Please check the examination details below before entering your candidate information

Candidate surname	Other names

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

Centre Number | Candidate Number

Monday 11 November 2019

Afternoon (Time: 1 hour 30 minutes) | Paper Reference **1MA1/3F**

Mathematics

Paper 3 (Calculator)
Foundation Tier

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

Turn over ▶

P58875A

6/1/1/

P 5 8 8 7 5 A 0 1 2 4

Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Write down two factors of 12

Factor → a number which another number can be divided by to give a whole number

3 , 4 ✓

(Total for Question 1 is 1 mark)

2 Find $\frac{1}{3}$ of 30

$\frac{1}{3} \times 30 = 10$

$30 \div 3$

10 ✓

(Total for Question 2 is 1 mark)

3 Write 0.7 as a fraction.

$\frac{7}{10}$ ✓

(Total for Question 3 is 1 mark)

4 Here is a list of numbers.

7 8 15 16 18 22

Write down the number from the list that is a multiple of 6

$18 \div 6 = 3$

18 ✓

(Total for Question 4 is 1 mark)

5 Change 4 kilometres into metres.

1km = 1000m
×4 ×4
4km = 4000m

4000 metres

(Total for Question 5 is 1 mark)

6 Here is a grid of squares.

1	2	3	5
1	2	3	4

Write down the ratio of the number of shaded squares to the number of unshaded squares.

shaded : unshaded
3 : 5

3 : 5

(Total for Question 6 is 1 mark)

7 $w = 4u + 3$

Find the value of w when $u = 8$

$w = 4(8) + 3$
$w = 32 + 3$
$w = 35$

35

(Total for Question 7 is 2 marks)

8 Here are the first five terms of a sequence.

1 (+2) 3 (+3) 6 (+4) 10 (+5) 15 (+6) 21 (+7) 28

6th 7th

Write down the next two terms of the sequence.

21 , 28

(Total for Question 8 is 2 marks)

9 Mrs Brown asked each child in her class which pet they liked best.

Here are her results.

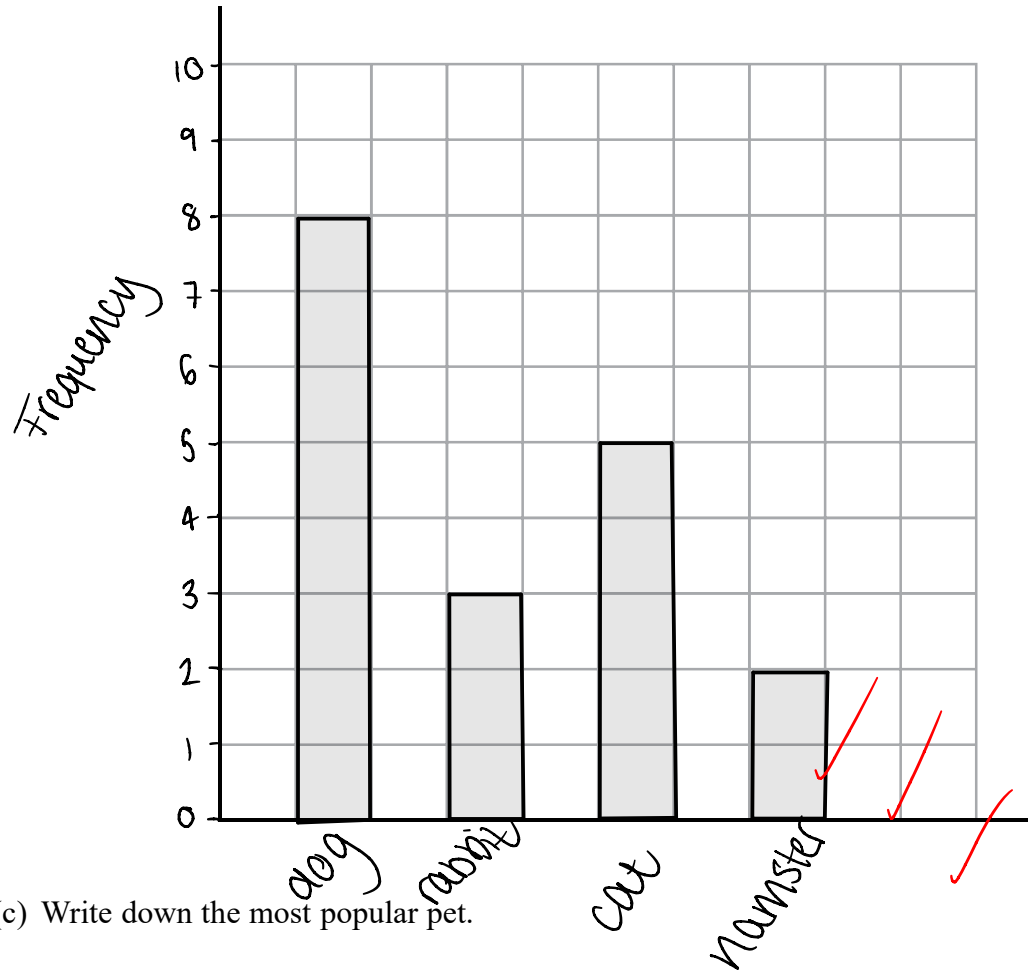
dog	rabbit	cat	dog	dog	hamster
cat	dog	rabbit	hamster	cat	cat
dog	dog	cat	dog	rabbit	dog

(a) Complete the frequency table for this information.

Pet	Tally	Frequency
dog	𝍸 III	8
rabbit	III	3
cat	𝍸	5
hamster	II	2

(2)

(b) On the grid below, draw a bar chart for this information.



(3)

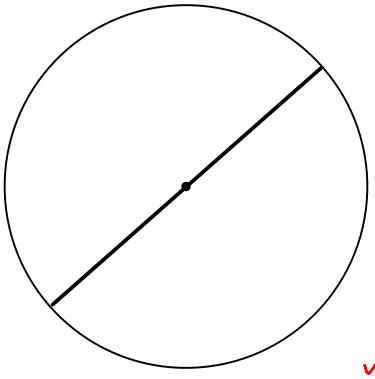
(c) Write down the most popular pet.

dog

(1)

(Total for Question 9 is 6 marks)

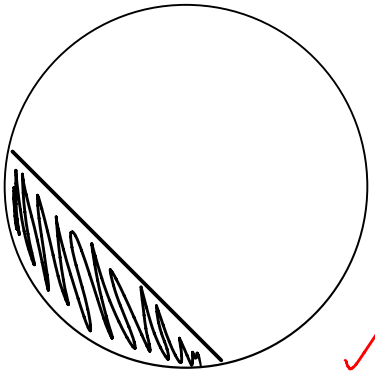
10



(a) On the diagram above, draw a diameter of the circle.

(1)

(b) On the diagram below, draw a segment of the circle.
Shade the segment.



(1)

(Total for Question 10 is 2 marks)

11 Dylan buys 13 bicycle lights for £7.50 each.
He pays with five £20 notes.

(a) How much change should Dylan get?

$13 \times 7 \cdot 50 = £97 \cdot 50$ ✓

$5 \times 20 = £100$

$100 - 97 \cdot 50 = £2 \cdot 50$ ✓

£ 2·50 ✓

(3)

The normal price of a bicycle is £120

In a sale, there is $\frac{1}{5}$ off the normal price of the bicycle.

→ $\frac{4}{5}$ of original price

(b) Work out the price of the bicycle in the sale.

$\frac{4}{5} \times 120 = £96$ ✓

£ 96 ✓

(2)

(Total for Question 11 is 5 marks)

12 Cornflakes are sold in two sizes of box.

Size of box	Weight of cornflakes
small	450 g
large	750 g

Rae buys 3 small boxes of cornflakes and some large boxes of cornflakes.
In total she buys 5850 g of cornflakes.

Work out the number of large boxes of cornflakes Rae buys.

$3 \times 450 = 1350$ g ✓

$5850 - 1350 = 4500$ g

$4500 \div 750 = 6$ ✓

6 ✓

(Total for Question 12 is 3 marks)

13 The stem and leaf diagram below gives information about the ages of people in a social club.

3	1	4	5			
4	0	2	2	5	6	
5	0	1	7	7	8	9
6	3	4	5	9		
7	0	4				

Key: 4|2 represents 42 years

Find the range of these ages.

31 74 ✓

74 - 31 = 43

43 ✓ ..... years

(Total for Question 13 is 2 marks)

14 Here is a rectangle.

Coby has to find the perimeter of this rectangle.

He writes,

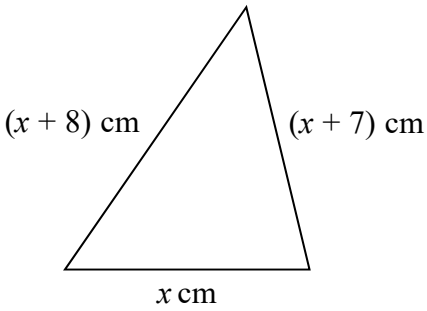
Perimeter = 7×3

(a) What mistake has Coby made?

Worked out the area not the perimeter ✓

(1)

Here is a triangle.



Iram solves a problem about this triangle to find the value of x.

Her answer is

$x = -2$

(b) Explain why Iram's answer must be wrong.

x can not be negative because it is a length ✓

(1)

(Total for Question 14 is 2 marks)

15 There are 800 students at a school.
Each student has either a school dinner or a packed lunch.

31% of the students have packed lunches.

55% of the students are boys.
60% of the boys have school dinners.

How many girls have packed lunches?
You must show all your working.

	PL	SD	total
boys	176	264	440
girls	72		
total	248		800

$0.31 \times 800 = 248$ ✓
$0.55 \times 800 = 440$ ✓
$0.60 \times 440 = 264$
$440 - 264 = 176$ ✓
$248 - 176 = 72$

72 ✓

(Total for Question 15 is 4 marks)

16 In a bag there are only red counters, blue counters, green counters and yellow counters.
A counter is taken at random from the bag.

The table shows the probabilities of getting a red counter or a yellow counter.

Colour	red	blue	green	yellow
Probability	0.4	0.15	0.2	0.25

= 1

the number of blue counters : the number of green counters = 3 : 4

Complete the table.

probability of blue or green

$1 - (0.4 + 0.25)$

$= 1 - 0.65$

$= 0.35$ ✓

probability of blue

$\frac{3}{7} \times 0.35 = 0.15$ ✓

probability of green

$= 1 - (0.4 + 0.15 + 0.25)$

$= 1 - 0.8$ ✓

$= 0.2$

(Total for Question 16 is 4 marks)

17 (a) Complete the table of values for $y = 4x - 6$

x	−1	0	1	2	3	4
y	-10	-6	−2	2	6	10

when $x = -1$ $y = 4(-1) - 6$
$y = -4 - 6$
$y = -10$

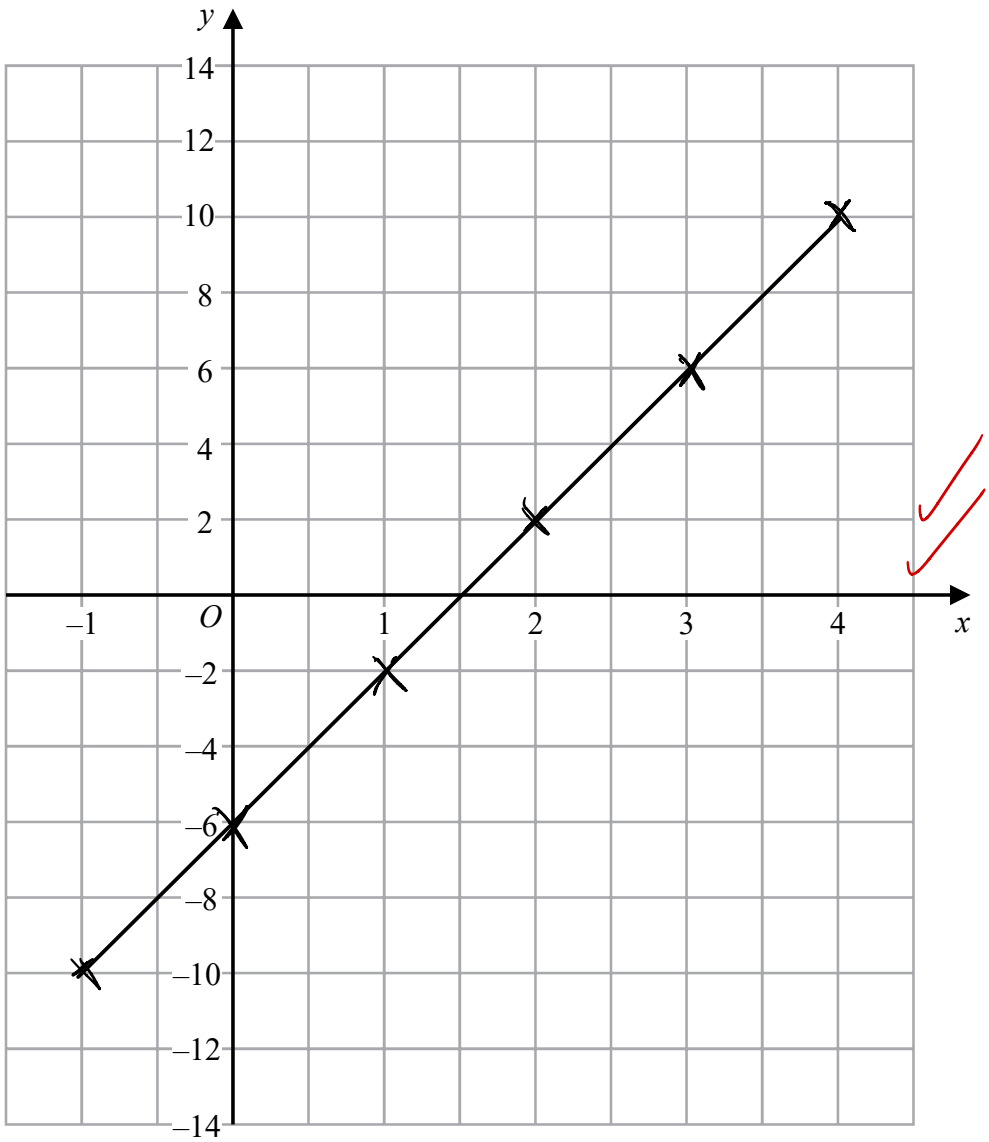
when $x = 2$ $y = 4(2) - 6$
$y = 2$

when $x = 0$ $y = 4(0) - 6$
$y = -6$

when $x = 3$ $y = 4(3) - 6$
$y = 6$

(2)

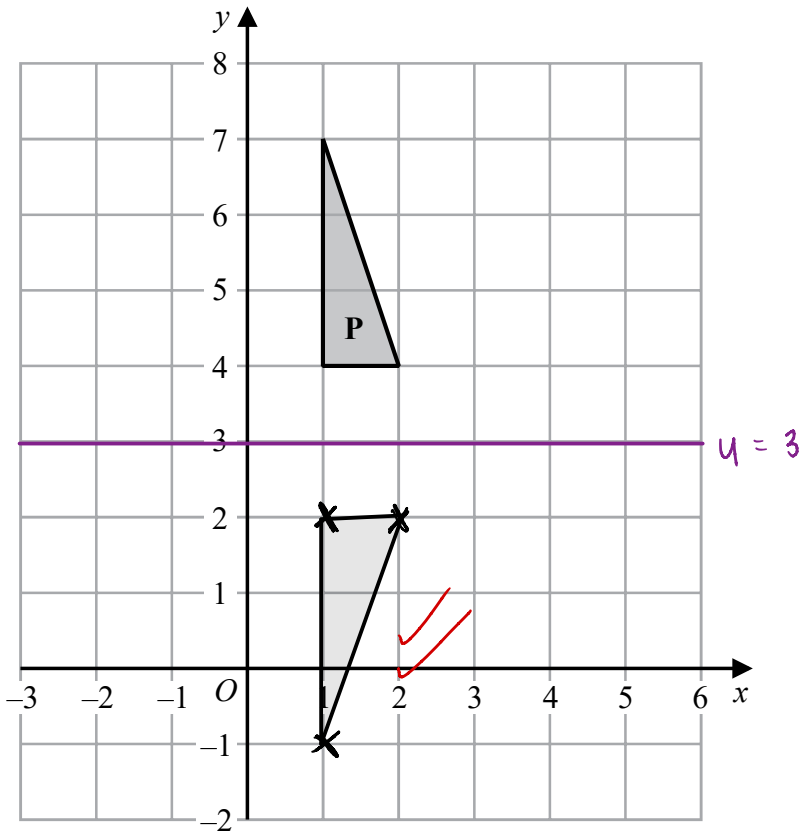
(b) On the grid, draw the graph of $y = 4x - 6$ for values of x from −1 to 4



(2)

(Total for Question 17 is 4 marks)

18



Reflect shape **P** in the line $y = 3$

(Total for Question 18 is 2 marks)

19 Solve $4(x - 6) = 44$

$4(x-6) = 44$

$4x - 24 = 44$

$(+24)\quad(+24)$

$4x = 68$

$(\div 4)\quad(\div 4)$

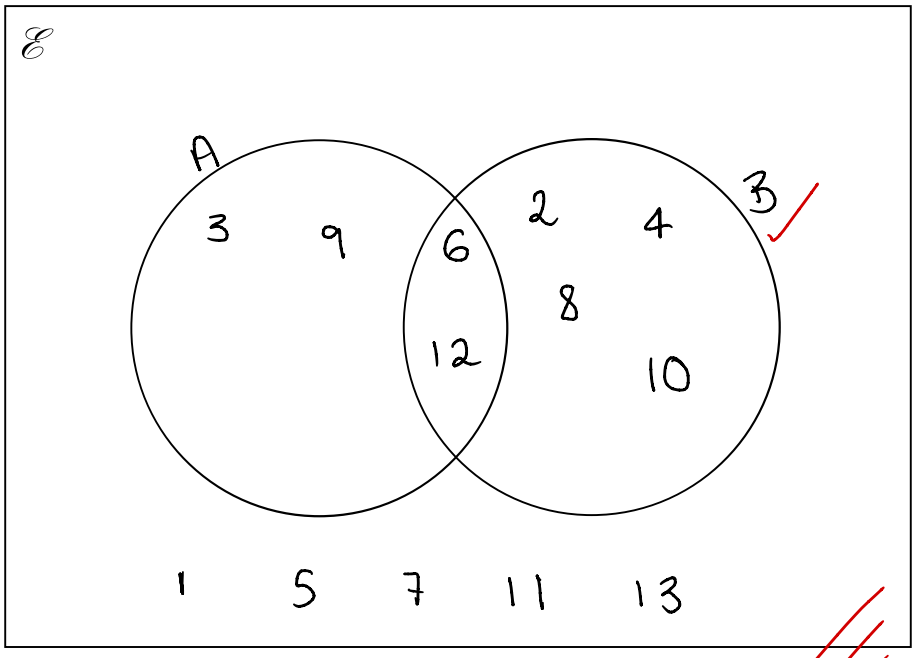
$x = 17$

$x =$ 17

(Total for Question 19 is 2 marks)

20 $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13\}$
$A = \{\text{multiples of 3}\}$
$B = \{\text{even numbers}\}$

Complete the Venn diagram for this information.



(Total for Question 20 is 4 marks)

21 Franco buys a house for £146 500
He sells the house for £158 220

Calculate the percentage profit Franco makes.

158220 − 146500 = £11 720 ✓

$\frac{11\,720}{146500} \times 100 = 8\%$ ✓

8 ✓ %

(Total for Question 21 is 3 marks)

22 (a) Expand and simplify $(x + 5)(x - 9)$

$(x+5)(x-9)$

$= x^2 - 9x + 5x - 45$

$= x^2 - 4x - 45$

$x^2 - 4x - 45$

(2)

(b) Factorise fully $9x^2 + 6x$

$= 3(3x^2 + 2x)$

$= 3x(3x + 2)$

$3x(3x + 2)$

(2)

(Total for Question 22 is 4 marks)

23 (a) Use your calculator to work out $\dfrac{29^2 - 4.6}{\sqrt{35 - 1.9^3}}$

Write down all the figures on your calculator display.

$\frac{\square}{\square}$

$29^2 - 4 \cdot 6$ (down arrow) then $\sqrt{\square}$

$\square$

$\dfrac{29^2 - 4 \cdot 6}{\sqrt{35 - 1 \cdot 9^3}} = 157.668255$

257.668255

(2)

(b) Write your answer to part (a) correct to 4 significant figures.

257.668255

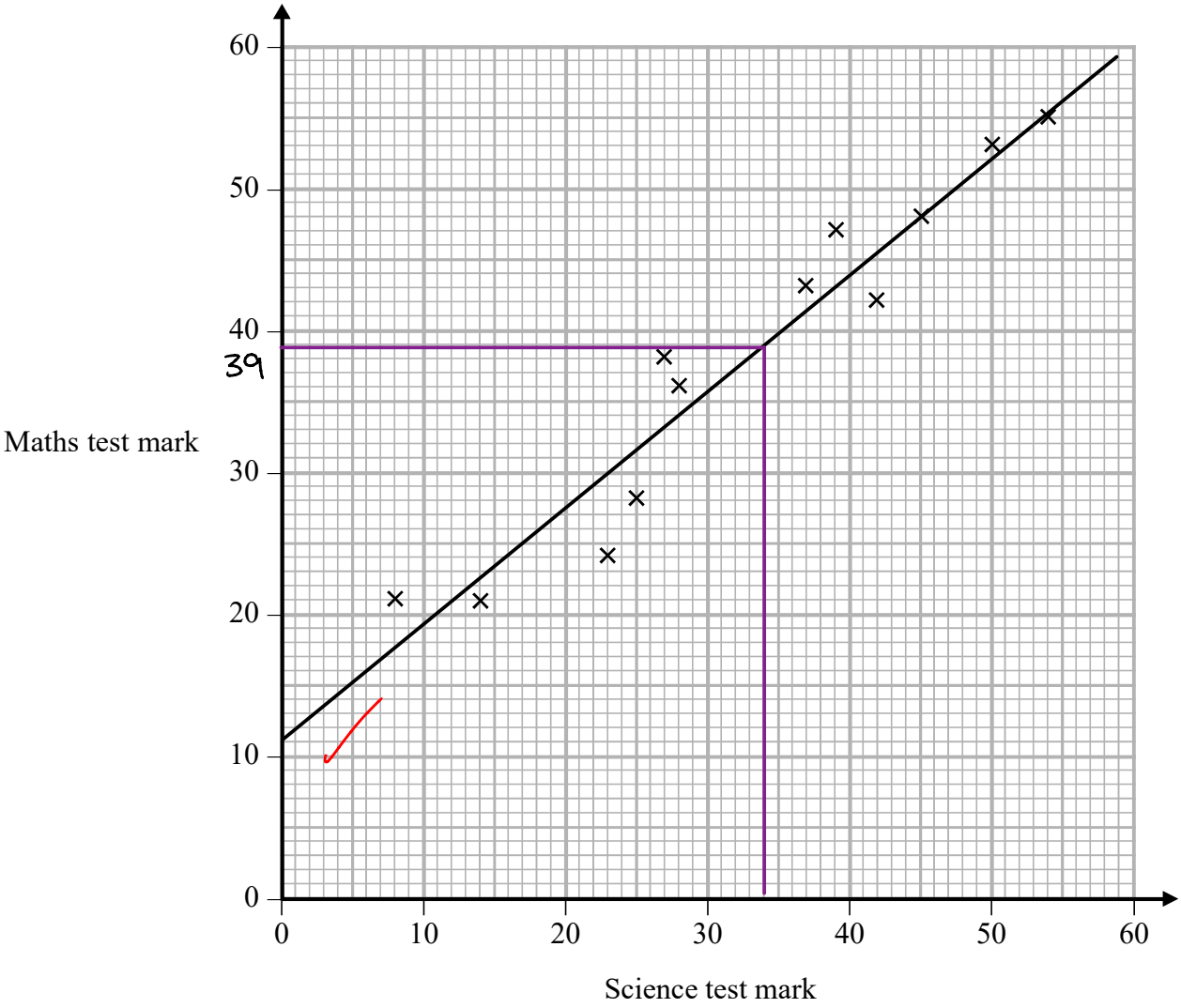
$= 257.7$

257.7

(1)

(Total for Question 23 is 3 marks)

24 The scatter graph shows information about the marks a group of students got in a Science test and in a Maths test.



Jamie got a mark of 34 in the Science test.

Using the scatter graph, find an estimate for Jamie's mark in the Maths test.

39 ✓

(Total for Question 24 is 2 marks)

25 The table gives information about the times taken, in seconds, by 18 students to run a race.

Time (t seconds)	Frequency
$5 < t \leqslant 10$	1
$10 < t \leqslant 15$	2
$15 < t \leqslant 20$	7
$20 < t \leqslant 25$	8

middle
7.5
12.5
17.5
22.5

Work out an estimate for the mean time.
Give your answer correct to 3 significant figures.

$1 \times 7.5 + 2 \times 12.5 + 7 \times 17.5 + 8 \times 22.5$
$= 335$ ✓

$\frac{335}{18} = 18.6111\ldots$ ✓
$= 18.6$ (3.s.f.)

18.6 ✓ seconds

(Total for Question 25 is 3 marks)

26 Write 37 cm^3 in mm^3

1cm = 10mm

$1cm^3 = 10^3 mm^3$

×37 ↓ ↓

$37cm^3 = 37000mm^3$

37000 ✓ ..... mm^3

(Total for Question 26 is 1 mark)

---

27 Nimer was driving to a hotel.
He looked at his Sat Nav at 13 30

Time	13 30
Distance to destination	65 miles

Nimer arrived at the hotel at 14 48

Work out the average speed of the car from 13 30 to 14 48
You must show all your working.

distance
time

13:30
↓ + 1hr
14:30
↓ + 18mins
14:48

time 1hr 18mins ✓ = 1.3hrs ✓

60 mins in 1hr
↓ ×0.3 ↓
18mins = 0.3hrs

$\text{speed} = \frac{\text{distance}}{\text{time}}$

$\text{speed} = \frac{65}{1.3}$ ✓

speed = 50 mph

50 ✓ ..... mph

(Total for Question 27 is 4 marks)

---

28 (a) Write 32 460 000 in standard form.

(value between 1 and 10) $\times 10^x$

32 460 000.

3.246×10^7

3.246×10^7 ✓

(1)

(b) Write 4.96×10^{-3} as an ordinary number.

00004.96

$= 0.00496$

0.00496 ✓

(1)

Asma was asked to compare the following two numbers.

$A = 6.212 \times 10^8$ and $B = 4.73 \times 10^9$

She says,

"6.212 is bigger than 4.73 so A is bigger than B."

(c) Is Asma correct?
You must give a reason for your answer.

No, B is larger because the power of 10 is greater ✓

(1)

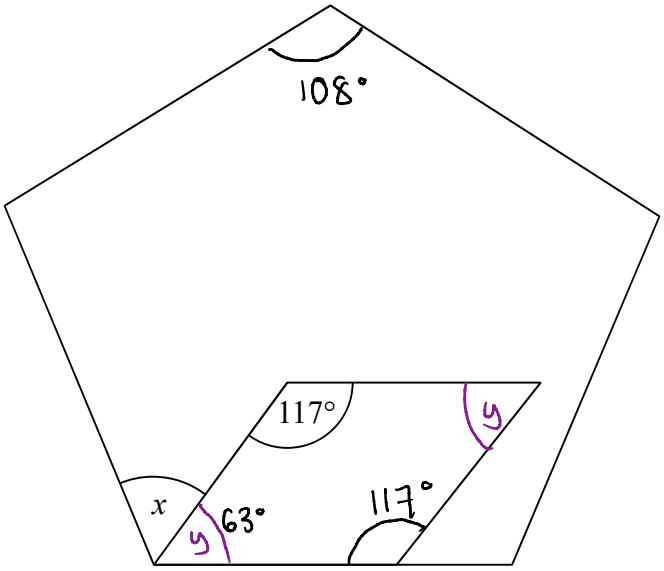
(Total for Question 28 is 3 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

29 The diagram shows a regular pentagon and a parallelogram.



Work out the size of the angle marked x.
You must show all your working.

Sum of interior angles = (n° of sides − 2) × 180
= (5 − 2) × 180
= 3 × 180
= 540°

$\frac{540}{5} = 108°$

In parallelograms opposite angles are equal

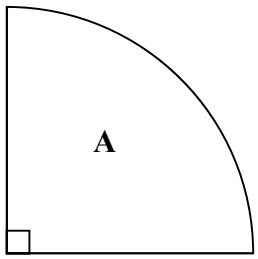
$117 + 117 + 2y = 360$
$234 + 2y = 360$
$(-234)\ (-234)$
$2y = 126$
$(\div 2)\ (\div 2)$
$y = 63°$

$x + y = 108°$
$x + 63 = 108$
$(-63)\ (-63)$
$x = 45°$

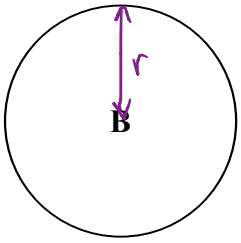
45 °

(Total for Question 29 is 4 marks)

30 **A** is in the shape of a quarter circle of radius 15 cm.
B is in the shape of a circle.



15 cm



The area of **A** is 9 times the area of **B**.

Show that the radius of **B** is 2.5 cm.

Area $= \pi \times r^2$

Area of shape A $= \frac{\pi r^2}{4}$

Area of A $= 9 \times$ Area of B

Area of A $= \frac{\pi \times 15^2}{4}$

$= \frac{225\pi}{4}$

$= 56.25\pi$ ✓

$56.25\pi = 9 \times \pi r^2$

$(\div \pi)$ $(\div \pi)$

$56.25 = 9r^2$

$(\div 9)$ $(\div 9)$ ✓

$6.25 = r^2$

$(\sqrt{})$ $(\sqrt{})$

$\pm 2.5 = r$

(r must be positive)

$r = 2.5$ ✓

(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

BLANK PAGE

BLANK PAGE