IGCSE - Inequalities –P4 - 2

May 05 Paper 4

9 **Answer the whole of this question on a sheet of graph paper.**

A taxi company has "SUPER" taxis and "MINI" taxis.
One morning a group of 45 people needs taxis.
For this group the taxi company uses x "SUPER" taxis and y "MINI" taxis.
A "SUPER" taxi can carry 5 passengers and a "MINI" taxi can carry 3 passengers.
So $5x + 3y \geqslant 45$.

(a) The taxi company has 12 taxis.
Write down **another** inequality in x and y to show this information. [1]

(b) The taxi company always uses at least 4 "MINI" taxis.
Write down an inequality in y to show this information. [1]

(c) Draw x and y axes from 0 to 15 using 1 cm to represent 1 unit on each axis. [1]

(d) Draw three lines on your graph to show the inequality $5x + 3y \geqslant 45$ **and** the inequalities from **parts (a) and (b).**
Shade the **unwanted** regions. [6]

(e) The cost to the taxi company of using a "SUPER" taxi is \$20 and the cost of using a "MINI" taxi is \$10.
The taxi company wants to find the cheapest way of providing "SUPER" and "MINI" taxis for this group of people.
Find the **two** ways in which this can be done. [3]

(f) The taxi company decides to use 11 taxis for this group.
(i) The taxi company charges \$30 for the use of each "SUPER" taxi and \$16 for the use of each "MINI" taxi.
Find the two possible **total** charges. [3]

(ii) Find the largest possible **profit** the company can make, using 11 taxis. [1]

Oct 06 Paper 4

9 **Answer the whole of this question on a sheet of graph paper.**

Tiago does some work during the school holidays.
In one week he spends x hours cleaning cars and y hours repairing cycles.
The time he spends repairing cycles is at least equal to the time he spends cleaning cars.
This can be written as $y \geqslant x$.

He spends no more than 12 hours working.
He spends at least 4 hours cleaning cars.

(a) Write down two more inequalities in x and/or y to show this information. [3]

(b) Draw x and y axes from 0 to 12, using a scale of 1 cm to represent 1 unit on each axis. [1]

(c) Draw three lines to show the three inequalities. Shade the **unwanted** regions. [5]

(d) Tiago receives \$3 each hour for cleaning cars and \$1.50 each hour for repairing cycles.

(i) What is the least amount he could receive? [2]

(ii) What is the largest amount he could receive? [2]