
(a) A school buys x balls and y bats.

The total number of balls and bats is no more than 30.

(i) Write an inequality to represent this information. (2 marks)

The school budget allows no more than \$360 to be spent on balls and bats. The cost of a ball is \$6 and the cost of a bat is \$24.

(ii) Write an inequality to represent this information. (2 marks)

(b) (i) **Using a scale of 2 cm on the x -axis to represent 10 balls and 2 cm on the y -axis to represent 5 bats, draw the graphs of the lines associated with the inequalities at (a) (i) and (ii) above.** (5 marks)

(ii) Shade the region which satisfies the two inequalities at (a) (i) and (ii) and the inequalities $x \geq 0$ and $y \geq 0$. (1 mark)

(iii) Use your graph to write the coordinates of the vertices of the shaded region. (2 marks)

(c) The balls and bats are sold to students. The school makes a profit of \$1 on each ball and \$3 on each bat. The equation $P = x + 3y$ represents the total profit that may be collected from the sale of these items.

(i) Use the coordinates of the vertices given at (b) (iii) above to determine the profit for each of those combinations. (2 marks)

(ii) Hence, state the maximum profit that may be made. (1 mark)

Total 15 marks