

! DAILY QUEST

1) Jimbo paid \$12.50 for a shirt with a sales tax of 7% included, but he doesn't remember the price without tax. What was the price of the shirt? Write an equation to model the situation. Then solve the equation.

7%

$$\begin{array}{rclcl}
 \text{Shirt} & + & \text{tax} & = & \text{Total} \\
 1x & + & .07x & = & 12.50 \\
 & & & & \hline
 1.07x & = & 12.50 & & \\
 & & & & \hline
 1.07 & & 1.07 & &
 \end{array}$$

$$x = \$11.68$$

2) Solve. $6x + 10 \geq 2(3x + 3)$

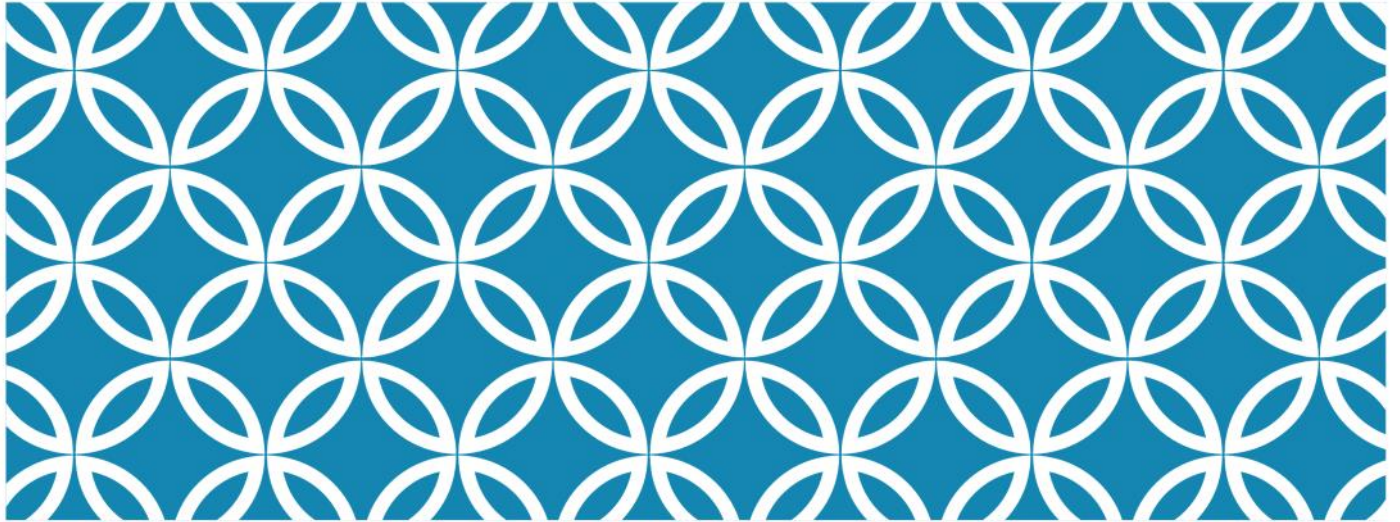
$$\begin{array}{rcl}
 \cancel{6x} + 10 & \geq & \cancel{6x} + 6 \\
 -6x & & -6x
 \end{array}$$

$$10 \geq 6$$

All real #'s

$$\begin{array}{rcl}
 11.68 & + & .82 & = & 12.50 \\
 \text{shirt} & & \text{tax} & & \text{total}
 \end{array}$$

$6 \geq 10$
No solution



LESSON 4.2

SOLVE INEQUALITIES

SOLVE INEQUALITY WORD PROBLEMS

Goal: To solve equations/inequalities in math and real world context and to write rules for arithmetic sequence.

Obj: SWBAT write/solve inequalities in word problems.

PROBLEM 1:

Solve and graph each inequality.

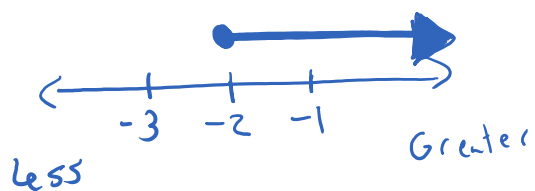
$$-14 \leq 4n - 6$$

$$\begin{array}{r} +6 \\ \hline -8 \leq 4n \end{array}$$

$$\frac{-8}{4} \leq \frac{4n}{4}$$

$$-2 \leq n$$

$$\boxed{n \geq -2}$$



$$45 \geq 9(-3 + x)$$

$$\begin{array}{r} +27 \\ \hline 45 \geq -27 + 9x \end{array}$$

$$\begin{array}{r} +27 \\ \hline 72 \geq 9x \end{array}$$

$$\frac{72}{9} \geq \frac{9x}{9}$$

$$8 \geq x$$

PROBLEM 1A:

Solve and graph each inequality.

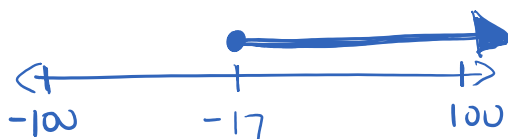
$$\cancel{12} \left(\frac{v+5}{\cancel{12}} \right) \geq -1 \cdot \cancel{12}$$

$$v + 5 \geq -12$$

$$-5 \quad -5$$

$$v \geq -17$$

Greater than sign



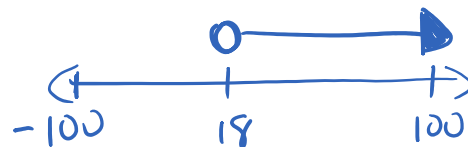
$$11 < \left(\frac{r}{2} \right) + 2 \cdot 2$$

$$22 < r + 4$$

$$\underline{-4} \quad \quad \quad \underline{-4}$$

$$18 < r$$

$$r > 18$$

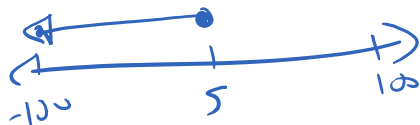


PROBLEM 1B:

Solve and graph each inequality.

$$\begin{array}{r}
 3 + 10n \leq 53 \\
 \underline{-3} \quad \underline{-3} \\
 10n \leq 50 \\
 \underline{10} \quad \underline{10}
 \end{array}$$

$$n \leq 5$$



$$\begin{array}{r}
 4 > 9 + \frac{x}{3} \\
 \underline{-27} \quad \underline{-27} \\
 12 > 27 + x
 \end{array}$$

$$-15 > x$$

$$x < -15$$



PROBLEM 2:

Solve and graph each inequality.

$$-5(r - 6) \geq 27 - 5r$$

$$\begin{array}{r} -5r + 30 \geq 27 - 5r \\ +5r \quad \quad \quad +5r \end{array}$$

$$30 \geq 27$$

30 greater than or equal to 27

All real numbers

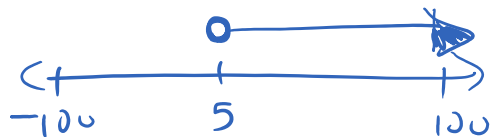
$$8(x + 1) > 33 + 3x$$

$$\begin{array}{r} 8x + 8 > 33 + 3x \\ -3x \quad \quad \quad -3x \\ \hline \end{array}$$

$$\begin{array}{r} 5x + 8 > 33 \\ -8 \quad \quad \quad -8 \\ \hline \end{array}$$

$$\frac{5x}{5} > \frac{25}{5}$$

$$x > 5$$




PROBLEM 2A:

Solve and graph each inequality.

$$4k + 4 \geq -4(3k - 5)$$
$$\begin{array}{r} 4k + 4 \geq -12k + 20 \\ +12k \quad \quad +12k \end{array}$$
$$\begin{array}{r} 16k + 4 \geq 20 \\ -4 \quad \quad -4 \end{array}$$
$$\frac{16k}{16} \geq \frac{16}{16}$$
$$k \geq 1$$

$k=1$



$$6 + 24 - 8n < -4(2n - 7)$$

PROBLEM 3: \geq at least

Jimmy has \$700 in savings account at the beginning of the summer. He wants to have at least \$300 in the account by the end of the summer. He withdraws \$25 each week for food, clothes and movie tickets. Write an inequality that represents Jimmy's situation. How many weeks can Jimmy withdraw money from his account?

$$\begin{array}{r} \$ \\ \text{Beginning} \\ \text{Summer} \end{array} - \begin{array}{r} \$ \\ \text{Withdraw} \end{array} \geq \begin{array}{r} \text{Savings} \\ \text{account} \end{array}$$

$$\begin{array}{r} 700 \\ -700 \end{array} - 25w \geq \begin{array}{r} 300 \\ -700 \\ \hline \end{array}$$

I divided by a negative

$$\begin{array}{r} -25w \geq -400 \\ \hline -25 \\ \hline \end{array} \downarrow$$

$$w \leq 16$$

PROBLEM 3A: \leq at most

Amanda is ordering books online. She has \$100 to spend. The seller charges 4% of the cost of the books for shipping. What is the most that Amanda's books can cost, before the shipping charge?

$$\begin{array}{rcl}
 \text{Books} & + & \text{Shipping} & \leq & \text{Total} \\
 \$ & & 4\% & & \$ \\
 1x & + & .04x & \leq & 100
 \end{array}$$

She can
Spend at
most \$96.15

$$\begin{array}{r}
 \cancel{1.04x} \leq 100 \\
 \hline
 1.04 \quad 1.04 \\
 x \leq 96.15
 \end{array}$$

PROBLEM 3B:

 \leq

Your elementary school is having a fall carnival. Admission into the carnival is \$3 and each game inside the carnival costs \$.25. Write an inequality that represents the possible number of games that can be played having \$10. What is the maximum number of games that can be played?

$$\text{admission} + \text{per game} \leq \$$$

$$\begin{array}{r} 3 \\ -3 \\ \hline \end{array} + .25g \leq \begin{array}{r} 10 \\ -3 \\ \hline \end{array}$$

At most you
can play 28
games

$$\begin{array}{r} .25g \\ \hline .25 \end{array} \leq \frac{7}{.25}$$

$$g \leq 28$$

PROBLEM 3C:

Chris wants to order DVD's over the internet. Each DVD costs \$15.99 and shipping for the entire order is \$9.99. Chris has no more than \$100 to spend. How many DVD's can Chris buy? Write and solve an inequality that represents Chris' situation.