8/29 A1 Notes

August 23, 2018

## Bellwork

1. Solve $8 - 4(2m - 2) = 24$.

$8-4(2m-2)=24$
$8-8m+8=24$
$16-8m=24$
$-16 \quad -16$
$\frac{-8m}{-8}=\frac{8}{-8}$ $\boxed{m=-1}$

2. Solve $x - 6 \geq -10$. Graph the solution.

$+6 \quad +6$
$x \geq -4$

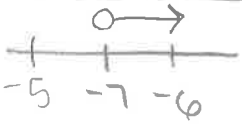
3. The sum of twice a number and 8 is 14. Write an equation to represent this situation. What is the number?

$2x + 8 = 14$
$-8 \quad -8$
$\frac{2x}{2}=\frac{6}{2}$
$\boxed{x=3}$

**Solve the inequality. Graph the solution.**

**1.** $b - 2 > -9$

$+2 \quad +2$
$\boxed{b > -7}$

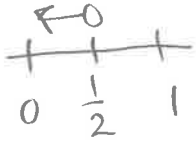



**2.** $m - 3 \leq 5$

$+3 \quad +3$
$\boxed{m \leq 8}$

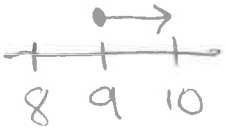
**3.** $\frac{1}{4} > y - \frac{1}{4}$ $\cdot 4 \quad \cdot 4 \quad \cdot 4$

$1 > 4y - 1$
$+1 \quad +1$
$\frac{2}{4} > \frac{4y}{4}$
$\frac{1}{2} > y$ $\boxed{y < \frac{1}{2}}$



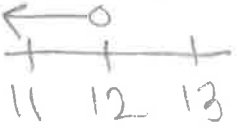

**4.** $\frac{4b}{4} \geq \frac{36}{4}$

$\boxed{b \geq 9}$




**5.** $\frac{-18}{1.5} > \frac{1.5q}{1.5}$

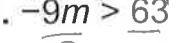
$12 > q$
$\boxed{q < 12}$



**Solve the inequality. Graph the solution.**

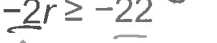
6. $\frac{p}{-4} < 7$ ·(−4)

$p > -28$



7. $\frac{x}{-5} \leq -5$ ·(−5)

$x \geq 25$



8. $1 \geq -\frac{1}{10}z$ ·10

$10 \geq -1z$

$-10 \leq z$

$z \geq -10$

9. $-9m > 63$

$\frac{-9m}{-9} > \frac{63}{-9}$

$m < -7$

10. $-2r \geq -22$

$\frac{-2r}{-2} \geq \frac{-22}{-2}$

$r \leq 11$

11. $-0.4y \geq -12$

$\frac{-0.4y}{-0.4} \geq \frac{-12}{-0.4}$

$y \leq 30$

* when multiplying/dividing by a negative you must flip the inequality sign the other direction

- Use what you already know about solving equations and inequalities to solve each multi-step inequality. Graph your solutions.

**a.** $2x + 3 \leq x + 5$

a) $2x+3 \leq x+5$

$-x \quad -x$

$x+3 \leq 5$

$-3 \quad -3$

$x \leq 2$

**b.** $-2x + 3 > x + 9$

b) $-2x+3 > x+9$

$-x \quad -x$

$-3x+3 > 9$

$-3 \quad -3$

$\frac{-3x}{-3} > \frac{6}{-3}$

$x < -2$

**c.** $27 \geq 5x + 4x$

c) $27 \geq 5x+4x$

$\frac{27}{9} \geq \frac{9x}{9}$

$3 \geq x$

$x \leq 3$

**d.** $-8x + 2x - 16 < -5x + 7x$

d) $-8x+2x-16 < -5x+7x$

$-6x-16 < 2x$

$+6x \quad +6x$

$\frac{-16}{8} < \frac{8x}{8}$

$-2 < x$

$x > -2$

**e.** $3(x - 3) - 5x > -3x - 6$

e) $3(x-3)-5x > -3x-6$

$3x-9-5x > -3x-6$

$-2x-9 > -3x-6$

$+3x \quad +3x$

$x-9 > -6$

$+9 \quad +9$

$x > 3$

**f.** $-5x - 6x \leq 8 - 8x - x$

f) $-5x-6x \leq 8-8x-x$

$-11x \leq 8-9x$

$+9x \quad +9x$

$-2x \leq 8$

$\frac{-2x}{-2} \geq \frac{8}{-2}$

$x \geq -4$

**Solve the inequality. Graph the solution.**

**1.** $\frac{4b}{3} - \frac{1}{2} < \frac{7}{9}$

**2.** $8 - 9c \geq -28$

**3.** $\frac{n}{-2} + 11 > 12$

**4.** $8b - 3 > 4(2b + 3)$

1) $6\left(\frac{4b}{3}\right) - \left(\frac{1}{2}\right)9 < \left(\frac{7}{9}\right)^2 2$

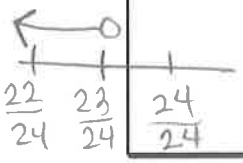
$\frac{24b}{18} - \frac{9}{18} < \frac{14}{18}$

$24b - 9 < 14$

$+9 \quad +9$

$\frac{24b}{24} < \frac{23}{24}$

$b < \frac{23}{24}$

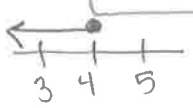



2) $8 - 9c \geq -28$

$-8 \quad -8$

$\frac{-9c}{-9} \geq \frac{-36}{-9}$

$c \leq 4$

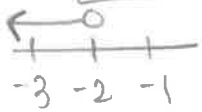



3) $\frac{n}{-2} + 11 > 12$

$-11 \quad -11$

$-2\left(\frac{n}{-2}\right) > (1)-2$

$n < -2$




4) $8b - 3 > 4(2b + 3)$

$8b - 3 > 8b + 12$

$-8b \quad -8b$

$-3 > 12$

False

no solution

**Solve the inequality.**

**5.** $5x - 12 \leq 3x - 4$

**6.** $2(k - 5) < 2k + 5$

**7.** $-4(3n - 1) > -12n + 5.2$

**8.** $3(2a - 1) \geq 10a - 11$

5) $5x - 12 \leq 3x - 4$

$-3x \quad -3x$

$2x - 12 \leq -4$

$+12 \quad +12$

$\frac{2x}{2} \leq \frac{8}{2}$

$x \leq 4$

6) $2(k - 5) < 2k + 5$

$2k - 10 < 2k + 5$

$-2k \quad -2k$

$-10 < 5$

True

ims

7) $-4(3n - 1) > -12n + 5.2$

$-12n + 4 > -12n + 5.2$

$+12n \quad +12n$

$4 > 5.2$

False

no soln

8) $3(2a - 1) \geq 10a - 11$

$6a - 3 \geq 10a - 11$

$-6a \quad -6a$

$-3 \geq 4a - 11$

$+11 \quad +11$

$\frac{8}{4} \geq \frac{4a}{4}$

$2 \geq a$

$a \leq 2$

## Break

You earn $9.50 per hour at your summer job. Write and solve an inequality that represents the numbers of hours you need to work to buy a digital camera that costs $247.

$X$ = hrs

$$\frac{9.5X}{9.5} \geq \frac{247}{9.5}$$

$X \geq 26$ hrs

You have at most \$3.65 to make copies. Each copy costs \$0.25. Write and solve an inequality that represents the numbers of copies you can make.

$X$ = copies

$\frac{0.25x}{0.25} \leq \frac{3.65}{0.25}$

$x \leq 14.6$

14 copies

The maximum speed limit for a school bus is 55 miles per hour. Write and solve an inequality that represents the numbers of hours it takes to travel 165 miles in a school bus.

$X$ = hours

$\frac{55x}{55} \leq \frac{165}{55}$

$x \leq 3$ hrs

You need a mean score of at least 90 points to advance to the next round of the touch-screen trivia game. What scores in the fifth game will allow you to advance?

mean = average

$X$ = 5th game

$\frac{95+91+77+89+x}{5} \geq 90$

$5\left(\frac{352+x}{5}\right) \geq (90)5$

$352 + x \geq 450$

$-352 \quad -352$

$x \geq 98$

**9.** WHAT IF? You need a mean score of at least 85 points to advance to the next round. What scores in the fifth game will allow you to advance?

$$\frac{95+91+77+89+x}{5} \geq 85$$

$$5\left(\frac{352+x}{5}\right) \geq (85)5$$

$$352 + x \geq 425$$
$$-352 \quad -352$$

$$x \geq 100$$

## Homework

WS 2.2 Solving Inequalities and Application