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)

Wednesday 8 November 2023

Morning (Time: 1 hour 30 minutes)

Paper reference **1MA1/1F**

Mathematics

PAPER 1 (Non-Calculator)
Foundation Tier

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, Formulae Sheet (enclosed). 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 not be used**.

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 ▶

P69525A

P 6 9 5 2 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 Here is a list of numbers.

2 4 4 7 8

Work out the range of these numbers.

largest - smallest

8 - 2

6

(Total for Question 1 is 1 mark)

2 Work out 120 – 89

$$\begin{array}{r} {}^{0}\not{1}\,{}^{11}\not{2}\,{}^{1}0 \\ -\quad 8\ 9 \\ \hline 3\ 1 \end{array}$$

31

(Total for Question 2 is 1 mark)

3 Simplify $3 \times a \times 4$

3 x 4 = 12

12 x a = 12a

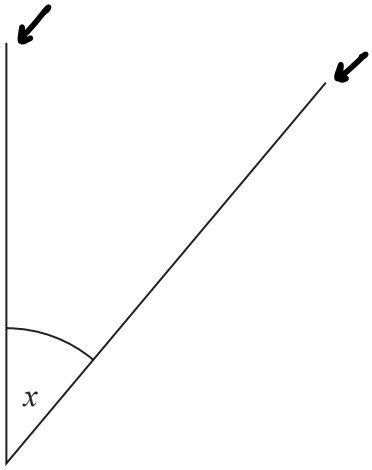
12a

(Total for Question 3 is 1 mark)

4 Measure the size of the angle marked x.

PROTRACTOR

Read from 0



40 °

(Total for Question 4 is 1 mark)

5 Work out $\frac{1}{5}$ of 300

300 ÷ 5 = 60

60

(Total for Question 5 is 1 mark)

6 There are 3 litres of oil in a can.
Jermaine uses 700 millilitres of the oil.

Work out the amount of oil left in the can.
Give your answer in millilitres.

1L = 1000ml
x1000

3L x 1000 = 3000ml

3000 - 700 = 2300ml

2300 millilitres

(Total for Question 6 is 3 marks)

7 Matt is drawing a scale diagram.

1 cm represents 5 m.

He draws a line 3 cm long.

(a) What real distance does the line represent?

1cm = 5m
×5
3cm × 5 = 15m

15 m

(1)

The real distance between two points is 20 m.

(b) What is the distance between the two points on the scale diagram?

1cm = 5m
÷5
20m ÷ 5 = 4cm

4 cm

(1)

(Total for Question 7 is 2 marks)

8 Miss Bailey asked 24 students where they each wanted to go on a school trip.

Here are the results.

museum	castle	castle	farm
farm	castle	farm	farm
castle	farm	castle	castle
castle	farm	castle	museum
museum	farm	castle	museum
museum	museum	castle	castle

(a) Complete the frequency table.

Place	Tally	Frequency
castle	𝍸 𝍸 |	11
farm	𝍸 ||	7
museum	𝍸 |	6

(2)

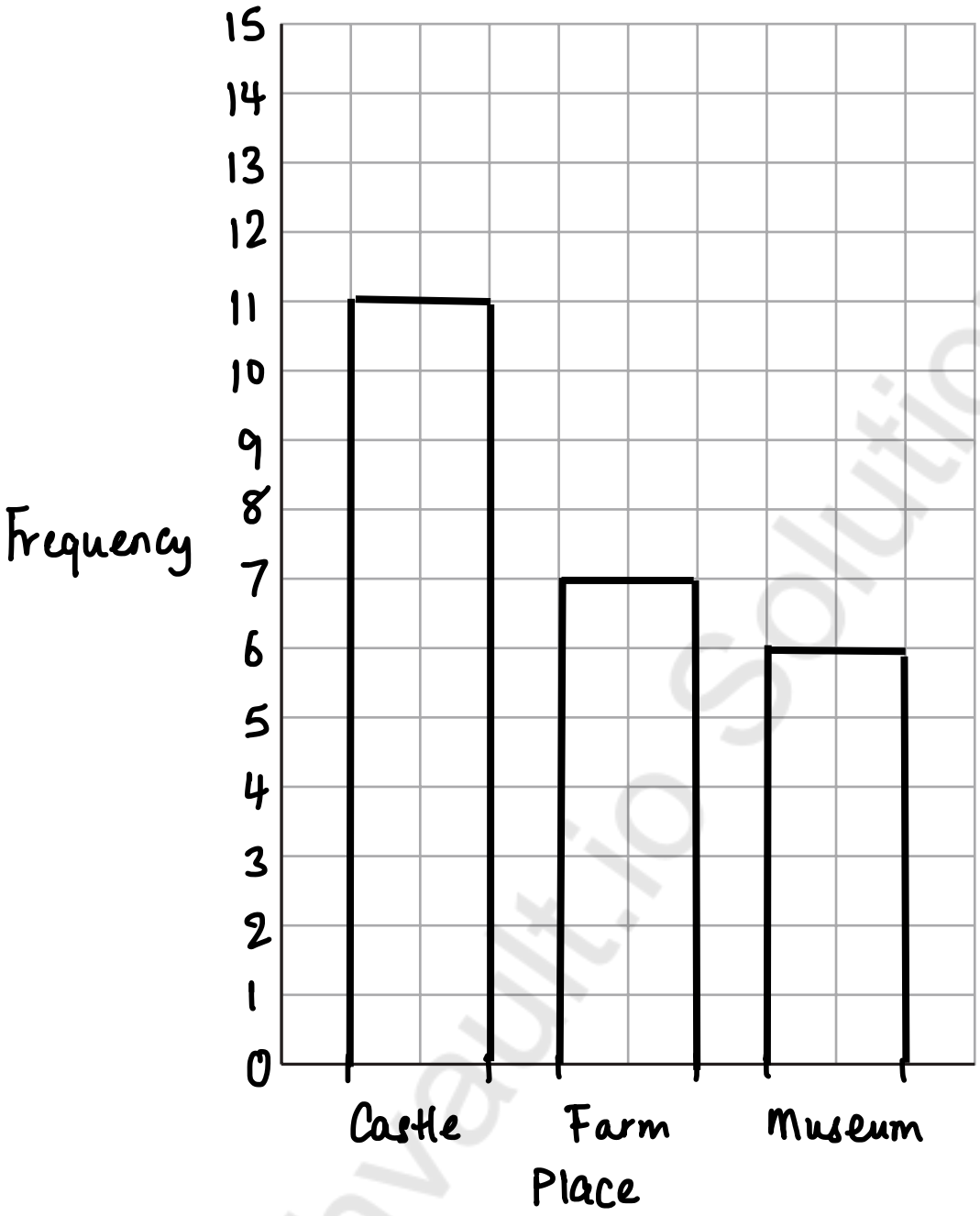
(b) Write down the place that is the mode.

most common

Castle

(1)

(c) Draw a bar chart to show the results.



(3)

(Total for Question 8 is 6 marks)

9 Selina has a bag of 22 counters.

5 of the counters are blue.
9 of the counters are red.
8 of the counters are pink.

Selina takes at random a counter from the bag.

Write down the probability that Selina

(i) takes a red counter,

$p(\text{red}) = \frac{9}{22}$

$\frac{9}{22}$

(1)

(ii) does **not** take a pink counter,

$22 - 8 = 14$

$p(\text{not pink}) = \frac{14}{22}$

$\frac{14}{22}$

(1)

(iii) takes a white counter.

$p(\text{white}) = 0$

0

(1)

(Total for Question 9 is 3 marks)

10 Here are the ingredients needed to make 20 peanut butter cookies.

Makes 20 cookies
250 g peanut butter
200 g sugar
2 small eggs

×3 → 60 cookies

Derek wants to make 60 cookies.

He has 900 g of peanut butter.

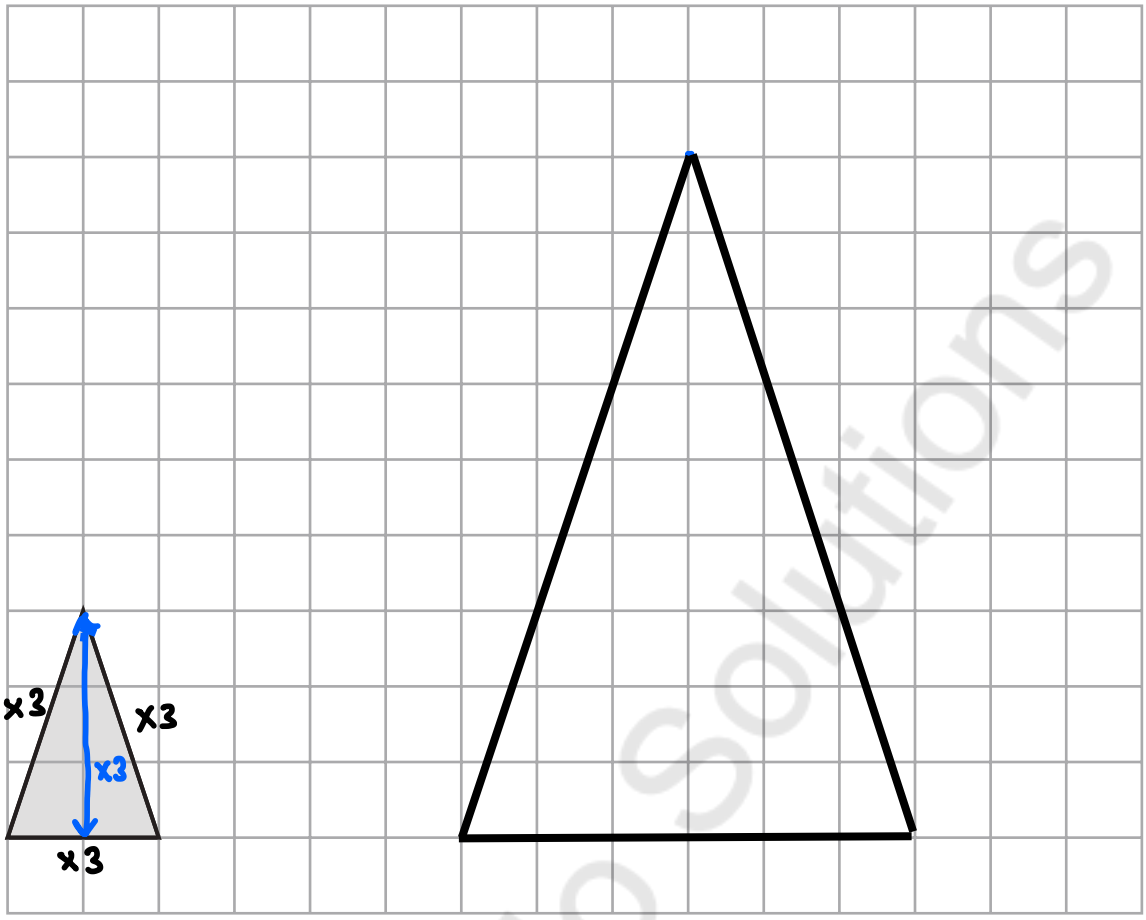
Does Derek have enough peanut butter to make 60 cookies?
You must show how you get your answer.

250g x 3 = 750g

900g > 750g so Derek has enough.

(Total for Question 10 is 3 marks)

11



On the grid, draw an enlargement of the triangle with a scale factor of 3

(Total for Question 11 is 2 marks)

12 $P = 2g + 4h$

(a) (i) Work out the value of P when $g = 3$ and $h = 5$

$P = 2g + 4h$

$P = 2(3) + 4(5)$

$P = 6 + 20$

$P = 26$

$P =$ 26

(2)

(ii) Work out the value of g when $P = 38$ and $h = 3$

$P = 2g + 4h$

$38 = 2g + 4(3)$

$38 = 2g + 12$

$-12 \quad -12$

$26 = 2g$

$\div 2 \quad \div 2$

$13 = g$

$g =$ 13

(2)

$V = 3r - q$

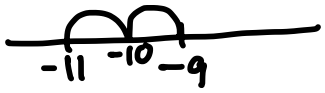
(b) Work out the value of V when $r = -3$ and $q = 2$

$V = 3r - q$

$V = 3(-3) - (2)$

$V = -9 - 2$

$V = -11$



$V =$ −11

(2)

(Total for Question 12 is 6 marks)

13 Chloe is making scrunchies.

Chloe has a large number of hair bands.
Each hair band costs 8p.

She buys 100 g of wool for £3

Chloe uses 1 hair band and 5 g of wool to make each scrunchy.
She makes as many scrunchies as she can.

Work out the total cost of each scrunchy that she makes.
Give your answer in pence.

Wool

100g ÷ 5g = 20 scrunchies

£3 × 100 = 300p

300p ÷ 20 = 15p per scrunchie

£1 = 100p
×100

1 hair band + 5g wool

8p + 15p = 23p

23 p

(Total for Question 13 is 4 marks)

14 On the grid, draw the graph of $y = 4x - 1$ for values of x from -2 to 2

x	-2	-1	0	1	2
y	-9	-5	-1	3	7

$y = 4(2) - 1$
$= 8 - 1$
$= 7$

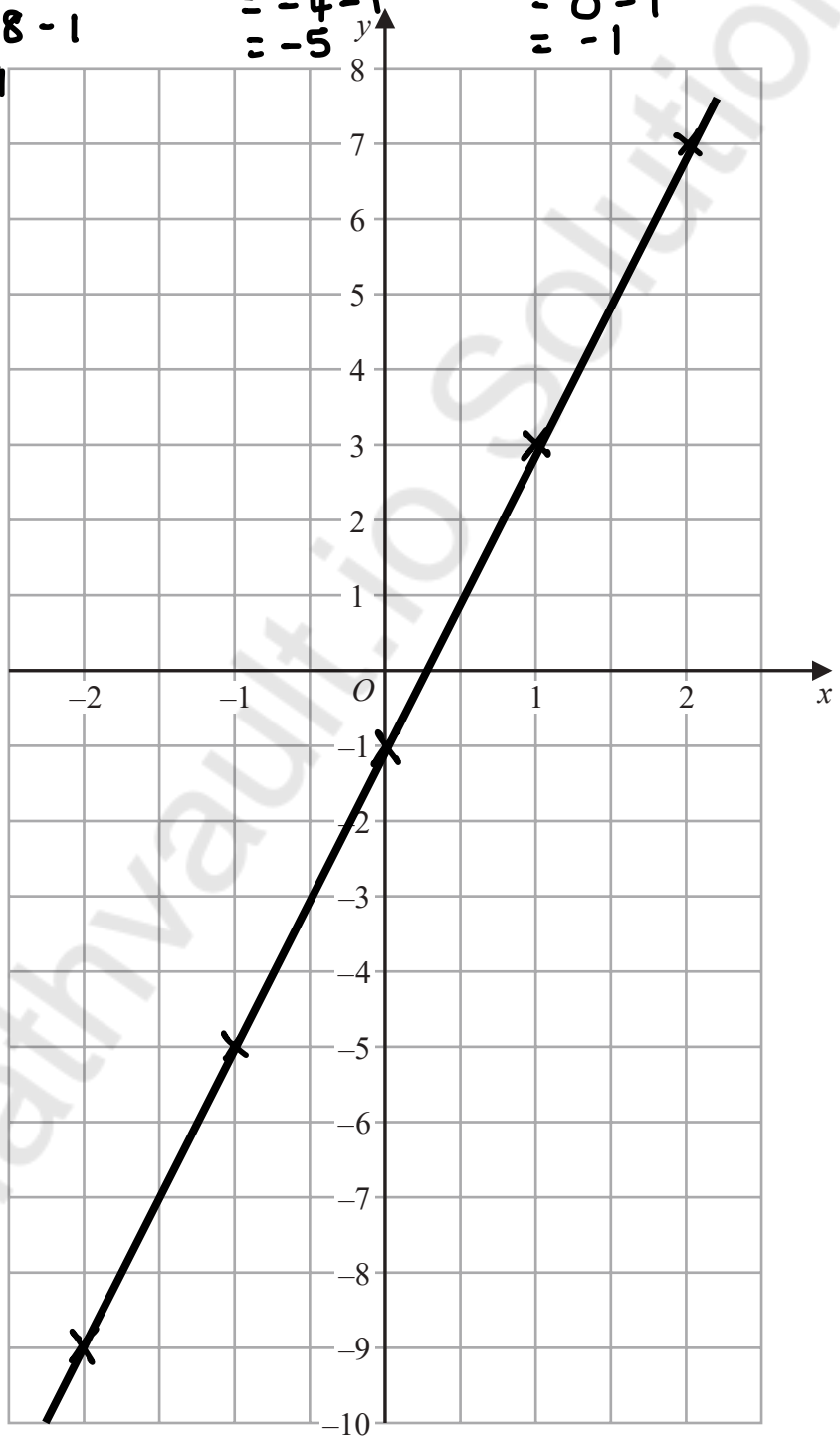
$y = 4(-2) - 1$
$= -8 - 1$
$= -9$

$y = 4(-1) - 1$
$= -4 - 1$
$= -5$

$y = 4(0) - 1$
$= 0 - 1$
$= -1$

$y = 4(1) - 1$
$= 4 - 1$
$= 3$

$(-2, -9)$
$(-1, -5)$
$(0, -1)$
$(1, 3)$
$(2, 7)$



(Total for Question 14 is 3 marks)

15 Steve is buying a car.
The car costs £12 000

Steve pays 25% of the cost as a deposit. ← initial
He pays the rest of the cost in 20 equal monthly payments.

How much is each monthly payment?

100% ÷ 4 = 25%

25% of 12,000

12,000 ÷ 4 = £3,000 (deposit)

12,000 − 3,000 = £9,000

£9,000 ÷ 20 = £450

$$20 \overline{)\,9^{9}0^{10}00} \quad 0450$$

£ 450

(Total for Question 15 is 4 marks)

16 Shah takes an exam.
The exam is out of 60 marks.

Shah needs to score at least 70% of the marks to pass the exam.
He scores 45 marks.

Show that Shah passes the exam.

70% of 60 = 42

10% of 60 = 60 ÷ 10 = 6 (×7)

100% ÷ 10 = 10%

45 > 42

(Total for Question 16 is 2 marks)

17 Work out $\frac{3}{5} \div \frac{1}{6}$

Give your answer as a mixed number.

K C F

$\frac{3}{5} \div \frac{1}{6}$

$\frac{3}{5} \times \frac{6}{1} = \frac{18}{5} = 3\frac{3}{5}$

$3\frac{3}{5}$

(Total for Question 17 is 3 marks)

18 Work out 6.3×2.4

×10 ×10

63 × 24

$$\begin{array}{r} {}^{1}6\ 3 \\ \times\ 2\ 4 \\ \hline {}^{1}2\ 5\ 2 \\ +\ 1\ 2\ 6\ 0 \\ \hline 1\ 5\ 1\ 2 \end{array}$$

÷100 → 15.12

15.12

(Total for Question 18 is 3 marks)

19 (a) (i) Write down the value of 5^0

$x^0 = 1$

1

(1)

(ii) Write down the value of 5^{-2}

$x^{-a} = \frac{1}{x^a}$

$5^{-2} = \frac{1}{5^2} = \frac{1}{25}$

$\frac{1}{25}$

(1)

(b) Write $\frac{2^5 \times 2^4}{2^3}$ in the form 2^n where n is an integer.

$2^5 \times 2^4 = 2^{4+5} = 2^9$

$x^a \times x^b = x^{a+b}$

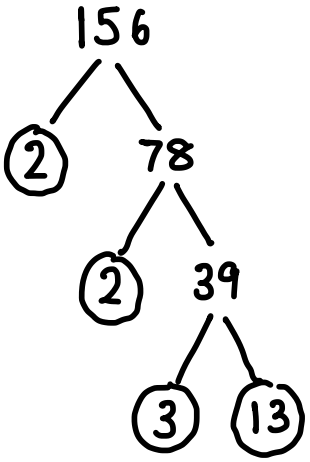
$\frac{2^9}{2^3}$ ← ÷ $\frac{x^a}{x^b} = x^{a-b}$ $\frac{2^9}{2^3} = 2^{9-3}$ 2^6

(2)

(Total for Question 19 is 4 marks)

20 (a) Write 156 as a product of its prime factors.

$$2 \overline{)156} \quad 78$$

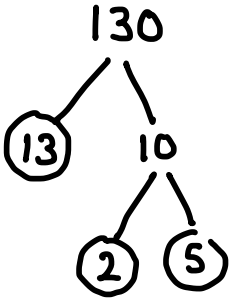


$2 \times 2 \times 3 \times 13$

$2 \times 2 \times 3 \times 13$

(2)

(b) Find the highest common factor (HCF) of 156 and 130



$130 = 2 \times 5 \times 13$

$156 = 2 \times 2 \times 3 \times 13$

$HCF = 2 \times 13$

$= 26$

26

(2)

(Total for Question 20 is 4 marks)

21 The mean length of 5 sticks is 4.2 cm.

Nawal measured the length of one of the sticks as 7 cm.

(a) Work out the mean length of the other 4 sticks.

mean = $\frac{\text{total length}}{\text{no. of sticks}}$

$4.2 = \frac{\text{total length}}{5}$

$\times 5 \qquad \times 5$

$4.2 \times 5 = 42 \times 5 = 210 \xrightarrow{\div 10} 21\text{cm}$ (×10)

$21 - 7 = 14\text{ cm}$

$\text{Mean} = \frac{14}{4}$ $\quad 4\overline{)14^{2}0} = 3.5$

3.5 cm

(3)

Nawal made a mistake.
The stick was not 7 cm long.
It was 17 cm long.

$21 - 17 = 4\text{cm}$

$\text{Mean} = \frac{4}{4} = 1$

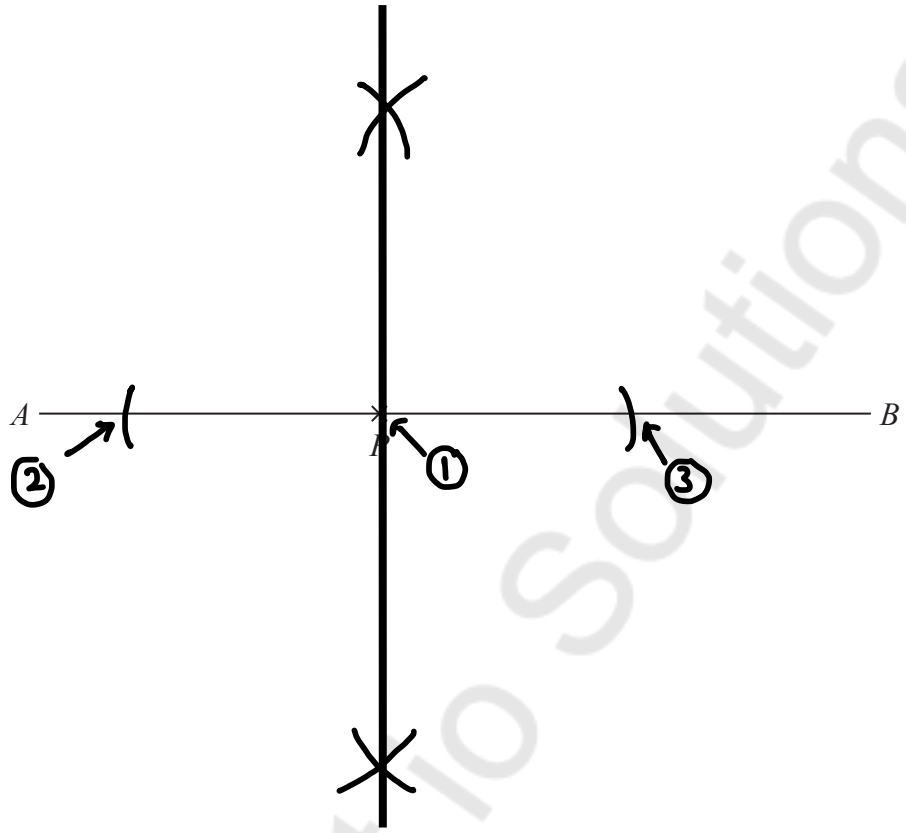
(b) How does this affect your answer to part (a)?

The mean would be 1 cm.

(1)

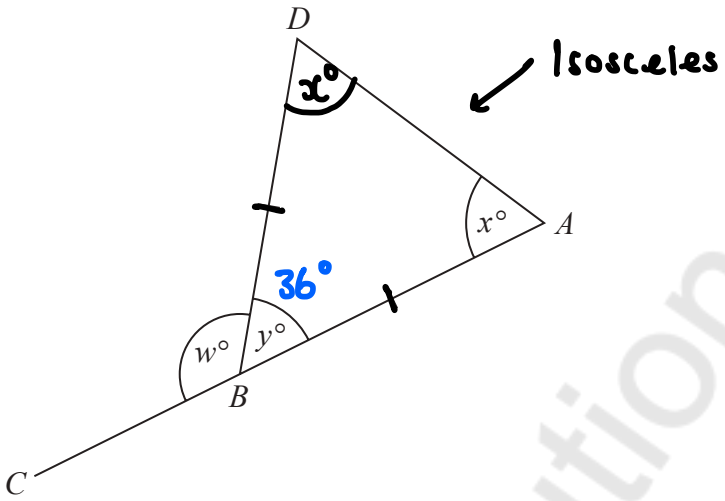
(Total for Question 21 is 4 marks)

22 The point P lies on the line AB.
Use ruler and compasses to construct an angle of 90° at P.
You must show all your construction lines.



(Total for Question 22 is 2 marks)

23 The diagram shows an isosceles triangle ABD and the straight line ABC.



$BA = BD$

$x : y = 2 : 1$

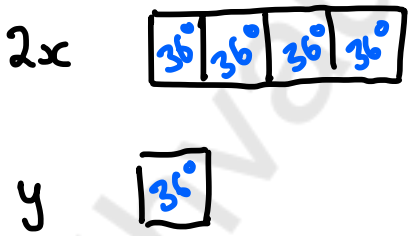
Work out the value of w.

$x : y$

$2 : 1$

$2x : y$

$4 : 1$



5 parts

$180 \div 5 = 36$

$5\overline{)180}$ → 36

$w = 180 - 36$

$= 144°$

$w =$ 144° .....

(Total for Question 23 is 4 marks)

24 Mano has three shelves of books.

There are x books on shelf **A**.
There are $(3x + 1)$ books on shelf **B**.
There are $(2x - 5)$ books on shelf **C**.

There is a total of 44 books on the three shelves.

All the books have the same mass.

The books on shelf **B** have a total mass of 7500 g.

Work out the total mass of the books on shelf **A**.

Total books : $x + 3x + 1 + 2x - 5$

$44 = 6x - 4$

$+4 \qquad +4$

$48 = 6x$

$\div 6 \qquad \div 6$

$8 = x$

Mass of each books :

$3x + 1$ books shelf B

$3(8) + 1 = 25$

$7500 \div 25 = 300\,g$ each book

Shelf A $= x$

$= 8$ books

Mass $= 8 \times 300g$

$= 2400g$

2400 g

(Total for Question 24 is 5 marks)

25 A piece of glass has a mass of 27 g and a volume of 10 cm^3

Work out the density of the piece of glass.

m

D V

$D = \frac{m}{V}$

$m = 27g$

$V = 10\ cm^3$

$D = \frac{27}{10}$

$= 2.7\ g/cm^3$

2.7 ..... g/cm^3

(Total for Question 25 is 2 marks)

26 Work out an estimate for $\frac{5.7 \times 8.2}{0.26}$

↑ Round to 1sf ← non-0 digit

$5.7 \approx 6$

$8.2 \approx 8$

$0.26 \approx 0.3$

$= \frac{6 \times 8}{0.3}$

$= \frac{48}{0.3} \begin{matrix} \times 10 \\ \times 10 \end{matrix} = \frac{480}{3} = 160$

160 .....

(Total for Question 26 is 3 marks)

27 (a) Expand and simplify $(3x + 2)(2x - 5)$

×	$3x$	$+2$
$2x$	$6x^2$	$+4x$
-5	$-15x$	-10

$4x - 15x = -11x$

$6x^2 - 11x - 10$

$6x^2 - 11x - 10$

(2)

(b) Factorise $x^2 - 16$

difference of square no.

D.O.T.S

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

$x^2 - 16$

$\sqrt{x^2}$ $\sqrt{16}$

x 4

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

(1)

(Total for Question 27 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

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