AGS 1 Name: _____ Period: ____ Date: _____

Unit 5 Review

Test will cover:

- Solving equations – showing every step
- Solving and graphing inequalities – showing every step
- Writing equations and inequalities from context and interpreting the answers

Solve each equation.

1. $5x + 6 = -41$

$-6 \quad -6$

$\frac{5x}{5} = \frac{-47}{5}$

$x = \frac{-47}{5}$

2. $7 - 3x = 46$

$-7 \quad -7$

$\frac{-3x}{-3} = \frac{39}{-3}$

$x = -13$

3. $(9)\ \frac{2x}{9} = \frac{14}{3}(9)$

$\frac{2x}{2} = \frac{42}{2}$

$x = 21$

4. $5 - 2(x - 6) = 3(x + 4)$

$5 - 2x + 12 = 3x + 12$

$-2x + 17 = 3x + 12$

$+2x \quad +2x$

$17 = 5x + 12$

$-12 \quad -12$

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

$x = 1$

5. $3x - 9 - 8x = 11$

$-5x - 9 = 11$

$+9 \quad +9$

$\frac{-5x}{-5} = \frac{20}{-5}$

$x = -4$

6. $\left(-\frac{2}{5}\right) -\frac{5}{2}(x - 1) = 15\left(-\frac{2}{5}\right)$

$x - 1 = -6$

$+1 \quad +1$

$x = -5$

7. $\frac{x}{6} + 9 = 14$

$-9 \quad -9$

$(6)\ \frac{x}{6} = 5(6)$

$x = 30$

8. $8x + 3 = 4(2x + 3)$

$8x + 3 = 8x + 12$

$-8x \quad -8x$

$3 = 12$

No Solution

Solve each literal equation.

9. Solve for w: $V = lwh$

$\frac{V}{lh} = \frac{lwh}{lh}$

$w = \frac{V}{lh}$

10. Solve for y: $6x - 3y = 12$

$-6x \quad -6x$

$\frac{-3y}{-3} = \frac{-6x}{-3} + \frac{12}{-3}$

$y = 2x - 4$

11. Solve for d_1: $A = d_1 d_2$

$\frac{A}{d_2} = \frac{d_1 d_2}{d_2}$

$d_1 = \frac{A}{d_2}$

12. Solve for m: $y - y_1 = m(x - x_1)$

$\frac{y - y_1}{x - x_1} = \frac{m(x - x_1)}{(x - x_1)}$

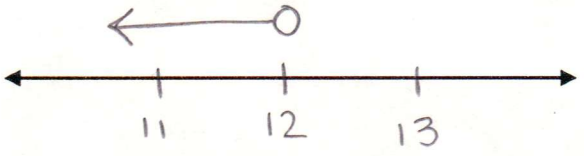
$m = \frac{y - y_1}{x - x_1}$

Solve and graph each inequality.

13. $3x < 36$

$\frac{3x}{3} < \frac{36}{3}$

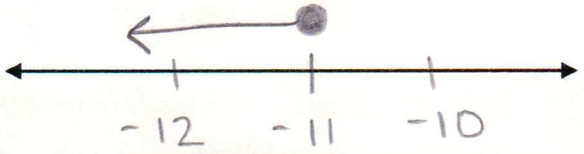
$x < 12$



14. $-4x \geq 44$

$\frac{-4x}{-4} \geq \frac{44}{-4}$

$x \leq -11$



15. $3(2x - 7) < 6$

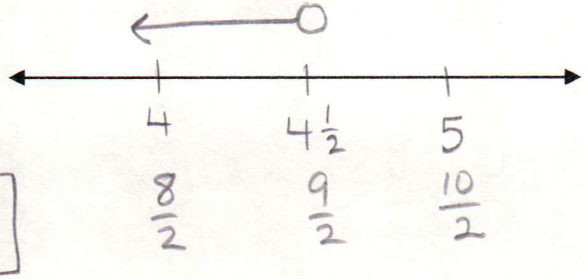
$\frac{3(2x-7)}{3} < \frac{6}{3}$

$2x - 7 < 2$

$+7 \quad +7$

$\frac{2x}{2} < \frac{9}{2}$

$x < 4\frac{1}{2}$



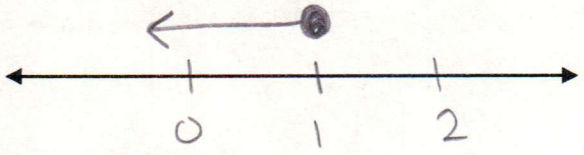
16. $15 \leq 19 - 4x$

$-19 \quad -19$

$\frac{-4}{-4} \leq \frac{-4x}{-4}$

$1 \geq x$

$x \leq 1$



17. $6(x-7) > 4(x+3)$

$6x - 42 > 4x + 12$

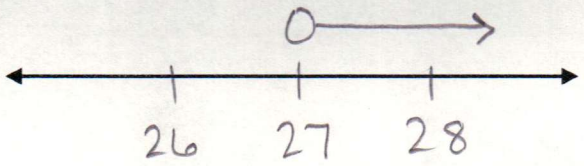
$-4x \quad -4x$

$2x - 42 > 12$

$+42 \quad +42$

$\frac{2x}{2} > \frac{54}{2}$

$x > 27$

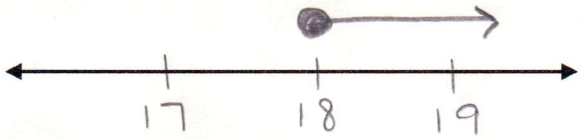


18. $\frac{2x}{3} + 5 \geq 17$

$-5 \quad -5$

$\left(\frac{3}{2}\right)\frac{2x}{3} \geq 12\left(\frac{3}{2}\right)$

$x \geq 18$



19. $3(2x+8) \leq 7(x-1) + x$

$6x + 24 \leq 7x - 7 + x$

$6x + 24 \leq 8x - 7$

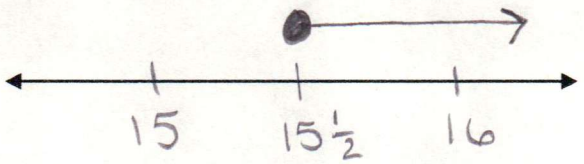
$-8x \quad -8x$

$-2x + 24 \leq -7$

$-24 \quad -24$

$\frac{-2x}{-2} \leq \frac{-31}{-2}$

$x \geq 15\frac{1}{2}$



Read each context carefully and model the situation.

20. You currently have $150 in your savings account. You want to get to $600 saved. If you are able to save $30 a week, how long will it take you to reach your goal.

a) Write and solve an equation that models the situation.

w = weeks to save $

$30w + 150 = 600$

$-150 \quad -150$

$\frac{30w}{30} = \frac{450}{30}$

$w = 15$

b) Interpret your solution.

It will take 15 weeks to save the $600.

21. Gordon wants to join the game club for $25. This makes him a member and drops the weekly game fee to $3 each time. If Gordon does not join he pays $6 each time. How many times will Gordon have to go to game club for the membership rate to be cheaper?

a) Write and solve an inequality that models the situation.

w = # of weeks he pays the fee

$3w + 25 < 6w$

$-3w \quad -3w$

$\frac{25}{3} < \frac{3w}{3}$

$8\frac{1}{3} < w$

b) Interpret your solution.

Gordon will need to go to game club nine or more times to make being a member be the better option.

c) Write your solution in interval notation.

$[9, \infty)$

22. Sara wants to get veggies delivered from the local farm. There is a one-time member fee of $20 plus a delivery fee of $35 each time. How many deliveries can Sara get if she wants to spend no more than $200 on veggie deliveries?

a) Write and solve an inequality that models the situation.

d = # of deliveries

$35d + 20 \leq 200$

$-20 \quad -20$

$\frac{35d}{35} \leq \frac{180}{35}$

$d \leq 5.14$

b) Interpret your solution.

Sara can get veggies delivered no more than 5 times.

c) Write your solution in interval notation.

$[0, 5]$

Use the table to answer the following questions.

Variable	Meaning	Unit
S	Packages of Skittles	packages
N	Packages of Nerds	packages
M	Number of Milky Way Bars	bars
H	Number of Hershey Bars	bars
G	Packages of Gummy Bears	packages
T	Number of Twix Bars	bars
W	Packages of Whoppers	packages

Jack got back from watching the parade and dumped out his candy bag. He created the table above to track the amount of candy he has. (His little brother likes to steal it from him!)

23. He created the following equation: $C = M + H + T + W$

Describe the meaning of the variable C.

C describes how many candies he got that were chocolate

24. Then he made this equation: $P = S + N + G + W$

Describe the meaning of the variable P.

P describes how many candies he got that were in packages (not bars)

25. Create a variable and equation that find the number of bars.

B = # of candies that come as bars

$B = M + H + T$