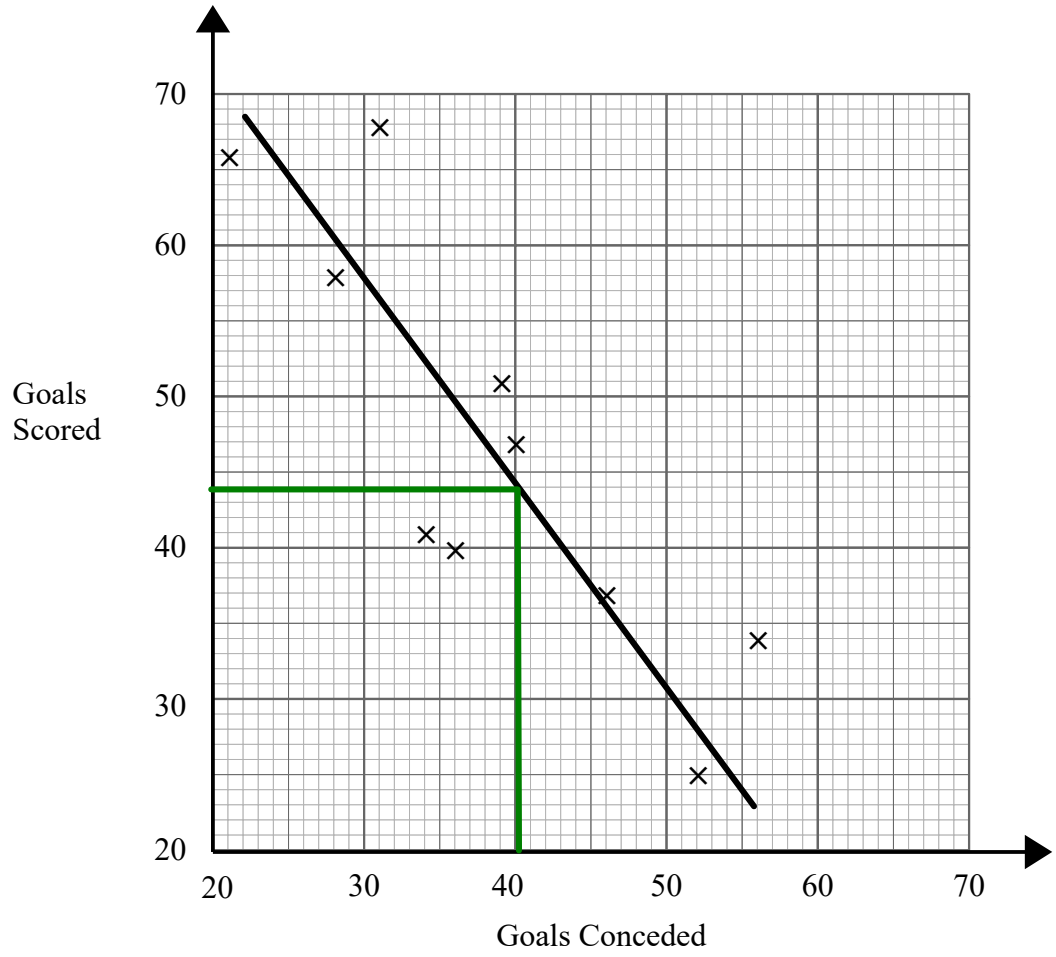
$x = \sqrt{144}$

$x =$ 12

(Total for Question 24 is 2 marks)

25 Gary recorded how many goals 10 football teams scored.
He also recorded how many goals they conceded

The information is shown on the scatter graph.



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

negative

(1)

(b) Another team have scored 44 goals.

Estimate the number of goals this team has conceded.

40

(2)

(Total for Question 25 is 3 marks)

26 Adam is measuring the heights in cm of his tomato plants.

Height (cm)		Frequency
$140 < h \leqslant 150$	145 ×	7
$150 < h \leqslant 160$	155 ×	10
$160 < h \leqslant 170$	165 ×	15
$170 < h \leqslant 180$	175 ×	19
$180 < h \leqslant 200$	190 ×	9
		60

1015
1550
2475
3325
1710
10075

(a) Estimate the mean height.
Give your answer correct to 1 decimal place.

$\frac{10075}{60} = 167.9$

167.9 cm

(3)

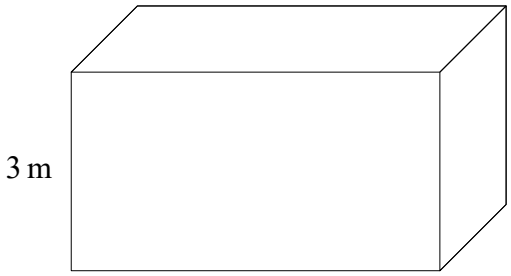
(b) Explain why your answer to part (a) is an estimate.

we do not know the actual heights, we used the midpoints instead.

(1)

(Total for Question 26 is 4 marks)

27 The diagram shows a cuboid.



$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

The cuboid has height 3 m
The volume of the cuboid is 21 m^3
The pressure on the floor due to the cuboid is 25 newtons/m^2

Work out the force exerted by the cuboid on the floor.

volume = area of cross section x height

21 = area x 3

area = 7

$\text{pressure} = \frac{\text{force}}{\text{area}}$

$25 = \frac{\text{force}}{7}$

force = 25 x 7

175 newtons

(Total for Question 27 is 3 marks)

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28 Water flows through each of the hoses that fill a swimming pool at the same rate.

It takes 3 of the hoses 6 hours to fill the swimming pool.

Work out how many hours it would take 2 of the hoses to fill $\frac{3}{4}$ of the swimming pool.

3 x 6 = 18 (18 hours for one hose to fill the pool)

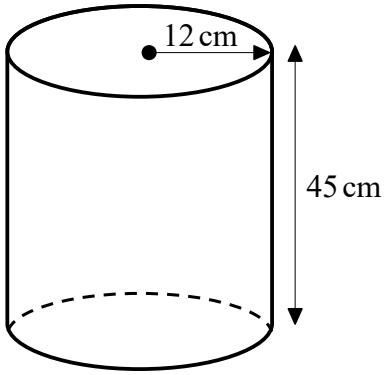
$\frac{18}{2} = 9$ (9 hours for 2 hoses to fill the pool)

$\frac{3}{4}$ or 9 = $\frac{3}{4}$ x 9 = 6.75 hours

6.75 hours

(Total for Question 28 is 3 marks)

29 The diagram shows an empty tank in the shape of a cylinder.



The cylinder has radius 12 cm and height 45 cm.

Water flows into the tank at a rate of 1.8 litres per minute.

1 litre = 1000 cm^3

Calculate the number of minutes it will take to completely fill the tank.
Give your answer correct to the nearest minute.

Volume = $\pi r^2 h$

$= \pi (12)^2 (45)$

$= 20357.52 \ cm^3$

$= 20.35752$ litres

$20.35752 \div 1.8 = 11.3$ minutes

11 minutes

(Total for Question 29 is 4 marks)

30 Solve the simultaneous equations

$$4x + 2y = 12$$

$$2x + 3y = 13 \quad \times 2$$

$$4x + 6y = 26$$

$$4x + 2y = 12$$

$$4y = 14$$

$$y = 3.5$$

$$4x + 2(3.5) = 12$$

$$4x + 7 = 12$$

$$4x = 5$$

$$x = 1.25$$

$x =$ 1.25

$y =$ 3.5

(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS