the PiXL club

partners in excellence

Pre Public Examination
GCSE Mathematics (Edexcel style)
March 2017
Higher Tier
Paper 1H

Name   …………………………………………………………

Class   …………………………………………………………

TIME ALLOWED
1 hour 30 minutes
INSTRUCTIONS TO CANDIDATES
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- You are **NOT** permitted to use a calculator in this paper.
- Do all rough work in this book.

INFORMATION FOR CANDIDATES
- The number of marks is given in brackets **[ ]** at the end of each question or part question on the Question Paper**.**
- **You are reminded of the need for clear presentation in your answers.**
- The total number of marks for this paper is **80**.

Question	Mark	Out of
1		3
2		5
3		5
4		6
5		6
6		4
7		3
8		2
9		3
10		1
11		2
12		3
13		4
14		3
15		4
16		2
17		4
18		3
19		5
20		3
21		3
22		3
23		3
Total		80

Answer ALL questions.

Write your answers in the spaces provided.

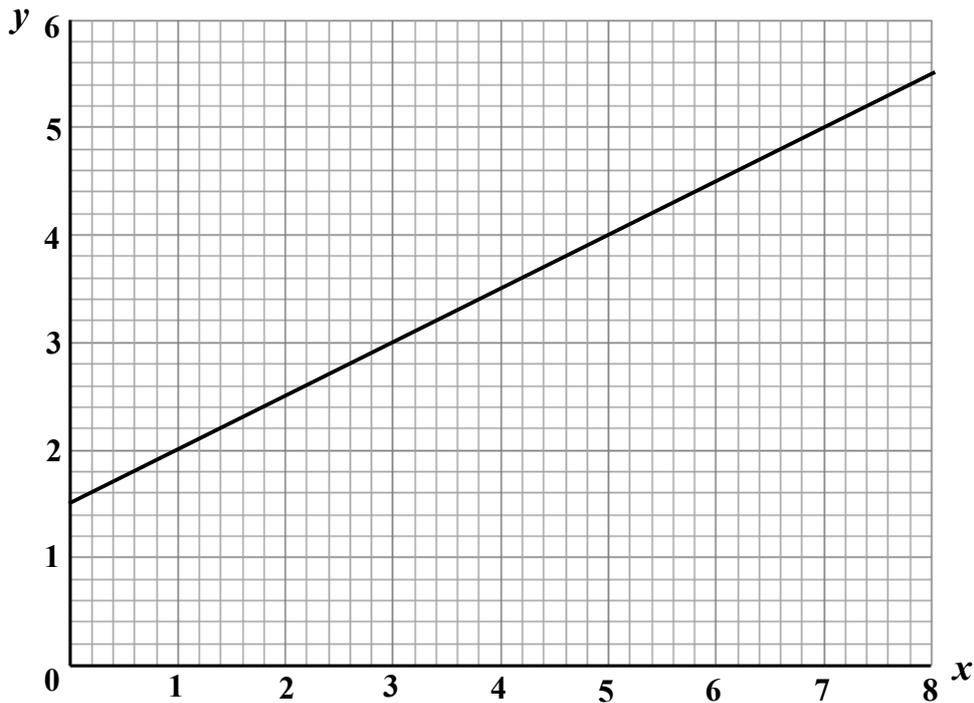**You must write down all the stages in your working.**

Question 1.

Work out $\quad 3\dfrac{4}{7} - 1\dfrac{2}{3}$

....
(Total 3 mark)

Question 2.

The graph gives the values of y for values of x from 0 to 8.

(*a*) (i) Give an interpretation of the intercept of the graph on the y-axis.

....

....

(ii) Give an interpretation of the gradient of the graph.

....

....

(2)

(*b*) Find the equation of the straight line in the form $y = mx + c$

....

(3)

(Total 5 marks)

Question 3.
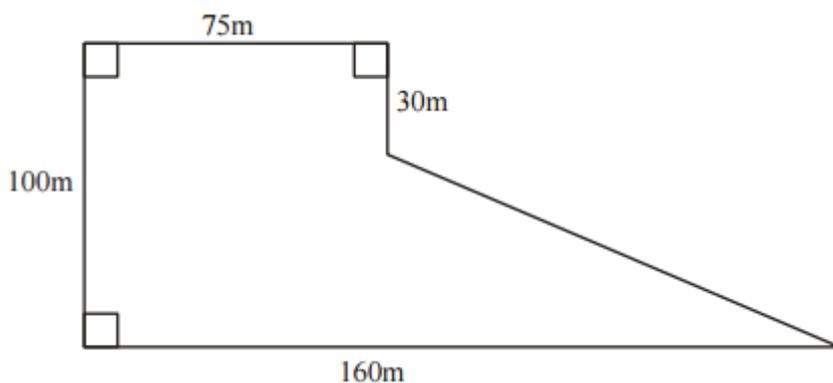
The diagram shows the plan of a field.
The farmer sells the field for £3 per square metre.
Work out the total amount of money the farmer should get for the field.

£.....................................

(Total 5 marks)

Question 4.

Here is part of a railway time table.

Departure Times

Newcastle	0840	0935	1040	1122
York	0943	1034	1144	1225
Leeds	1010	–	1210	–
Derby	1124	1157	1324	1355
Birmingham	1215	1315	1415	1515

A train leaves Newcastle at 1040.

(a) How long is the journey to Birmingham for this train?
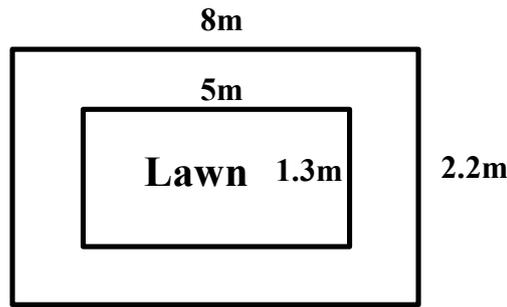
Give your answer in hours and minutes.

.....................hrs....................mins

(3)

(b) The train ticket from York to Derby costs £64 plus 2.5% booking fee.
Workout how much a ticket from York to Derby will cost in total.

£.......................................

(3)
(Total 6 marks)

Question 5.

The diagram shows a rectangular garden with a path around the edge.

8m

5m

Lawn **1.3m**

2.2m

Farhan is going to cover the path with rectangular tiles.
Each tile is 25 cm by 10 cm.
He chooses to tile the path in white, red and black colours.

The ratio of the number of white tiles to the number of red tiles to the number of black tiles will be 5 : 3 : 4.

(*a*) Assuming there are no gaps between the tiles, how many tiles of each colour will Farhan need?

white tiles ....

red tiles ....

black tiles ....

(5)

Farhan is told that he should leave gaps between the tiles.

(*b*) If Farhan leaves gaps between the tiles, how could this affect the number of tiles he needs?

....

....
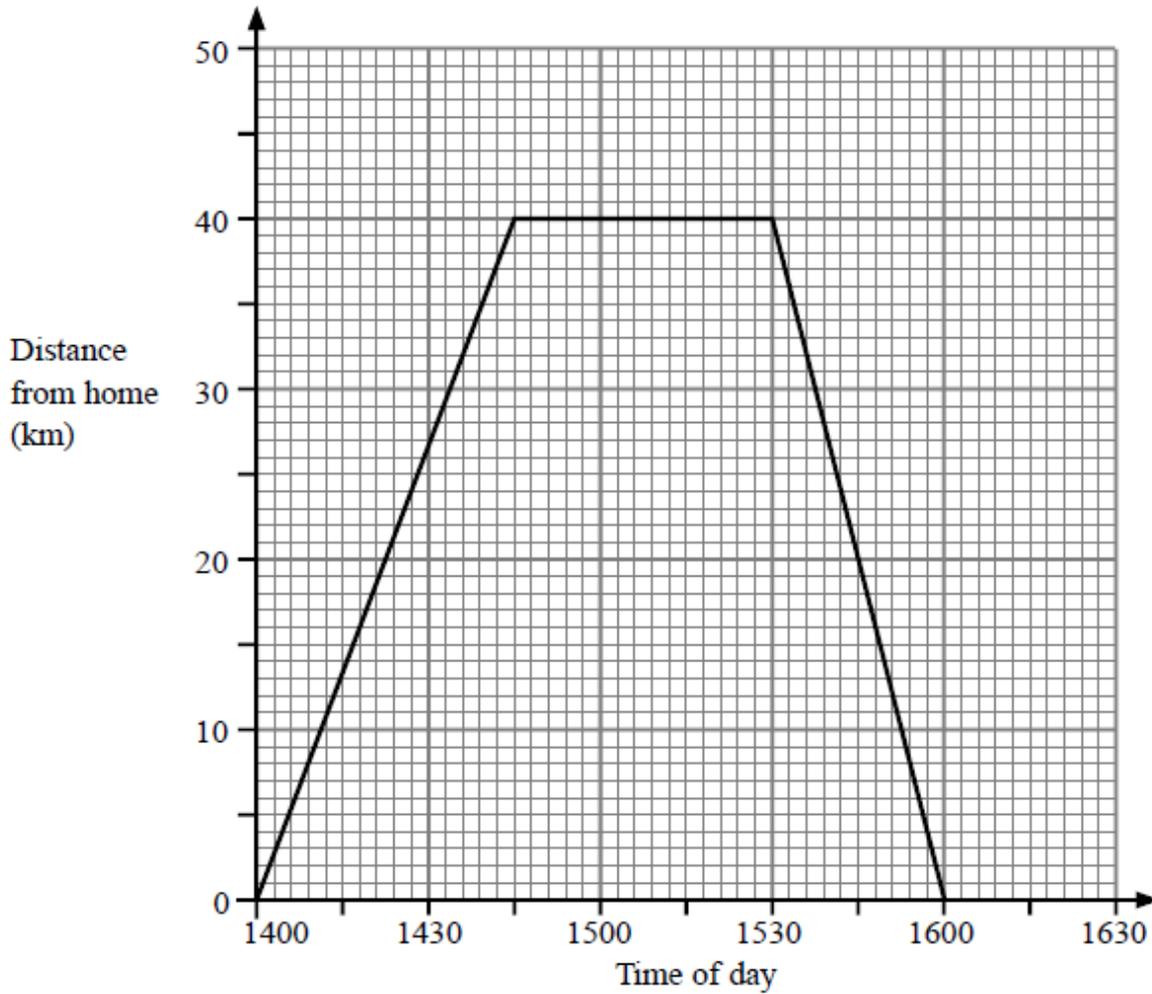
(1)

(Total 6 marks)

Question 6.

Judy drove from her home to the airport.
She waited at the airport. Then she drove home.
Here is the distance-time graph for Judy's complete journey.

(a) What is the distance from Judy's home to the airport?

.... km

(1)

(b) For how many minutes did Judy wait at the airport?

.... minutes

(1)

(c) Work out Judy's average speed on her journey home from the airport.
    Give your answer in kilometres per hour.

.... km/hr

(2)

(Total 4 marks)

Question 7.

Write 420 as a product of its prime factors.

....
(Total 3 marks)

Question 8.

Shape **A** is translated by the vector $\begin{pmatrix} 3 \\ -4 \end{pmatrix}$ to make Shape **B**.

Shape **B** is then translated by the vector $\begin{pmatrix} -5 \\ -1 \end{pmatrix}$ to make Shape **C**.

Describe the single transformation that maps Shape **A** onto Shape **C**.

$\begin{pmatrix} \\ \\ \end{pmatrix}$

(Total 2 marks)

Question 9.

To complete a task in 15 days a company needs 4 people each working for 8 hours per day.
The company decides to have 5 people each working for 6 hours per day.
Assume that each person works at the same rate.

How many days will the task take to complete?
You must show your working.

....days
(Total 3 marks)

Question 10.

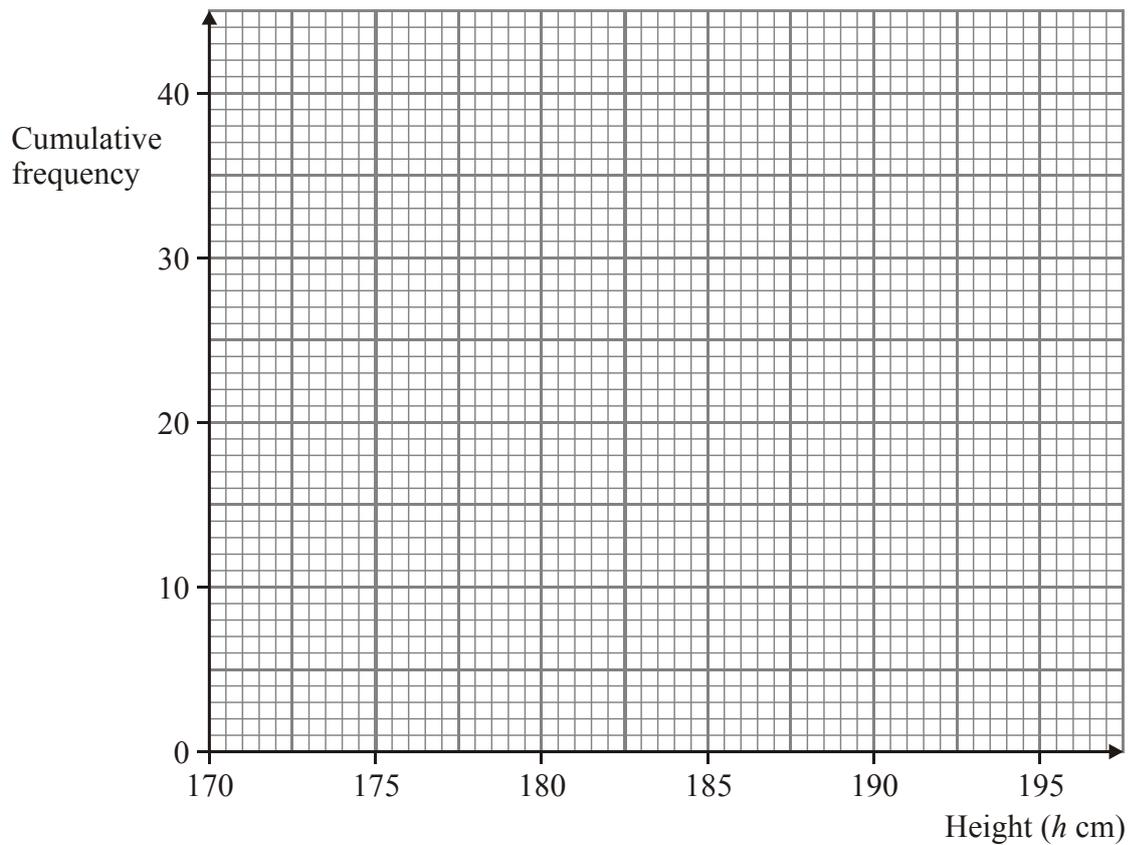Find the value of $125^{-\frac{2}{3}}$

....
(Total 1 mark)

Question 11.

The table shows information about the heights of 40 bushes.

Height (h cm)	Cumulative Frequency
$170 \leq h < 175$	5
$170 \leq h < 180$	23
$170 \leq h < 185$	35
$170 \leq h < 190$	39
$170 \leq h < 195$	40

On the grid below, draw a cumulative frequency graph for your table.

(Total 2 marks)

Question 12.

In a sale, the price of a television is reduced.

The television has a normal price of £1235.
The television has a sale price of £988.

Work out the percentage reduction in the price of the television.

....%
(Total 3 marks)

Question 13.

Prove that $(n + 1)^2 - (n - 1)^2 + 1$ is always odd for all positive integer values of n.

(Total 4 marks)

Question 14.

Write $0.3\dot{5}\dot{6}$ as a fraction in its simplest form.

....
(Total 3 marks)

Question 15.

The equation of a curve is $y = f(x)$ where $f(x) = x^2 - 8x + 21$.
Write down the coordinates of the minimum point of this curve.

(........................... , ...)
(Total 4 marks)

Question 16.

Expand $(3x + 1)(2x - 2)(3x + 4)$

....
(Total 2 marks)

11

Question 17.

The tangent DB is extended to T.
The line AO is added to the diagram. Angle TBA = 62° and BDC = 40°
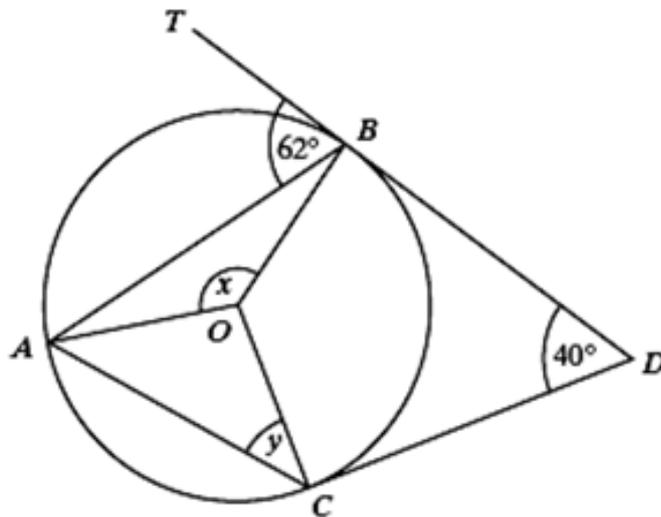
(a) Work out the value of x.

......................................°
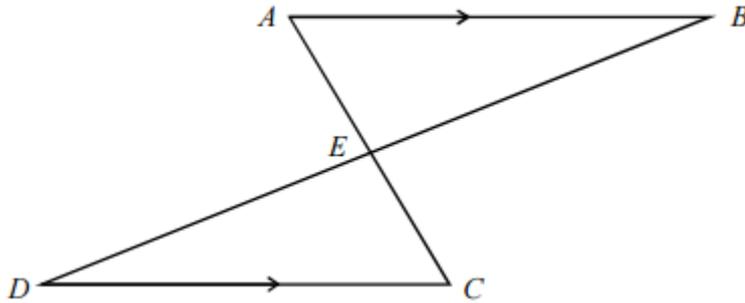
(2)

(b)   Work out the value of y.

......................................°

(2)

(Total 4 marks)

Question 18.

In the diagram, the lines AC and BD intersect at E.
AB and DC are parallel and AB = DC.

Prove that triangles ABE and CDE are congruent.

Question 19.

Solve these simultaneous equations

$$y^2 + x^2 = 10$$
$$y = x - 2$$

$x = $ .... $y = $ ....

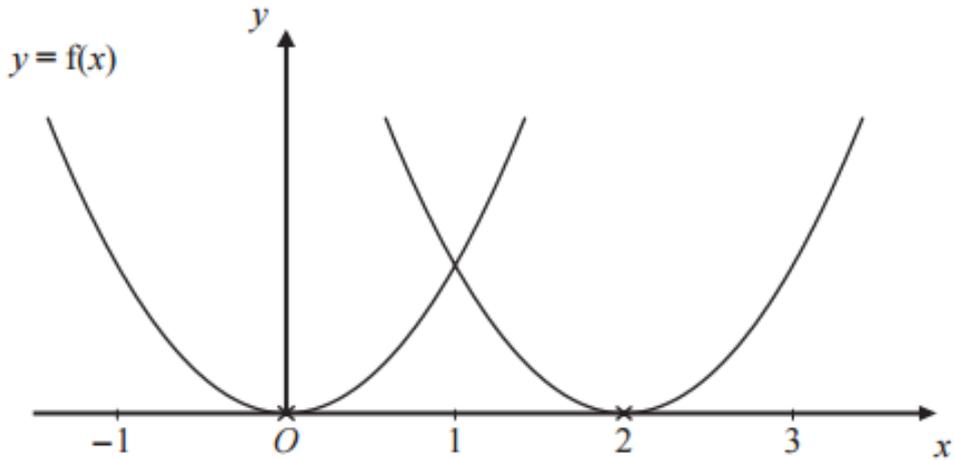or $x = $ .... $y = $ ....

(Total 5 marks)

Question 20.

Express $(2 - \sqrt{3})^2$ in the form $b + c\sqrt{3}$, where b and c are integers to be found.

....
(Total 3 marks)

Question 21.

The curve with equation $y = f(x)$ is translated so that the point at $(0, 0)$ is mapped onto the point $(2, 0)$.
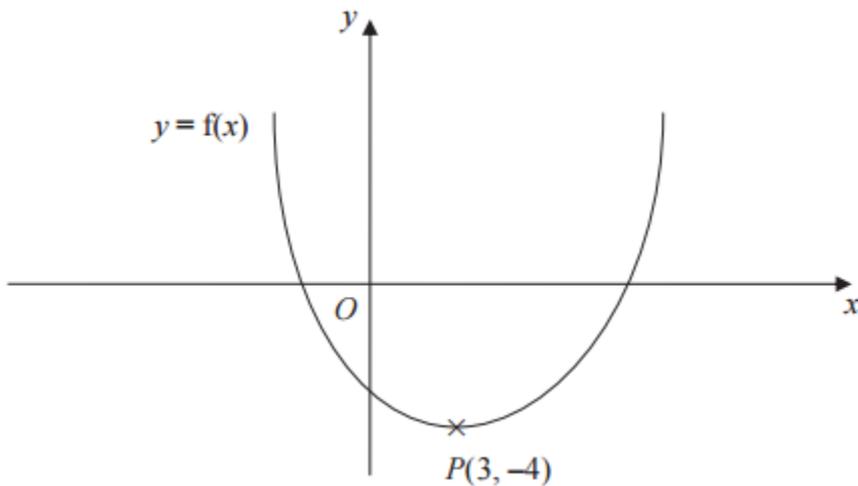

(a) Find an equation of the translated curve.

....

(1)

(b) Write down the coordinates of the minimum point of the curve with the equation
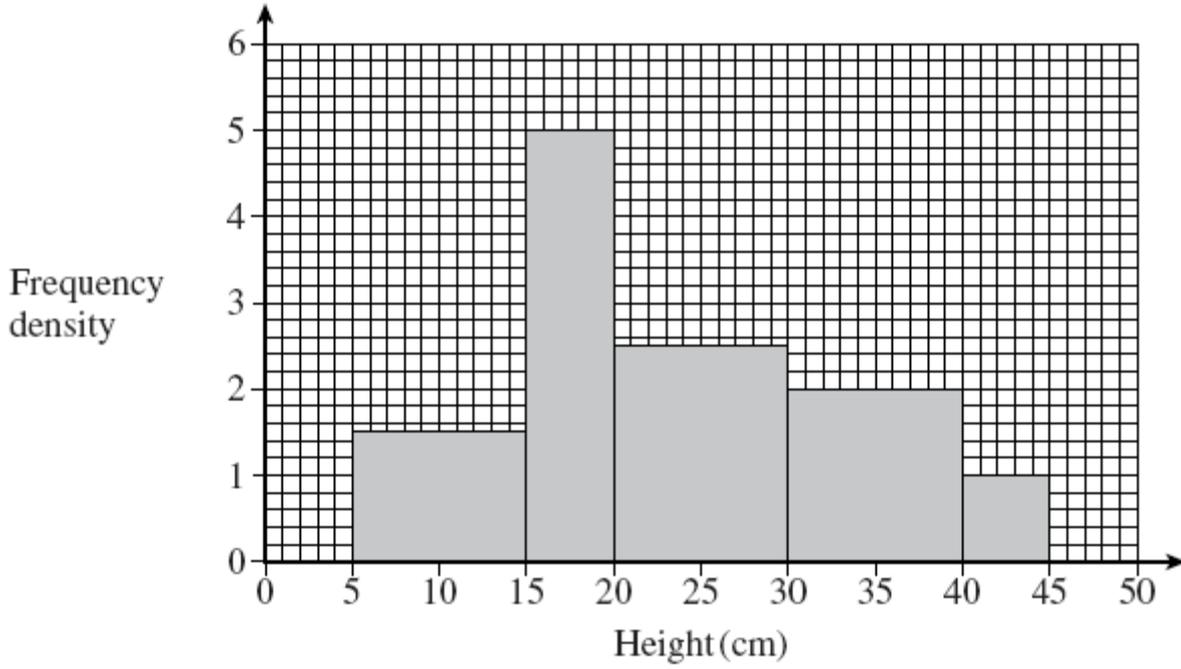
$y = f(x + 5) + 6$

$P(3, -4)$

(......................... , ...)

(2)
(Total 3 marks)

Question 22.

(a) How many plants are represented by the histogram?

....
(1)

(b) Estimate the median height of the plants.

....
(2)
(Total 3 marks)

Question 23.

There are three different types of sandwiches on a shelf.
There are:

      4 egg sandwiches,
      5 cheese sandwiches
    and 2 ham sandwiches.

Erin takes at random 2 of these sandwiches.
Work out the probability that she takes 2 different types of sandwiches.

....
(Total 3 marks)

TOTAL FOR PAPER IS 80 MARKS