Chapter 12 Test

1) $3x + 8 < 32$ and $3x + 8 \geq -1$
$3x < 24$ and $3x \geq -9$
$x < 8$ and $x \geq -3$

3) Let x represent the number of goals the team could allow in their fifth game. We have

$\frac{3+5+4+6+x}{5} < 4$ ← Average number of opposing goals must be less than 4

$\frac{18+x}{5} < 4$

$18 + x < 20$
$x < 2$

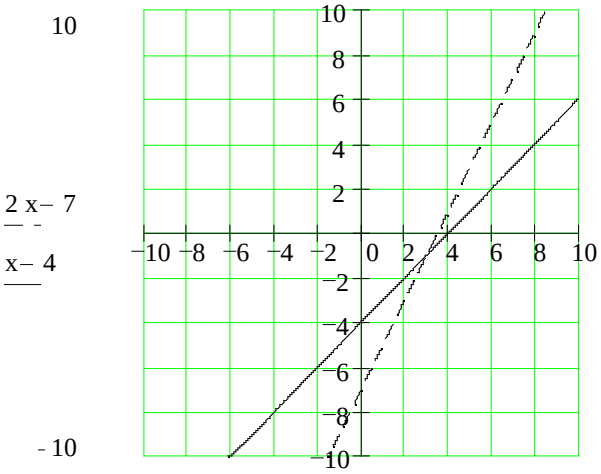
Since the opposing team cannot score negative or partial goals, we see that our solution $x < 2$ implies the team can only allow the opposing team to score 0 or 1 goal in the 5th game.

Solution set: $\{x : x = 0 \text{ or } x = 1\}$

5) Solution set: $\{x : x > 1.59\}$ (approximately)

7) Solution set: $(-\infty, -7) \quad (2, \infty)$

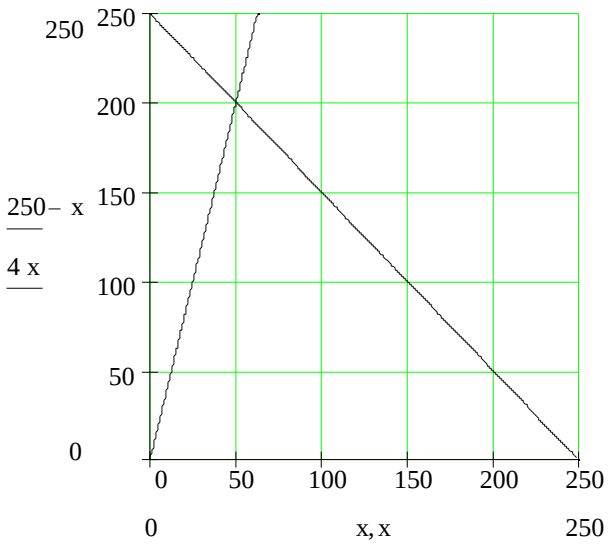
9)



11)

a) $x > 0$ ←Number is positive
$y > 0$ ←Number is positive
$x + y < 250$ ←Sum of both numbers is at most 250
$y \geq 4x$ ←Larger number is at least four times the smaller number

b)

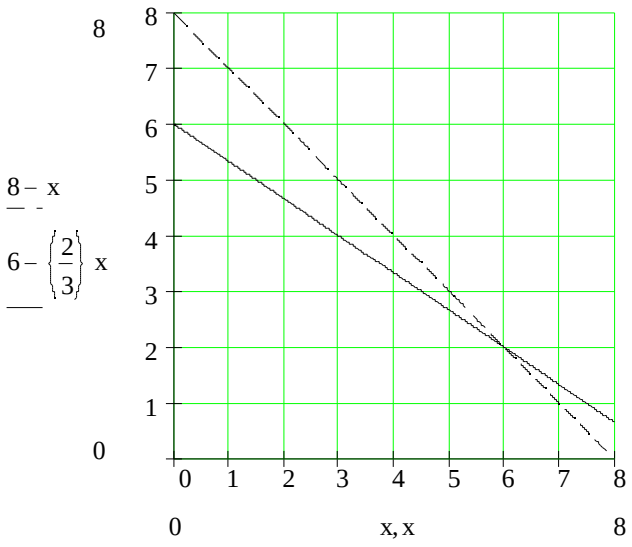


c) The ordered pair (10, 240) is a solution.

13)

a) $x + y < 8$ ←Trip must take less than 8 hrs total
$40x + 60y \geq 360$ ←Total trip must be at least 360 miles.

b)



c) Yes, the ordered pair (4.5, 3) is a solution to this problem because it satisfies both inequalities. It lies in the shaded region.

$(4.5) + (3) < 8$
$7.5 < 8$ ← True

$40(3) + 60(4.5) \geq 360$
$120 + 270 \geq 360$
$390 \geq 360$ ← True