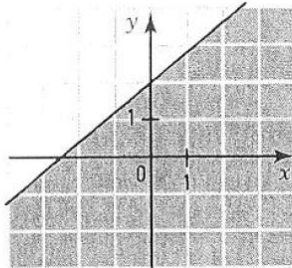
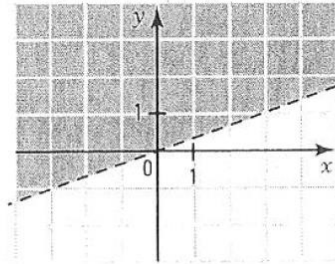


1. Represent graphically the solution set of the following inequalities.

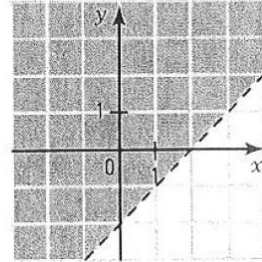
a) $-4x + 5y - 10 \leq 0$



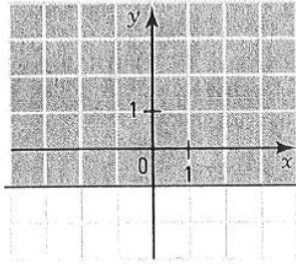
b) $x - 3y < 0$



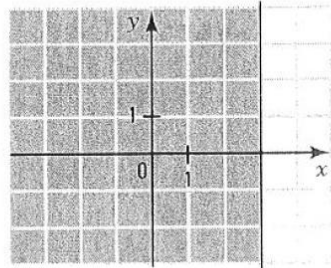
c) $y > x - 2$



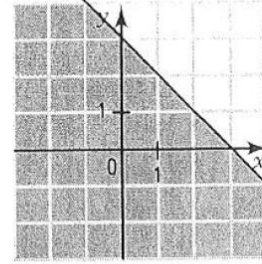
d) $y \geq -1$



e) $x \leq 3$



f) $x + y \leq 3$



2. Determine if the coordinates of the point $P(3, -2)$ verify each of the following inequalities.

a) $5x - 4y > 10$

Yes

b) $x \leq 4y$

No

c) $x < 2y + 4$

No

d) $-3x + 2y + 5 \leq 0$

Yes

e) $x \leq 8$

Yes

f) $\frac{x}{3} + \frac{y}{2} < 1$

Yes

3. For each of the following situations,

1. identify the variables.

2. translate the situation into a two-variable first degree inequality.

a) The total number of boys and girls on a field trip is less than or equal to 150.

x : number of boys, y : number of girls; $x + y \leq 150$.

b) The perimeter of a rectangle is greater than 250 cm. x : length, y : width; $2x + 2y > 250$.

c) At a summer camp, counsellors are paid \$9.50 an hour and sports instructors are paid \$15 an hour. The budget for these employees' salary is less than \$9000.

x : number of counsellors, y : number of sports instructors; $9.50x + 15y < 9000$.

d) At a food products company, salad dressing is packaged in 100 ml bottles and 250 ml bottles. The total amount of dressing packaged in bottles is at least equal to 50 litres.

x : number of 100 ml bottles, y : number of 250 ml bottles; $100x + 250y \geq 50\,000$.

e) In a group of tourists, there are at most three times as many Francophones as there are Anglophones.

x : number of Francophones, y : number of Anglophones; $x \leq 3y$.

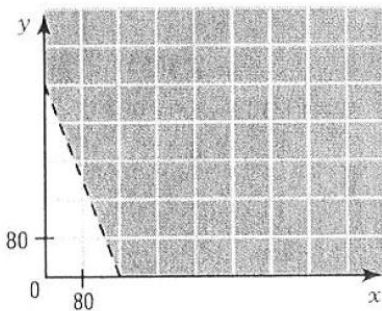
4. To raise money for their graduation party, secondary 5 students sell shirts and caps. Each shirt sells for \$15 and each cap sells for \$8. Translate each of the following constraints into a two-variable first degree inequality, knowing that x represents the number of shirts sold and y represents the number of caps sold.

- a) The students want to raise at least \$850. $15x + 8y \geq 850$
- b) They want to sell at most three times as many shirts as caps. $x \leq 3y$
- c) They sold more than 70 items. $x + y > 70$
- d) They sold a maximum of 40 shirts. $x \leq 40$
- e) They sold at least as many shirts as caps. $x \geq y$

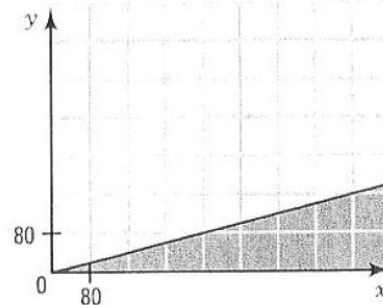
5. At a fundraising concert to help homeless people, organizers sell adult tickets for \$25 and student tickets for \$10. If x represents the number of adult tickets sold and y represents the number of student tickets sold, use a two-variable first degree inequality to translate each of the following statements and represent the solution set of the inequality in the Cartesian plane with an appropriate choice of scale.

- a) The organizers raised more than \$4000.
- b) There were at least four times as many adult tickets sold as student tickets.

$25x + 10y > 4000$

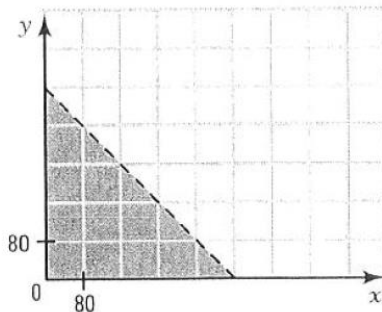


$x \geq 4y$

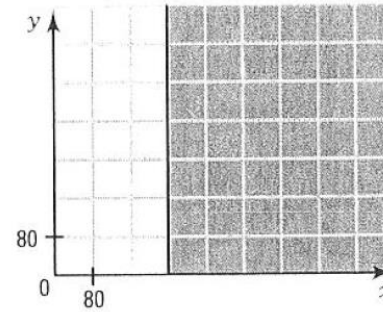


- c) The number of tickets sold is less than 400.
- d) The number of adult tickets sold is greater than or equal to 240.

$x + y < 400$



$x \geq 240$



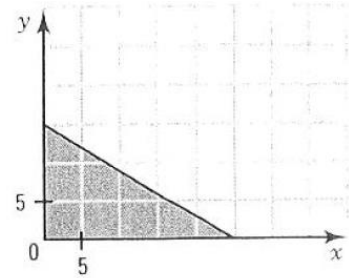
6. For each of the following situations,
1. define the variables involved in the situation;
 2. translate the situation into an inequality;
 3. represent the situation in the Cartesian plane.

- a) A garden has an area of 75 m². Each fruit patch occupies 3 m² and each vegetable patch occupies 5 m².

x: number of fruit patches,

y: number of vegetable patches;

$3x + 5y \leq 75$.

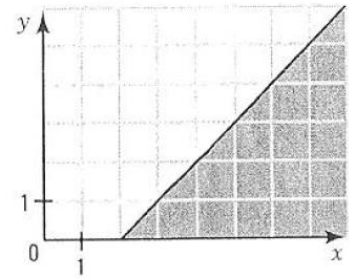


- b) In Quebec's logging industry, timber production exceeds pulp and paper production by at least 2%.

x: percentage of timber production,

y: percentage of pulp and paper production;

$x \geq y + 2$.

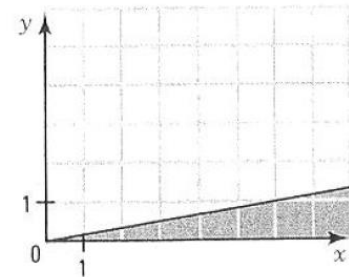


- c) Quebec's tourist industry announces that there are at least 6 times as many tourists from Quebec as there are tourists from other parts of Canada.

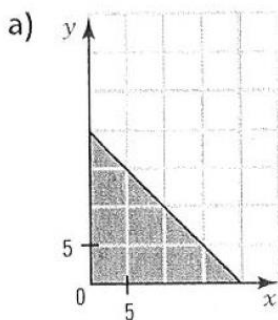
x: number of tourists from Quebec,

y: number of tourists from other parts of Canada;

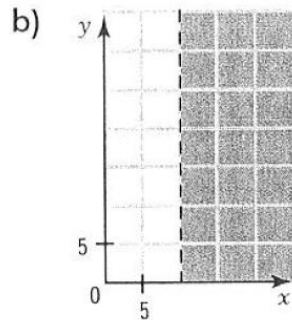
$x \geq 6y$.



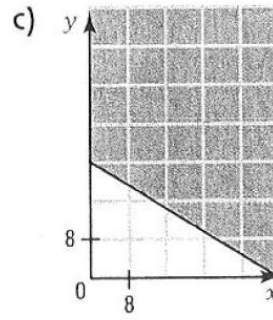
7. The manager of employees for a pharmaceutical company wishes to hire employees for the research department and employees for management. Research employees are paid \$40 an hour and management employees are paid \$16 an hour. If *x* represents the number of research employees and *y* the number of management employees, translate each of the following graphs into an inequality.



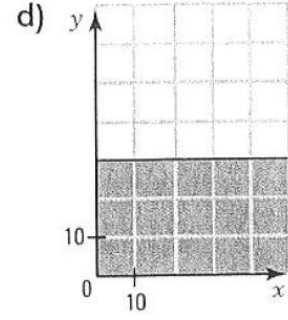
$x + y \leq 20$



$x > 10$



$3x + 5y \geq 120$



$y \leq 30$