Edexcel GCSE
Mathematics (Linear) – 1MA0

FREQUENCY POLYGONS

Materials required for examination
Ruler graduated in centimetres and
millimetres, protractor, compasses,
pen, HB pencil, eraser.
Tracing paper may be used.

Items included with question papers
Nil

ANSWERS .

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.

Information

The marks for each question are shown in brackets – use this as a guide as to how much time to spend on **each** question.
Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.

Advice

Read each question carefully before you start to answer it.
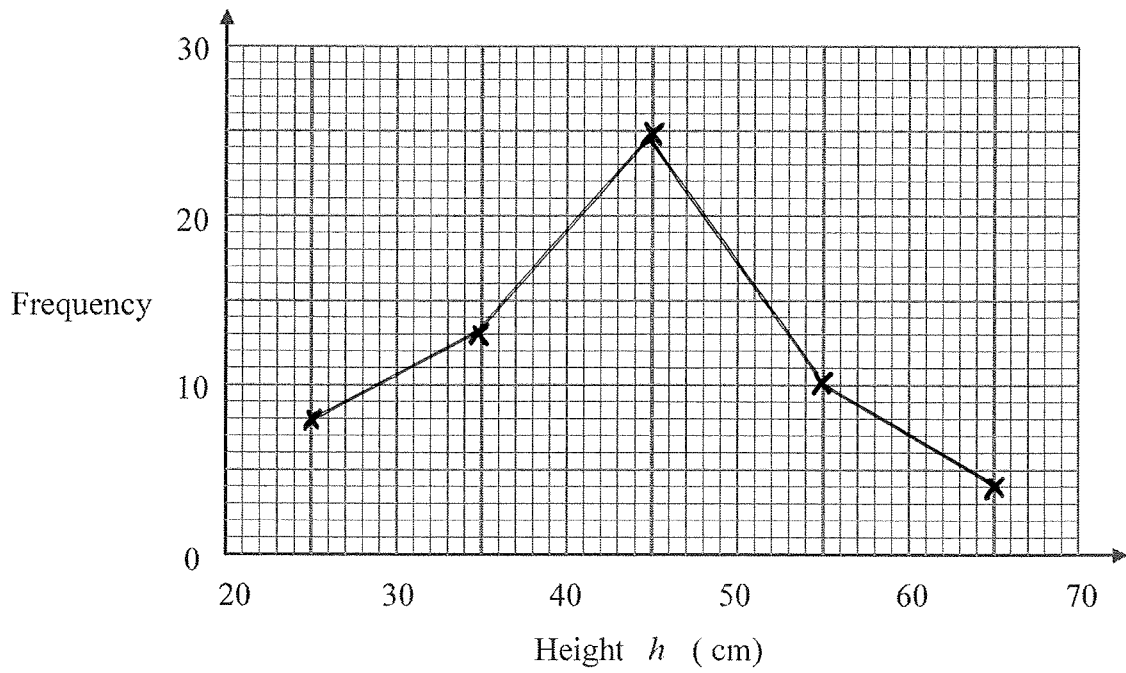Keep an eye on the time.
Try to answer every question.
Check your answers if you have time at the end.

1. The table shows some information about the heights (h cm) of 60 plants.

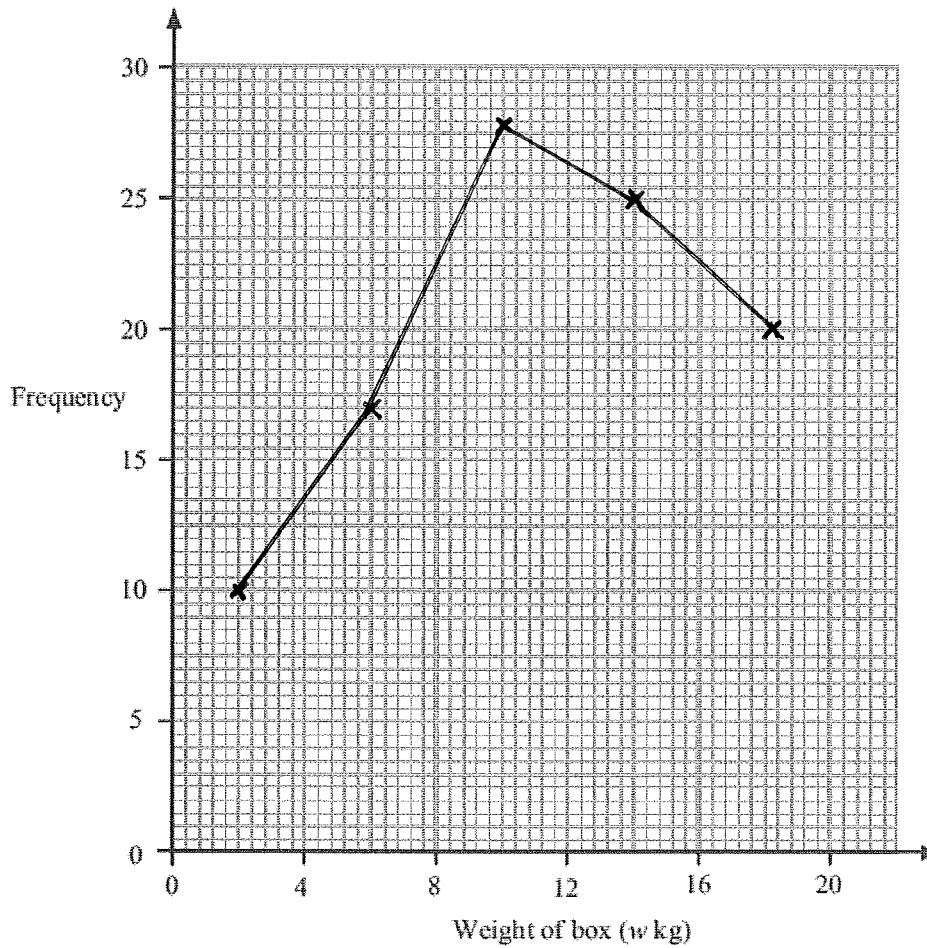| Height (h cm)	Frequency
$20 < w \leq 30$	8
$30 < w \leq 40$	13
$40 < w \leq 50$	25
$50 < w \leq 60$	10
$60 < w \leq 70$	4

Draw a frequency polygon to show this information.

(4 marks)

2. The table shows some information about the weights, in kg, of 100 boxes.

Weight of box (w kg)	Frequency
$0 < w \le 4$	10
$4 < w \le 8$	17
$8 < w \le 12$	28
$12 < w \le 16$	25
$16 < w \le 20$	20

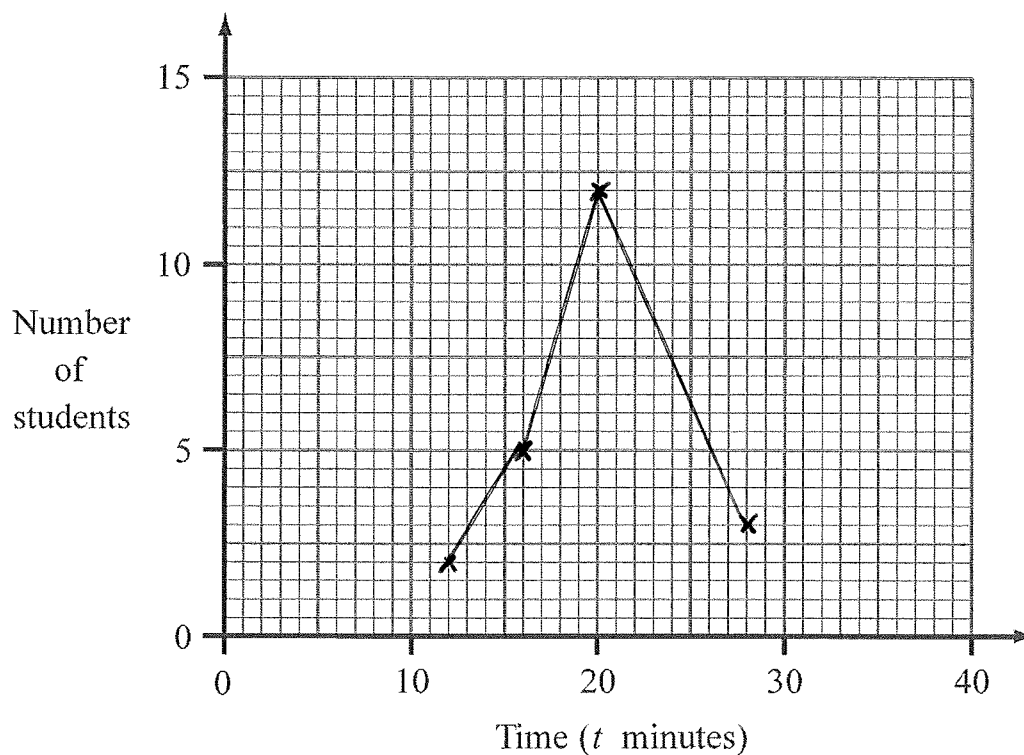Draw a frequency polygon to show this information.

(4 marks)

3. 30 students ran a cross-country race.
Each student's time was recorded.

The table shows information about these times.

Time (t minutes)	Frequency
$10 \leq t < 14$	2
$14 \leq t < 18$	5
$18 \leq t < 22$	12
$22 \leq t < 26$	8
$26 \leq t < 30$	3

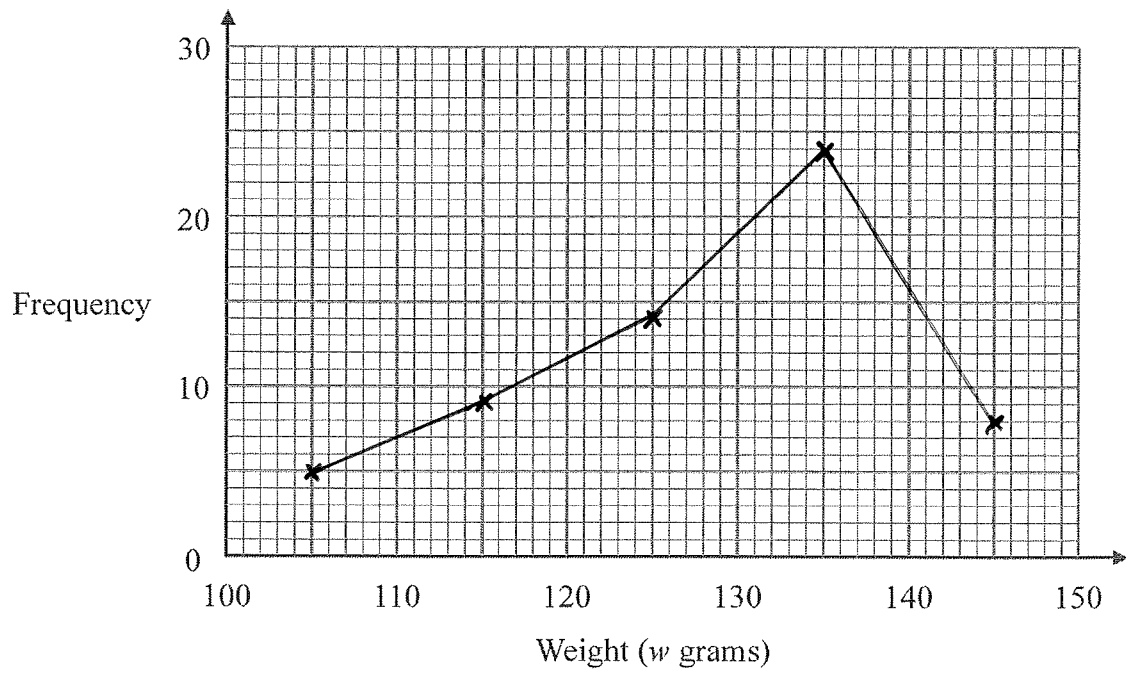On the grid, draw a frequency polygon to show this information.

Time (t minutes)

(4 marks)

4. The table shows some information about the weights (w grams) of 60 apples.

Weight (w grams)	Frequency
$100 \leq w < 110$	5
$110 \leq w < 120$	9
$120 \leq w < 130$	14
$130 \leq w < 140$	24
$140 \leq w < 150$	8

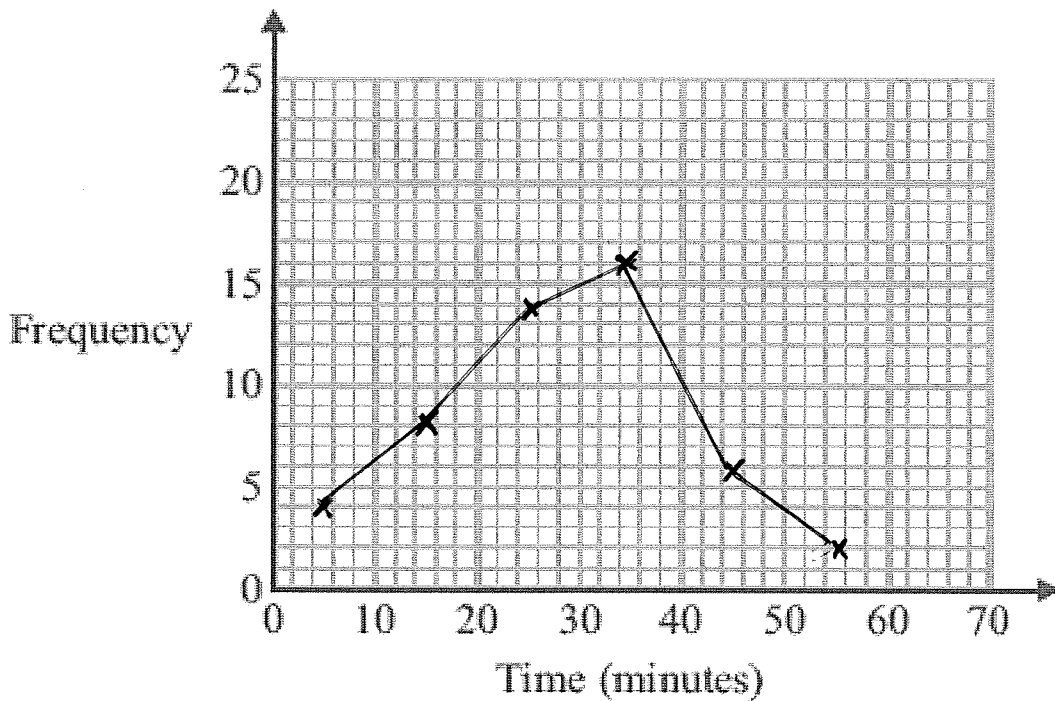Draw a frequency polygon to show this information.

(4 marks)

5. The frequency table gives information about the times it took some office workers to get to the office one day.

Time (*t* minutes)	Frequency
$0 < t \leq 10$	4
$10 < t \leq 20$	8
$20 < t \leq 30$	14
$30 < t \leq 40$	16
$40 < t \leq 50$	6
$50 < t \leq 60$	2

More than 40 minutes.

(a) Draw a frequency polygon for this information.

(3)

(b) Write down the modal class interval.

$30 < t \leq 40$

(1)

One of the office workers is chosen at random.

(c) Work out the probability that this office worker took more than 40 minutes to get to the office.
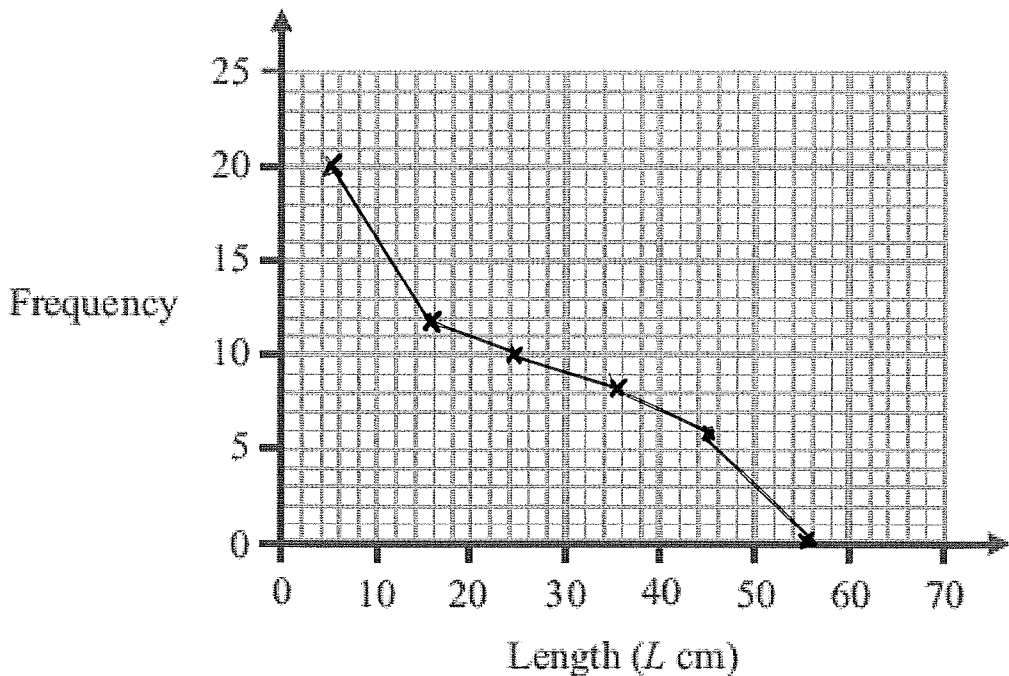
$4 + 8 + 14 + 16 + 6 + 2 = 50$

$\dfrac{8}{50}$

(2)

(6 marks)

6. The table gives information about the lengths of the branches on a bush.

Length(L cm)	Frequency
$0 \leq L < 10$	20
$10 \leq L < 20$	12
$20 \leq L < 30$	10
$30 \leq L < 40$	8
$40 \leq L < 50$	6
$50 \leq L < 60$	0

I Less than 20cm.

(a) Draw a frequency polygon to show this information.

(3)

(b) Write down the modal class interval.

$0 \leq L < 10$.

(1)

One of the branches is chosen at random.

(c) Work out the probability that this branch less than 20 cm long.

$20 + 12 + 10 + 8 + 6 =$
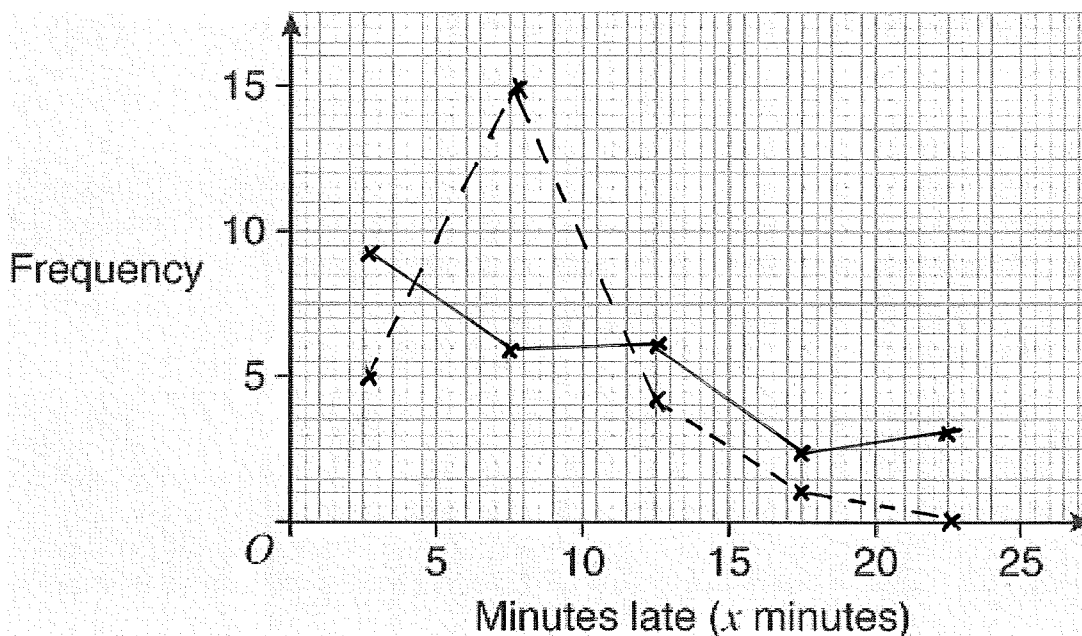
$\dfrac{32}{56} = \dfrac{16}{28} = \dfrac{4}{7}$

(2)

(6 marks)

7. In one month, Janet travelled by bus 25 times and by train 25 times.
The grouped frequency table records the number of minutes (x minutes) late each of her buses and trains were.

Minutes late	Bus	Train
$0 \leq x < 5$	5	9
$5 \leq x < 10$	15	6
$10 \leq x < 15$	4	6
$15 \leq x < 20$	1	2
$20 \leq x < 25$	0	3

(a) On the grid below draw two frequency polygons to illustrate this data.

Bus $----$

Train $\underline{\qquad}$

(3)

(b) Use your polygons to compare the lateness of buses and trains and comment on any differences you observe.

The modal time for trains to be late is $0 \leq x < 5$ whereas this is $5 \leq x < 10$ for the bus. 20 out of 25 bus journeys were late by less than 10 minutes, this was only 15 out of 25 for the train.

(2)

(5 marks)

5 train journeys were delayed by more than 15 minutes this was only 1 for the bus.