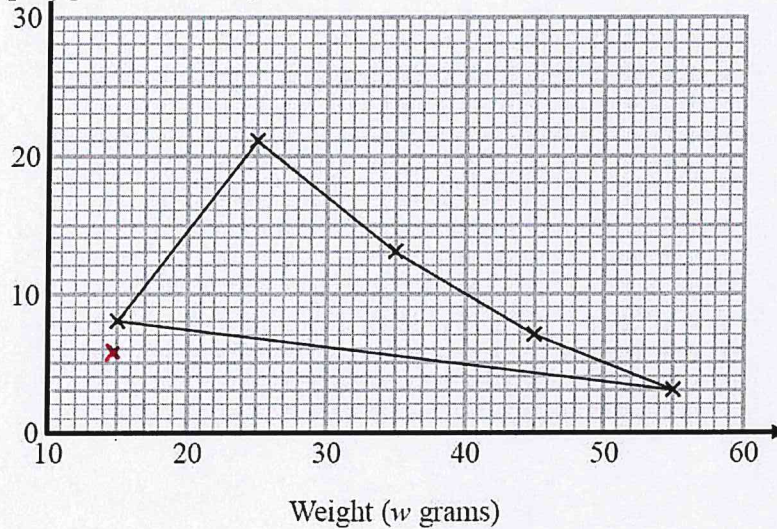


21/1 The table shows some information about the weights of 50 potatoes.

Weight (w grams)	Frequency
$10 < w \leq 20$	6
$20 < w \leq 30$	21
$30 < w \leq 40$	13
$40 < w \leq 50$	7
$50 < w \leq 60$	3

P107
 (15, 6)
 (25, 21)
 (35, 13)
 (45, 7)
 (55, 3)

Iveta drew this frequency polygon for the information in the table. The frequency polygon is **not** fully correct.



Write down **two** things that are wrong with the frequency polygon.

- 1..... The start and finish should not be joined.....
- 2..... The first point is plotted too high. It should be (15, 6)..... (2)

22/2 The length of a pencil is 128 mm correct to the nearest millimetre. Complete the error interval for the length of the pencil.

..... 127.5 mm \leq length $<$ 128.5 mm (2)

27/7 Work out $(3.42 \times 10^{-7}) \div (7.5 \times 10^{-6})$. Give your answer in standard form.

$\frac{57}{1250} = 0.0456 = 4.56 \times 10^{-2}$

..... 4.56×10^{-2} (2)

- 23/3 Tom and Adam have a total of 240 stamps. T A
 The ratio of the number of Tom's stamps to the number of Adam's stamps is 3 : 7
 Tom buys some stamps from Adam. T A
 The ratio of the number of Tom's stamps to the number of Adam's stamps is now 3 : 5
 How many stamps does Tom buy from Adam?
 You must show all your working.

Start	T : A	Total
	3 : 7	10
	72 : 168	240

End	T : A	Total
	3 : 5	8
	90 : 150	240

Tom bought $90 - 72 = 18$

..... 18 stamps
 (4)

- 24/4 Each person in a fitness club is going to get a free gift.
 Stan is going to order the gifts.

Stan takes a sample of 50 people in the fitness club.
 He asks each person to tell him the gift they would like.

The table shows information about his results.

Gift	Number of people
sports bag	17
gym towel	7
headphones	11
voucher	15

50

There are 700 people in the fitness club.

- (i) Work out how many sports bags Stan should order.

$$\frac{17}{50} \times 700 = 238$$

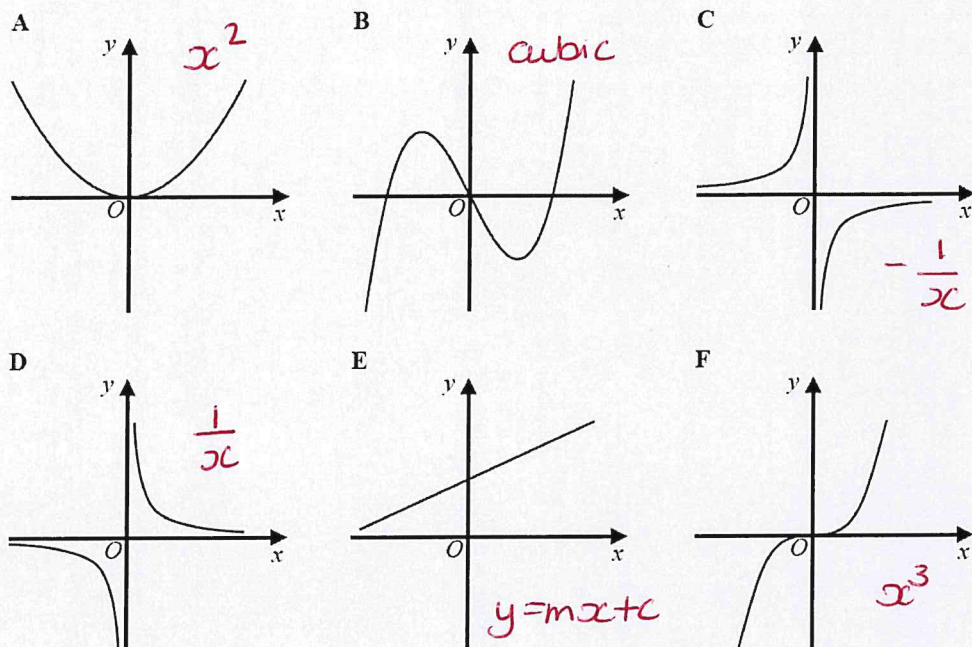
..... 238
 (2)

- (ii) Write down any assumption you made **and** explain how this could affect your answer.

..... The opinions of the 50 people who were
 sampled is in the same proportion as all of
 the members of the club

(1)

25/5 Here are six graphs.



Write down the letter of the graph that could have the equation

(a) $y = x^3$

..... F (1)

(b) $y = \frac{1}{x}$

..... D (1)

26/6 The n th term of a sequence is $2n^2 - 1$
 The n th term of a different sequence is $40 - n^2$

Show that there is only one number that is in both of these sequences.

$$\begin{aligned} & \underline{2n^2 - 1} \\ = & 2(1)^2 - 1 = 2 - 1 = 1 \\ & 2(2)^2 - 1 = 8 - 1 = 7 \\ & 2(3)^2 - 1 = 18 - 1 = 17 \\ & 2(4)^2 - 1 = 32 - 1 = \underline{31} \\ & \text{increasing} \end{aligned}$$

$$\begin{aligned} & \underline{40 - n^2} \\ & 40 - 1^2 = 40 - 1 = 39 \\ & 40 - 2^2 = 40 - 4 = 36 \\ & 40 - 3^2 = 40 - 9 = \underline{31} \\ & \text{decreasing} \end{aligned}$$

Both sequences include the number 31.
 There will be no more values as the first sequence is increasing and the second sequence is decreasing.

(3)

28/8 The number of days, d , that it will take to build a house is given by

$$\text{days} \rightarrow d = \frac{720}{n} \leftarrow \text{Workers}$$

where n is the number of workers used each day.

Ali's company will take 40 days to build the house.

Hayley's company will take 30 days to build the house.

Hayley's company will have to use more workers each day than Ali's company.

How many more?

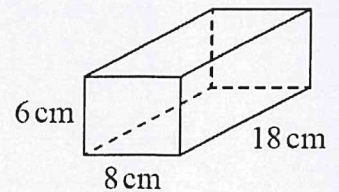
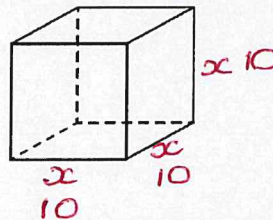
$$\begin{aligned} \text{Ali} \\ 40 &= \frac{720}{n} \\ n &= \frac{720}{40} \\ n &= 18 \end{aligned}$$

$$\begin{aligned} \text{Hayley} \\ 30 &= \frac{720}{n} \\ n &= \frac{720}{30} \\ n &= 24 \end{aligned}$$

6 more workers

(3)

29/9 The diagram shows a cube and a cuboid.



The total surface area of the cube is equal to the total surface area of the cuboid.

Janet says, "The volume of the cube is equal to the volume of the cuboid."

Is Janet correct?

You must show how you get your answer.

$$\begin{aligned} \text{S.A cuboid} &= 2(\text{front} + \text{side} + \text{top}) \\ &= 2(48 + 108 + 144) \\ &= 2 \times 300 \\ &= \underline{600} \end{aligned}$$

$$\text{SA cube} = \underline{6 \times x^2}$$

$$6x^2 = 600$$

$$x^2 = 100$$

$$x = \sqrt{100}$$

$$\underline{x = 10}$$

$$V \text{ cube} = 10 \times 10 \times 10 = \underline{1000}$$

$$V \text{ cuboid} = 8 \times 18 \times 6 = \underline{864}$$

The volume of the cube is bigger so Janet is incorrect (5)

TOTAL FOR PAPER IS 26 MARKS