

EXAM REVIEW GRADE 9
Unit 6 – Linear Equations and Inequalities

Name: _____ Class: _____

1. Solve the following equations:

a) $-8 = -4 + x$

$$-4 = x$$

b) $\frac{n}{8} = \frac{-9}{12}$

$$\frac{12n}{12} = \frac{-72}{12} \quad n = -6$$

2. a) A number is added to four and the result is doubled to equal twenty-two. Write and solve the equation.

$$2(n + 4) = 22$$

$$\begin{array}{r} 2n + 8 = 22 \\ -8 \quad -8 \end{array}$$

$$\frac{2n}{2} = \frac{14}{2}$$

$$n = 7$$

b) Four times a number decreased by 42 is equal to 54 decreased by 2 times the number. What is the number?

$$4n - 42 = 54 - 2n$$

$$\begin{array}{r} 4n - 42 = 54 - 2n \\ +42 \quad +42 \end{array}$$

$$6n = 96$$

$$n = 16$$

3. Solve for x: $\frac{-2x}{-2} > \frac{64}{2}$

$$x < -32$$

4. Solve the inequality: $6x - 5 < 8x + 1$

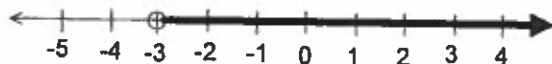
$$\begin{array}{r} -2x - 5 < 1 \\ +5 \quad +5 \end{array}$$

$$-2x < 6$$

$$\frac{-2x}{-2} < \frac{6}{-2}$$

$$x > -3$$

5. Write an inequality for the following graph?



$$x > -3$$

6. Solve each of the following equations.

A) $\frac{2x - 4}{-2x} = \frac{-3x}{-2x}$

$$\frac{-4}{-5} = \frac{-5x}{-5}$$

$$\frac{4}{5} = x$$

B) $\frac{x}{7} - 3 = 11$

$$\frac{x}{7} = \frac{14}{1}$$

$$x = 98$$

C) $2(x - 2) = -2(x + 4)$

$$\begin{array}{r} 2x - 4 = -2x - 8 \\ +2x \quad +2x \end{array}$$

$$\begin{array}{r} 4x - 4 = -8 \\ +4 \end{array}$$

$$4x = -4$$

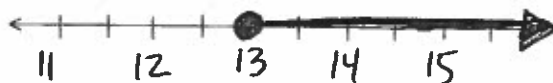
$$x = -1$$

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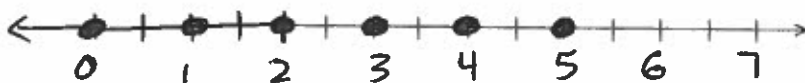
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7. Write an inequality for each situation and then graph it.

a) You must be at least 13 years old to watch the movie. $x \geq 13$



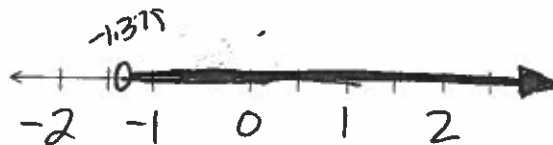
b) The truck can seat 5 people. $x \leq 5$



8. Solve and graph the following inequalities.

a)
$$\begin{array}{r} -3.5x < 1.3x + 6.6 \\ -1.3x \quad -1.3x \end{array}$$

$$\begin{array}{r} -4.8x < 6.6 \\ \hline -4.8 \quad -4.8 \\ x > -1.375 \end{array}$$



b)
$$\begin{array}{r} x - 4 > 3x + 12 \\ -3x \quad -3x \end{array}$$

$$\begin{array}{r} -2x - 4 > 12 \\ +4 \quad +4 \end{array}$$

$$\begin{array}{r} -2x > 16 \\ \hline -2 \quad -2 \\ x < -8 \end{array}$$



c)
$$\begin{array}{r} \frac{x+8}{8} + \frac{10}{1} \geq \frac{20}{1} \\ \frac{x+8}{8} \geq \frac{10}{1} \end{array}$$

$$\begin{array}{r} x + 80 \geq 160 \\ -80 \quad -80 \end{array}$$

$$x \geq 80$$



9. A taxicab charges \$2.50, plus \$1.78 per kilometre. How long is a trip that costs \$21.19? Write and solve an equation to show your solution.

$$\begin{array}{r} 2.50 + 1.78k = 21.19 \\ -2.50 \quad -2.50 \end{array}$$

$$\begin{array}{r} 1.78k = 18.69 \\ \hline 1.78 \quad 1.78 \end{array}$$

$$k = 10.5$$

The trip is 10.5 km.

10. Nadia gets paid \$1000 per month plus 5% commission on her sales. She wants to earn at least \$2200 this month. Write an inequality to represent this situation, then solve it to determine how much Nadia must sell to reach her goal.

$$\begin{array}{r} 1000 + 0.05c \geq 2200 \\ -1000 \quad -1000 \end{array}$$

$$\begin{array}{r} 0.05c \geq 1200 \\ \hline 0.05 \quad 0.05 \end{array}$$

$$c \geq 24000$$

Nadia must sell
\$24000 to
make at least
\$2200.