Graphical Inequalities: Easy

Question Paper 2

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Algebra and graphs
Sub-Topic	Graphical Inequalities
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 2

Time allowed: **43 minutes**

Score: **/33**

Percentage: **/100**

Grade Boundaries:

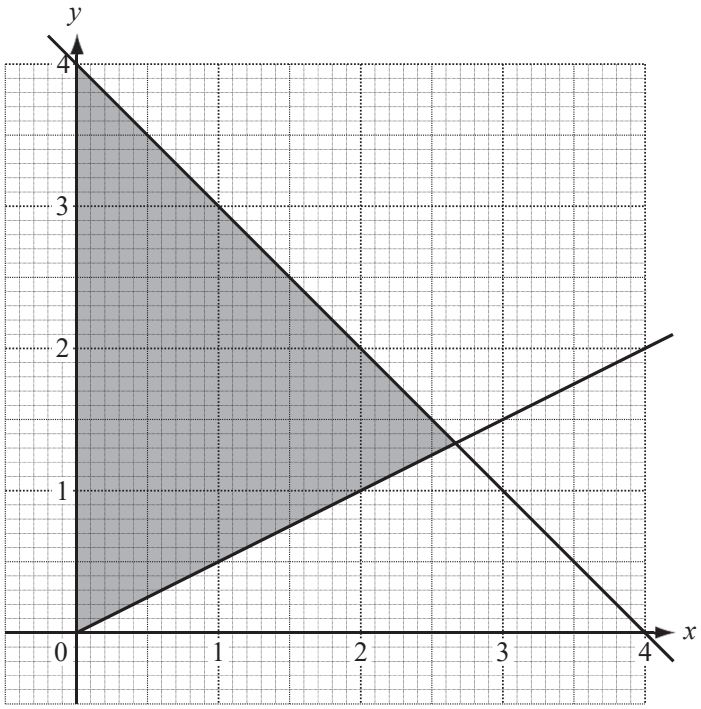
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1



Find the three inequalities which define the shaded region on the grid. [5]

Question 2

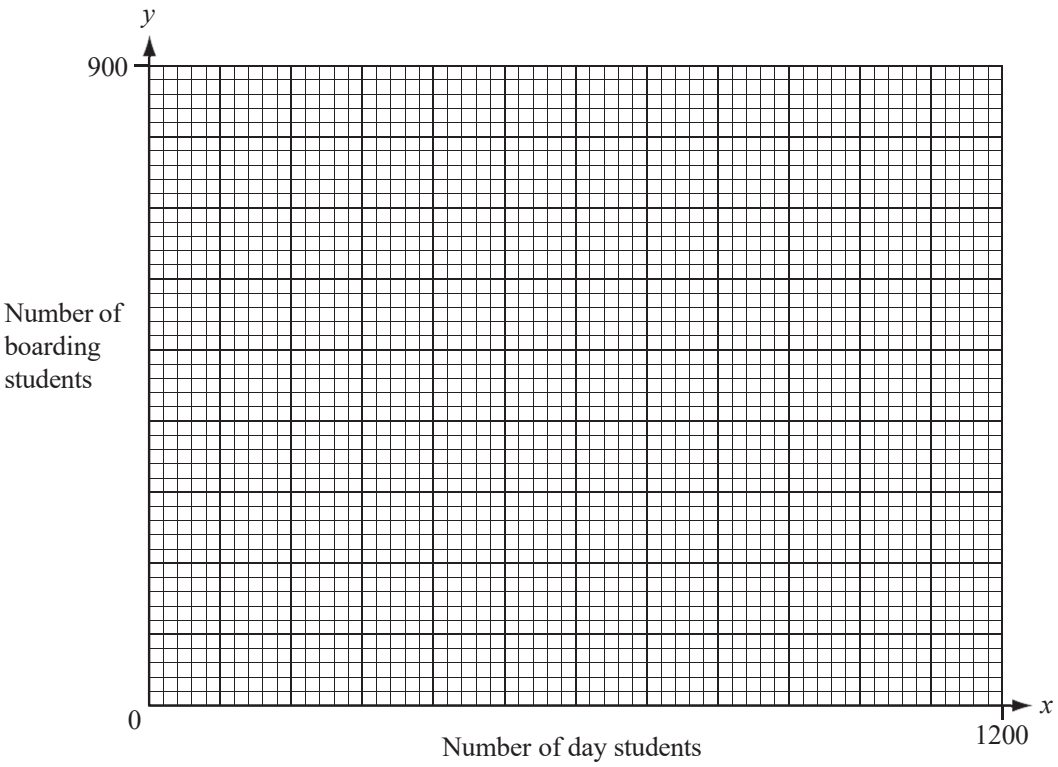
A new school has x day students and y boarding students.

The fees for a day student are \$600 a term.
The fees for a boarding student are \$1200 a term.
The school needs at least \$720 000 a term.

(a) Show that this information can be written as $x + 2y \geqslant 1200$. [1]

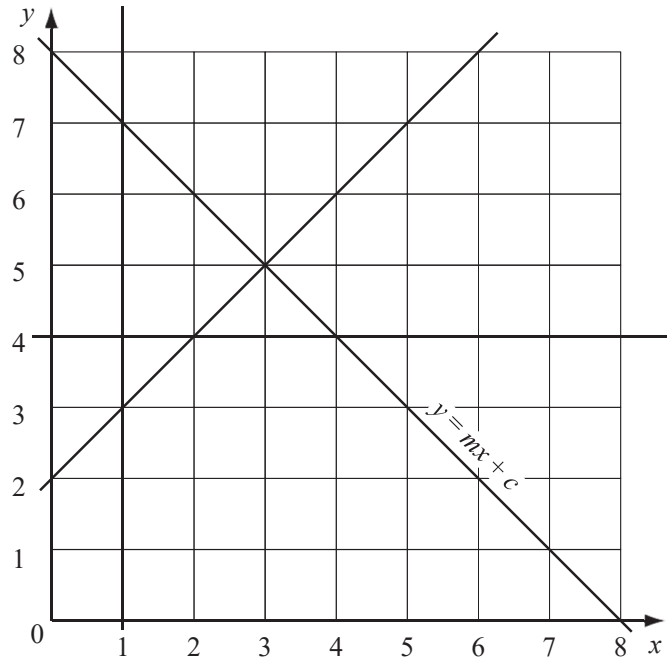
(b) The school has a maximum of 900 students.
Write down an inequality in x and y to show this information. [1]

(c) Draw two lines on the grid below and write the letter **R** in the region which represents these two inequalities. [4]



(d) What is the least number of **boarding** students at the school? [1]

Question 3



(a) One of the lines in the diagram is labelled $y = mx + c$.
Find the values of m and c.

[1]

[1]

(b) Show, by shading all the **unwanted** regions on the diagram, the region defined by the inequalities

$$x \geqslant 1, \quad y \leqslant mx + c, \quad y \geqslant x+2 \quad \text{and} \quad y \geqslant 4.$$

Write the letter **R** in the region required. [2]

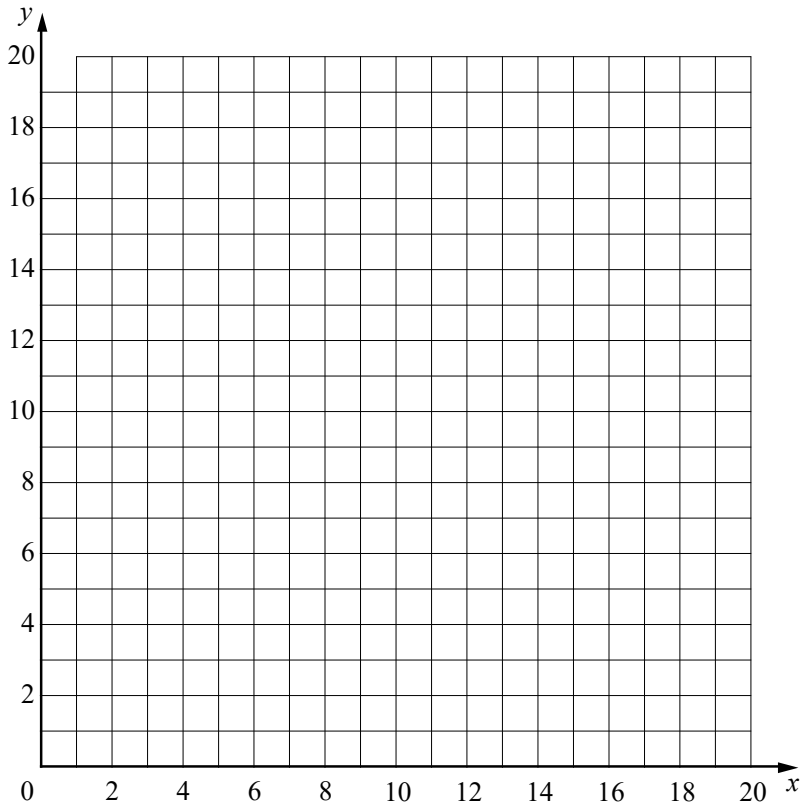
Question 4

Marina goes to the shop to buy loaves of bread and cakes.
One loaf of bread costs 60 cents and one cake costs 80 cents.
She buys x loaves of bread and y cakes.

(a) She must not spend more than \$12.
Show that $3x + 4y \leq 60$. [1]

(b) The number of loaves of bread must be greater than or equal to the number of cakes.
Write down an inequality in x and y to show this information.
[1]

(c) On the grid below show the two inequalities by shading the **unwanted** regions.
Write R in the required region.
[4]



(d) The **total** number of loaves of bread and cakes is $x + y$.
Find the largest possible value of $x + y$. [1]

Question 5

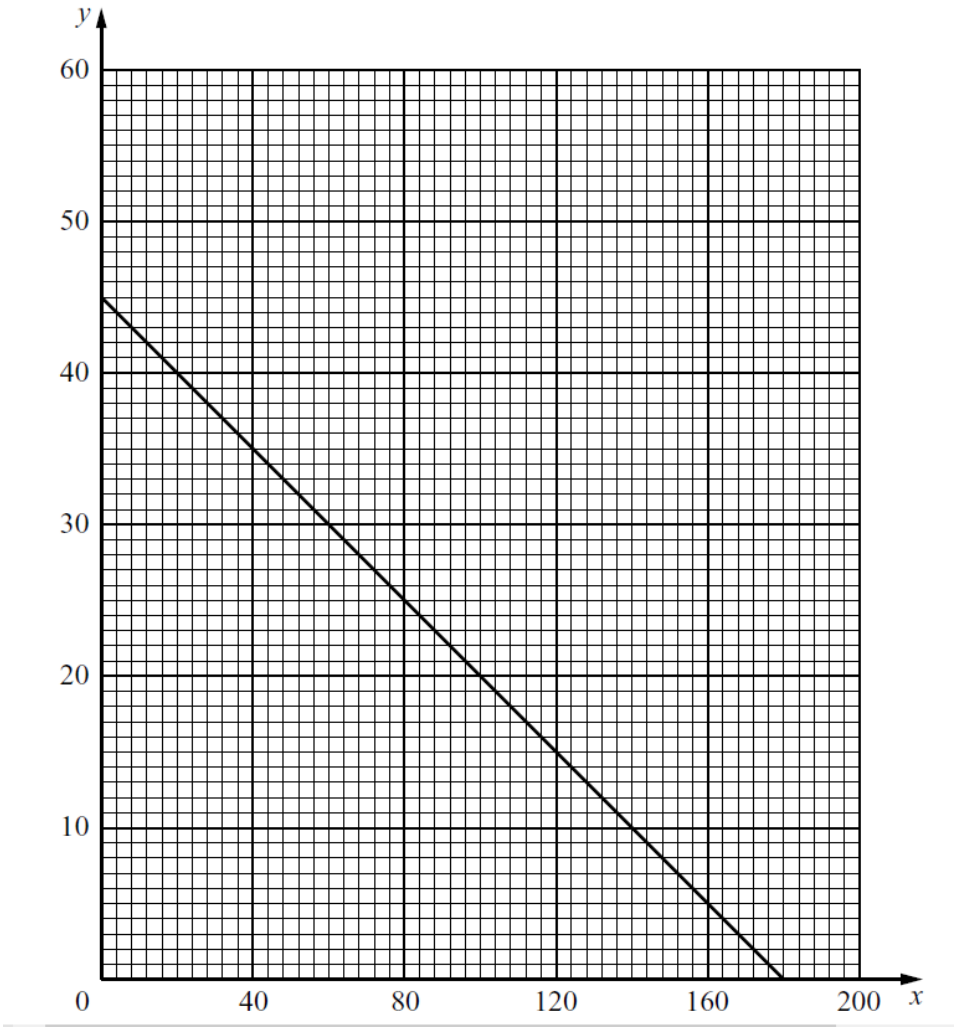
A ferry has a deck area of 3600 m^2 for parking cars and trucks. Each car takes up 20 m^2 of deck area and each truck takes up 80 m^2. On one trip, the ferry carries x cars and y trucks.

(a) Show that this information leads to the inequality $x + 4y \leq 180$. [2]

(b) The charge for the trip is \$25 for a car and \$50 for a truck.
The total amount of money taken is \$3000.
Write down an equation to represent this information and simplify it. [2]

(c) The line $x + 4y = 180$ is drawn on the grid below.

(i) Draw, on the grid, the graph of your equation in part **(b)**. [1]

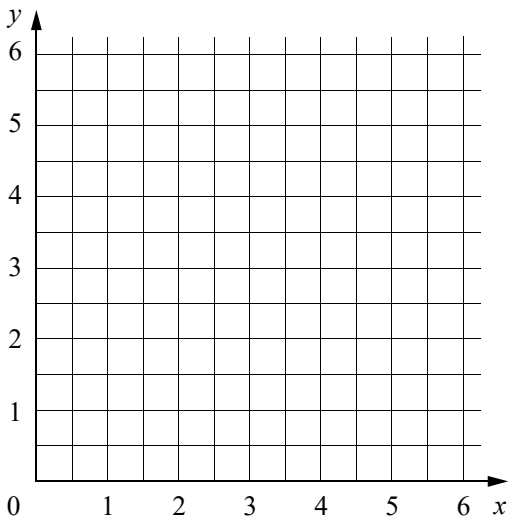


(ii)

Write down a possible number of cars and a possible number of trucks on the trip, which together satisfy both conditions.

[1]

Question 6



(a) On the grid, draw the lines $x = 1$, $y = 2$ and $x + y = 5$. [3]

(b) Write R in the region where $x \geqslant 1$, $y \geqslant 2$ and $x + y \geqslant 5$. [1]