

EXAM REVIEW GRADE 9
Unit 6 – Linear Equations and Inequalities

Name: _____ Class: _____

1. Solve the following equations:

a)
$$\begin{array}{r} -8 = -4 + x \\ +4 \quad +4 \\ \hline -4 = x \end{array}$$

b)
$$\begin{array}{r} \frac{n}{8} = \frac{-9}{12} \\ \frac{12n}{12} = \frac{-72}{12} \\ n = -6 \end{array}$$

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

$$\begin{array}{r} 2(n + 4) = 22 \\ 2n + 8 = 22 \\ -8 \quad -8 \\ \hline 2n = 14 \\ \frac{2n}{2} = \frac{14}{2} \\ n = 7 \end{array}$$

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

$$\begin{array}{r} 4n - 42 = 54 - 2n \\ +42 \quad +42 \\ \hline 4n = 96 - 2n \\ +2n \quad +2n \\ \hline 6n = 96 \\ \frac{6n}{6} = \frac{96}{6} \\ n = 16 \end{array}$$

3. Solve for x:

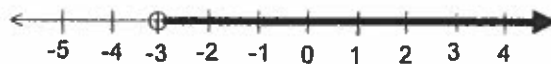
$$\begin{array}{r} -2x > 64 \\ \frac{-2x}{-2} < \frac{64}{-2} \\ x < -32 \end{array}$$

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

$$\begin{array}{r} 6x - 5 < 8x + 1 \\ -8x \quad -8x \\ \hline -2x < 6 \end{array}$$

$$\begin{array}{r} -2x > 6 \\ \frac{-2x}{-2} > \frac{6}{-2} \\ x > -3 \end{array}$$

5. Write an inequality for the following graph?



$$n > -3$$

6. Solve each of the following equations.

A)
$$\begin{array}{r} 2x - 4 = -3x \\ -2x \quad -2x \\ \hline -4 = -5x \\ \frac{-4}{-5} = \frac{-5x}{-5} \\ x = \frac{4}{5} \end{array}$$

B)
$$\begin{array}{r} \frac{x}{7} - 3 = 11 \\ +3 \quad +3 \\ \hline \frac{x}{7} = 14 \\ 7 \times \frac{x}{7} = 14 \times 7 \\ x = 98 \end{array}$$

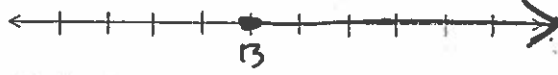
C)
$$\begin{array}{r} 2(x - 2) = -2(x + 4) \\ 2x - 4 = -2x - 8 \\ +4 \quad +4 \\ \hline 2x = -2x - 4 \\ +2x \quad +2x \\ \hline 4x = -4 \\ \frac{4x}{4} = \frac{-4}{4} \\ x = -1 \end{array}$$

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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. $n \geq 13$



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



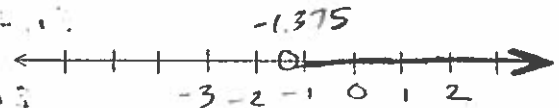
8. Solve and graph the following inequalities. (15% - 5 marks each)

a) $-3.5x < 1.3x + 6.6$

$$\begin{array}{r} -1.3x \quad -1.3x \\ \hline -4.8x < 1.6 \end{array}$$

$$\begin{array}{r} -4.8x > \frac{1.6}{-4.8} \\ \hline -4.8x > -0.333 \end{array}$$

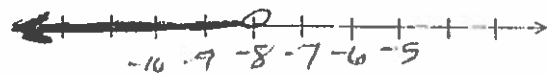
$x > -1.375$



b) $x - 4 > 3x + 12$

$$\begin{array}{r} -3x \quad -3x \\ \hline -2x - 4 > 12 \\ +4 \quad +4 \\ \hline -2x > 16 \end{array}$$

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



c) $\frac{x}{8} + 10 \geq 20$

$$\begin{array}{r} \frac{x}{8} \geq 10 \\ \hline x \geq 80 \end{array}$$



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.

$$\begin{array}{r} 2.50 + 1.78k = 21.19 \\ -2.50 \quad \quad \quad -2.50 \\ \hline 1.78k = 18.69 \end{array}$$

$$\begin{array}{r} 1.78k = 18.69 \\ \hline 1.78 \quad \quad 1.78 \\ \hline k = 10.5 \text{ km} \end{array}$$

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.

$$\begin{array}{r} 1000 + 0.05s \geq 2200 \\ -1000 \quad \quad \quad -1000 \\ \hline 0.05s \geq 1200 \\ \hline 0.05 \quad \quad \quad 0.05 \\ \hline s \geq 24000 \end{array}$$

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sell at
least
\$ 24000.