## 1.4: Write Equations and Inequalities

Goals: *Translate verbal sentences into equations or inequalities
*Decide if a given value is a solution to an equation or inequality
Equation - a mathematical sentence with an $\qquad$
$\qquad$ .

Inequality - a mathematical sentence with an $\qquad$ .
$<$ $\qquad$ than
$\qquad$ than
$\qquad$ than or $\qquad$ to
$\geq$ $\qquad$ than or $\qquad$ to
**IS**
The word $\qquad$ MUST appear in order to have an $\qquad$ or $\qquad$
"is", "is the same as", "is equal to" means to put an $\qquad$
$\qquad$ .
"is less than (or equal to)", "is greater than (or equal to)" means to put an $\qquad$ .

Translate the following verbal phrases into equations or inequalities. Be sure to underline key words or phrases.

Ex: twice the sum of a number $x$ and 6 is greater than 5

Ex: three times the quotient of a number $y$ and 4 is less than or equal to 3 .

Ex: The product of $x$ and 5 , minus 4 , is greater than 6 .

Ex: The sum of $b$ and 11 , divided by 14 is 12 .
**Ex: 5 less than the product of 8 and $x$

Ex: The product of 6 and a number is at least 24

Ex: The quotient of a number $p$ and 12 is at least 30

Ex: The quotient of a number and 2 is at most 16

## Write an inequality to represent the situation:

Ex: your math grade $g$, must be at least an 80 this year

Ex: The temperature can be at most $105^{\circ}$ or you will get sick.

Solution - the $\qquad$ of the variable that makes the equation $\qquad$ . (It $\qquad$ when you it in)

Check whether 3 is a solution to the equation or inequality. Yes or No.
Ex: $8-2 x=2$
Ex: $4 x-5=6$
$\mathbf{E x}: 2 z+5>12$
Ex: $5+3 n \leq 20$

Check whether 5 is a solution to the equation or inequality. Yes or No.
Ex: $24-3 d=9$
Ex: $3 x+4=18$

Ex: $2 w-7 \leq 3$
Ex: $4+3 p>19$

Check whether the given number is a solution: (the number given comes after the semi-colon)
Ex: $9-x=4 ; 5$
Ex: $b+5<15 ; 7$

Ex: $2 n+3 \geq 21 ; 9$

Ex: The last time you and 3 friends went to a mountain bike park, you had a coupon for $\$ 10$ off the total purchase and paid $\$ 17$ for 4 tickets.
a) Identify a variable to represent what you don't know.
b) Write an equation to represent the situation.
c) Can you find out what the cost would have been if the group did not have a coupon?
d) Can you find the cost of one regular price ticket?

Ex: A basketball player scored 351 points last year. The player plans on playing in 18 games this year.
a) Choose a variable to represent what you don't know.
b) Write an inequality to represent the situation.
c) Will an average of 20 points per game be enough to beat least year's total?

Ex: Tyler would like to make no less than $\$ 610$ selling coffee mugs online. He plans to sell mugs for $\$ 22$ each. Write an inequality to represent the situation, then decide if he sells 28 mugs if he will reach his goal.

