

3.3 Solving Equations Using Addition or Subtraction p.98

Two equations are **equivalent expressions** if they have the same solutions.

Solution: the answer that makes a math sentence true [what the variable equals]

Solve: to figure out the solution to a math problem [A, B, C, D]

Algebra is like a balance scale because in order to stay balanced, whatever you do to one side of the equation, you must do to the other side.

The equal sign separates the two sides.

The purpose of Algebra is to **isolate the variable** (teaches you to think logically).

Do the **inverse operation** (multiplication and division AND subtraction and addition) to undo what is being done to the variable.

CHECK YOUR SOLUTION BY REPLACING THE VARIABLE WITH THE SOLUTION (PLUG IT IN).

EXAMPLES: Use A, B, C, D for every problem

1) a) $g - 6 = -13$

b) $\frac{+6}{+6}$

c) $g + \text{O} = -$

d) $g = -7$

check
 $-7 - 6 = -13$
 $-13 = -13 \checkmark$

2) a) $-12 = x + 7$

b) $\frac{-7}{-7}$

c) $-19 = x + \text{O}$

d) $-19 = x$

check
 $-12 \stackrel{?}{=} -19 + 7$
 $-12 = -12 \checkmark$

3) a) $x + (-4) = -5$

b) $\frac{+4}{+4}$

c) $x + \text{O} = -1$

d) $x = -1$

4) a) $7 = p - 12$

b) $\frac{+12}{+12}$

c) $19 = p + \text{O}$

d) $19 = p$

*** never leave a double negative**

5) a) $-10 = b + (+8)$

b) $\frac{-8}{-8}$

c) $-18 = b + \text{O}$

d) $-18 = b$

6) a) $f - 2/5 = 6 \frac{3}{5}$

b) $\frac{+2/5}{+2/5}$

c) $f + \text{O} = 6 \frac{5}{5} = 7$

d) $f = 7$

*never leave double negatives

7) a) $p + (+5) = 24$

b) $\begin{array}{r|l} -5 & -5 \\ \hline \end{array}$

c) $p + 0 = 19$

d) $\boxed{p = 19}$

8) a) $a + (-4) = 9$

b) $\begin{array}{r|l} +4 & +4 \\ \hline \end{array}$

c) $a + 0 = 13$

d) $\boxed{a = 13}$

9) A) $-14 + k = 65$

B) $\begin{array}{r|l} +14 & +14 \\ \hline \end{array}$

C) $0 + k = 79$

D) $\boxed{k = 79}$

10) Ten more than a number c is three.

is/was \rightarrow
equal sign

a) $c + 10 = 3$

b) $\begin{array}{r|l} -10 & -10 \\ \hline \end{array}$

c) $c + 0 = -7$

d) $\boxed{c = -7}$

11) The difference between a number and negative six is negative fourteen.

A) $n + (+6) = -14$

B) $\begin{array}{r|l} -6 & -6 \\ \hline \end{array}$

C) $n + 0 = -20$

D) $\boxed{n = -20}$

12) 35 less than a number m is -72.

a) $m - 35 = -72$

b) $\begin{array}{r|l} +35 & +35 \\ \hline \end{array}$

c) $m + 0 = -37$

d) $\boxed{m = -37}$

13) 27 is twelve more than a number x.

a) $27 = x + 12$

b) $\begin{array}{r|l} -12 & -12 \\ \hline \end{array}$

c) $15 = x + 0$

d) $\boxed{15 = x}$

14) Negative eighteen less than a number is negative eighteen.

a) $n + (+18) = -18$

b) $\begin{array}{r|l} -18 & -18 \\ \hline \end{array}$

c) $n + 0 = -36$

d) $\boxed{n = -36}$