Equations & Inequalities

Equation- a statement formed by placing an equal sign between two expressions

Inequality- a statement formed by placing an inequality sign between two expressions

< *less than*

> *greater than*

≤ *less than or equal to* or *no more than*

≥ *greater than or equal to* or *no less than*

EXAMPLES

Explain if the following is an expression, an equation, or an inequality.

1. $3x + 1 = 14$
   equation – has an = sign

2. $5(y^2 + 4) - 7$
   expression – no = sign or inequality sign

3. $6x - 9 \geq 13$
   inequality – has an inequality sign

4. $-21h = 63$
   equation – has an = sign

Solution- a number that, when substituted for the variable in an equation or inequality, results in a true statement

Check to see if $a = 5$ is or is not a solution of the equation.

5. $a + 8 = 13$
   $5+8 \stackrel{?}{=} 13$
   $13 = 13$ ✓
   solution

6. $27 = 36 - 2a$
   $27 \stackrel{?}{=} 36-2(5)$
   $27 \stackrel{?}{=} 36-10$
   $27 \neq 26$
   not a solution

7. $5a + 4 = 26$
   $5(5)+4 \stackrel{?}{=} 26$
   $25 + 4 \stackrel{?}{=} 26$
   $29 \neq 26$
   not a solution

8. $a^2 + 2 = 27$
   $5^2 + 2 \stackrel{?}{=} 27$
   $25 + 2 \stackrel{?}{=} 27$
   $27 = 27$ ✓
   solution

Check to see if $b = 8$ is or is not a solution of the inequality.

9. $b + 10 \geq 19$

$8 + 10 \stackrel{?}{\geq} 19$

$18 \not\geq 19$

not a solution

10. $5b > 35$

$5(8) \stackrel{?}{>} 35$

$40 > 35$ ✓

solution

11. $18 - b \leq 10$

$18 - 8 \stackrel{?}{\leq} 10$

$10 \not\leq 10$

not a solution

12. $8 \geq 64 \div b$

$8 \stackrel{?}{\geq} 64 \div 8$

$8 \geq 8$

solution

Use mental math to solve the equation.

13. $2 = 6 - x$

$x = 4$

14. $x + 3 = 11$

$x = 8$

15. $\frac{x}{4} = 5$

$x = 20$

16. $14 = 2x$

$x = 7$