

Name _____

8A: Algebra 1

Date _____

Period _____

Extra Review for Algebra Exam #2

Extra Review #1

1) Solve the following equation and tell whether each has one, zero, or infinitely many solutions.

$$8x + 4 = 4(2x + 1)$$

2) Solve the linear inequality, write your answer in set notation and graph your solution on a number line

$$7(3x + 4) < 10 - 3x$$

Solve. Write the solution in set notation. Graph the solution

$$3) 2 - x < 1 \text{ OR } -5x + 1 > 16$$

$$4) -4x - 3 > -7 \text{ AND } -3x - 2 \leq 7$$

$$5) 12 \leq 4n < 28$$

6-9: Solve the following and write the final answer in interval notation:

6) $2(x-3)+1 \leq 5$

7) $-2(x+1)+4 \leq -4$

8) $6 \leq 3x < 9$

9) $x-4 > 1$ or $x-8 < -10$

10) $7f + g < 5$, for f

11) $r > 3p$, for p

12) $bc + 3g \leq 2k$, for c

13) $2c + 4d = 10$, for d

14) $k = \frac{1}{5}ab$ for b

15) $\frac{1}{3}(9n+6) = 5$

16) $-4(5y - 6) =$

17) Which property of equality can be used to justify this step?

$$\begin{array}{r} 15 - 10x = 6x \\ +10x \quad +10x \\ \hline 15 = 16x \end{array}$$

18) Solve: $4(3t - 5) + 7 \geq 8t + 3$

19) Solve: $5 - 10n > 45$

20) Solve & graph: $4m - 17 < 6m + 25$

21) Solve & graph: $-2 \leq x - 3 < 4$

22) Solve & write in interval notation
 $2x \leq 6$ or $3x > 12$

23) Solve & write in set-builder notation
 $4(x+2) < 24$

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Extra Review for Algebra Exam #2

Review #1

1) Solve the following equation and tell whether each has one, zero, or infinitely many solutions.

$$8x + 4 = 4(2x + 1)$$

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

$4 = 4$
 ✓ Infinite amount of solutions

2) Solve the linear inequality, write your answer in set notation and graph your solution on a number line

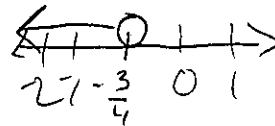
$$7(3x + 4) < 10 - 3x$$

$$\begin{array}{r} 21x + 28 < 10 - 3x \\ +3x \qquad +3x \end{array}$$

$$\begin{array}{r} 24x + 28 < 10 \\ -28 \quad -28 \\ \hline 24x < -18 \\ \frac{24x}{24} < \frac{-18}{24} \end{array}$$

$$x < -\frac{3}{4}$$

$$\{x \in \mathbb{R} \mid x < -\frac{3}{4}\}$$

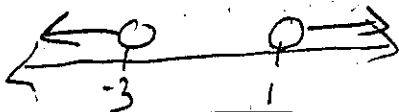


Solve. Write the solution in set notation. Graph the solution

$$3) 2 - x < 1 \text{ OR } -5x + 1 > 16$$

$$\begin{array}{r} 2 - x < 1 \\ -2 \quad -2 \\ \hline -x < -1 \\ \frac{-x}{-1} < \frac{-1}{-1} \\ x > 1 \end{array} \quad \begin{array}{r} -5x + 1 > 16 \\ -1 \quad -1 \\ \hline -5x > 15 \\ \frac{-5x}{-5} > \frac{15}{-5} \\ x < -3 \end{array}$$

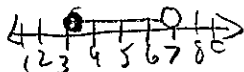
$$\{x \in \mathbb{R} \mid x > 1 \text{ or } x < -3\}$$



$$5) 12 \leq 4n < 28$$

$$\frac{12}{4} \leq \frac{4n}{4} < \frac{28}{4}$$

$$3 \leq n < 7 \quad \{n \in \mathbb{R} \mid 3 \leq n < 7\}$$



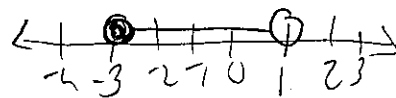
$$4) 4x - 3 > -7 \text{ AND } -3x - 2 \leq 7$$

$$\begin{array}{r} 4x - 3 > -7 \\ +3 \quad +3 \\ \hline 4x > -4 \\ \frac{4x}{4} > \frac{-4}{4} \\ x > -1 \end{array} \quad \begin{array}{r} -3x - 2 \leq 7 \\ +2 \quad +2 \\ \hline -3x \leq 9 \\ \frac{-3x}{-3} \geq \frac{9}{-3} \\ x \geq -3 \end{array}$$

$$x > -1 \text{ and } x \geq -3$$

$$-3 \leq x < 1$$

Must be written as single inequality!



$$\{x \in \mathbb{R} \mid -3 \leq x < 1\}$$

6-9: Solve the following and write the final answer in interval notation:

$$6) 2(x-3)+1 \leq 5$$

$$2x - 6 + 1 \leq 5$$

$$2x - 5 \leq 5$$

$$\quad +5 \quad +5$$

$$\frac{2x}{2} \leq \frac{10}{2}$$

$$x \leq 5$$

$x \leq 5$

IN: $(-\infty, 5]$

$$7) -2(x+1)+4 \leq -4$$

$$-2x - 2 + 4 \leq -4$$

$$-2x + 2 \leq -4$$

$$\quad -2 \quad -2$$

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

$$x \geq 3$$

$x \geq 3$

IN: $[3, \infty)$

* must switch the direction of the symbol when \div by a Neg #

$$8) \frac{6}{3} \leq \frac{3x}{3} < \frac{9}{3}$$

$$2 \leq x < 3$$

IN: $[2, 3)$

$$9) x-4 > 1 \text{ or } x-8 < -10$$

$$\quad +4 \quad +4 \quad \quad +8 \quad +8$$

$$x > 5 \text{ or } x < -2$$

IN: $(-\infty, -2) \cup (5, \infty)$

$$10) 7f+g < 5, \text{ for } f$$

$$\quad -g \quad -g$$

$$\frac{7f}{7} < \frac{5-g}{7}$$

$$f < \frac{5-g}{7}$$

$$11) r > 3p, \text{ for } p$$

$$\quad \quad \quad -3 \quad -3$$

$$\frac{r}{3} > p$$

$$\text{or}$$

$$p < \frac{r}{3}$$

$$12) bc+3g \leq 2k, \text{ for } c$$

$$\quad -3g \quad -3g$$

$$\frac{bc}{b} \leq \frac{2k-3g}{b}$$

$$c \leq \frac{2k-3g}{b}$$

if $b > 0$
 $b \neq 0$

$$c \geq \frac{2k-3g}{b}$$

if $b < 0 \in \text{Neg \#}$

* b/c if you switch the direction of the symbol when you \div by a Negative #

$$13) 2c+4d = 10, \text{ for } d$$

$$\quad -2c \quad -2c$$

$$\frac{4d}{4} = \frac{10-2c}{4}$$

$$d = \frac{10-2c}{4}$$

$$d = \frac{5-c}{2}$$

* all 3 #'s are divisible by 2, so you must simplify

$$14) k = \frac{1}{5}ab \text{ for } b$$

$$\quad \quad \quad \cdot \left(\frac{1}{5}ab \right) \cdot$$

$$\frac{5k}{a} = \frac{1}{a} \cdot \frac{1}{5} \cdot ab$$

$$b = \frac{5k}{a}$$

* you must get rid of the fraction 1st by multiplying by the reciprocal

$$15) \frac{1}{3}(9n+6) = 5$$

$$3n+2 = 5$$

$$\quad -2 \quad -2$$

$$\frac{3n}{3} = \frac{3}{3}$$

$$n = 1$$

16) $-4(5y - 6) =$
 $-20y + 24$

17) Which property of equality can be used to justify this step?

$$\begin{array}{r} 15 - 10x = 6x \\ +10x \quad +10x \\ \hline 15 = 16x \end{array}$$

APPE

Adding the same thing to both side,
Addition Property of Equality

18) Solve: $4(3t - 5) + 7 \geq 8t + 3$

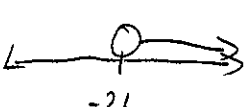
D $12t - 20 + 7 \geq 8t + 3$
 C $12t - 13 \geq 8t + 3$
 M $-8t \quad -8t$
 S $4t - 13 \geq 3$
 $+13 \quad +13$
 $\frac{4t}{4} \geq \frac{16}{4} \rightarrow t \geq 4$

19) Solve: $5 - 10n > 45$

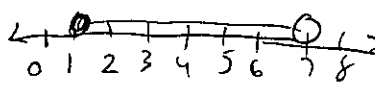
$$\begin{array}{r} -5 \quad -5 \\ \hline -10n > 40 \\ -10 \quad -10 \\ \hline n < -4 \end{array}$$

must switch the direction of the inequality symbol when dividing by a Negative #

20) Solve & graph: $4m - 17 < 6m + 25$

$$\begin{array}{r} -4m \quad -4m \\ \hline -17 < 2m + 25 \\ -25 \quad -25 \\ \hline -42 < 2m \\ \frac{-42}{2} < \frac{2m}{2} \\ -21 < m \text{ or } m > -21 \end{array}$$


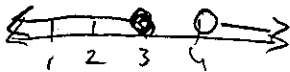
21) Solve & graph: $-2 \leq x - 3 < 4$

$$\begin{array}{r} +3 \quad +3 \quad +3 \\ \hline -2 \leq x < 4 \end{array}$$


22) Solve & write in interval notation

$$\frac{2x}{2} \leq \frac{6}{2} \text{ or } \frac{3x}{3} > \frac{12}{3}$$

$$x \leq 3 \text{ or } x > 4$$



IN: $(-\infty, 3] \cup (4, \infty)$

23) Solve & write in set-builder notation

$$\begin{array}{r} 4(x+2) < 24 \\ 4x + 8 < 24 \\ -8 \quad -8 \\ \hline 4x < 16 \\ \frac{4x}{4} < \frac{16}{4} \end{array}$$

$$x < 4$$

SB: $\{x \mid x < 4\}$