2.2 Solving One-Step Equations

What are <u>inverse operations</u>?

operations that "undo" each other $+/-$

$\cdot / \div$

What are <u>equivalent equations</u>?

equations that have the same solution

Solve each equation & check your solution.

1. $\boxed{x} + 4.3 = 1.2$

$\quad\quad -4.3 \quad\quad -4.3$

$\boxed{x \quad\quad = -3.1}$

Check: $-3.1 + 4.3 \overset{?}{=} 1.2$

$\quad\quad\quad 1.2 \quad = 1.2 \checkmark$

2. $k \boxed{+ (-1} 0) = -1$

$\quad k - 10 = -1$

$\quad\quad + 10 \quad\quad +10$

$\boxed{k \quad\quad = 9}$

Check: $9 + (-10) \overset{?}{=} -1$

$\quad\quad\quad -1 \quad = -1 \checkmark$

Solve each equation & check your solution.

3. $-8 + d = -15$

$d + -8 = -15$

$d - 8 = -15$

$ + 8 + 8$

$d = -7$

$-8 + d = -15$

$+8 + 8$

$d = -7$

Check: $-8 + -7 \overset{?}{=} -15$

$-15 = -15 \checkmark$

4. $-12.2 = n + (-7.5)$

$-12.2 = n - 7.5$

$+7.5 + 7.5$

$-4.7 = n$

Check: $-12.2 \overset{?}{=} -4.7 + (-7.5)$

$-12.2 = -12.2 \checkmark$

Solve each equation.

5. $m - (-\frac{3}{8}) = -\frac{5}{16}$

$m + \frac{3}{8} = -\frac{5}{16}$

$ - \frac{3}{8} - \frac{3}{8}$

$m = -\frac{11}{16}$

Check: $-\frac{11}{16} - (-\frac{3}{8}) \overset{?}{=} -\frac{5}{16}$

$-\frac{5}{16} = -\frac{5}{16} \checkmark$

6. $-\frac{5}{6} + f = -3\frac{1}{2}$ ※ change to improper

$-\frac{5}{6} + f = -\frac{7}{2}$

$+\frac{5}{6} + \frac{5}{6}$

$f = -\frac{8}{3}$

Check: $-\frac{5}{6} + -\frac{8}{3} \overset{?}{=} -\frac{7}{2}$

$-\frac{7}{2} = -\frac{7}{2} \checkmark$

Solve each equation & check your solution.

7. $\dfrac{-6k}{-6} = \dfrac{3}{-6}$

$k = -0.5$

Check: $-6 \cdot (-0.5) \overset{?}{=} 3$

$3 = 3 \checkmark$

8. $\dfrac{-2.4p}{-2.4} = \dfrac{-1.44}{-2.4}$

$p = 0.6$

Check: $-2.4 \cdot (0.6) \overset{?}{=} -1.44$

$-1.44 = -1.44 \checkmark$

9. $16 \cdot \dfrac{d}{16} = -4 \cdot 16$

$d = -64$

Check: $\dfrac{-64}{16} \overset{?}{=} -4$

$-4 = -4 \checkmark$

10. $-8 \cdot \dfrac{5}{12} = \dfrac{h}{-8} \cdot -8$

$-\dfrac{10}{3} = h$

Check: $\dfrac{5}{12} \overset{?}{=} \dfrac{-\frac{10}{3}}{-8}$

$\dfrac{5}{12} = \dfrac{5}{12} \checkmark$

Solve each equation.

11. $2\frac{1}{3}m = -3\frac{1}{9}$

$\dfrac{\frac{7}{3} \cdot m}{\frac{7}{3}} = \dfrac{-\frac{28}{9}}{\frac{7}{3}}$

$m = -\dfrac{4}{3}$

$\dfrac{3}{7} \cdot \dfrac{7}{3}m = -\dfrac{28}{9} \cdot \dfrac{3}{7}$

12. $\dfrac{-5w}{-5} = \dfrac{-0.75}{-5}$

$w = 0.15$

13. $\dfrac{-15}{45} = \dfrac{45k}{45}$

$-\dfrac{1}{3} = k$

14. $5\frac{1}{4} = 3\frac{1}{2}f$

$\dfrac{\frac{21}{4}}{\frac{7}{2}} = \dfrac{\frac{7}{2} \cdot f}{\frac{7}{2}}$

$\dfrac{3}{2} = f$

15. <u>What number increased by 45 is</u> –78?
    <u>Define a variable</u>, write an equation, and solve.

    Let $x = $ a number

    $$x + 45 = -78$$
    $$\underline{ -45 \qquad -45}$$
    $$x = -123$$

16. A traffic helicopter descended 160 meters to observe road conditions. It leveled off at 225 meters. What was its original altitude? Define a variable, write an equation, & solve.