Equations Show Me What You Know Name _____

Solve each of the following equations for the given variable. Record your answers in the table, place all work and checks on additional paper.

$3x+2x-4=14$	$\frac{2x}{5}+\frac{x}{7}=3$
$15=\frac{-m}{3}-3$	$\frac{1}{x}=\frac{3}{x-2}$
$\frac{1}{2}(18-5x)=\frac{1}{3}(6-4x)$	$9+5n=5n-1$
$\frac{5}{3}q+\frac{1}{3}q=13\frac{1}{3}+\frac{8}{3}q$	$-3(b-4)=-24$
$0.5x+8.75=13.25$	$7x-[4x-3(x-1)]=x+12$
$x(1-x)+2x-4=8x-24-x^2$	$10-8a=2(5-4a)$
$\frac{2}{3}x-\frac{5}{8}x=26$	$\frac{3}{4}x-2=10+0.75x$
$x^2+7=88$	$2\sqrt{x}-3=21$
$x^3=\frac{8}{125}$	$\frac{\sqrt[3]{x}}{3}+5=7$

1) $3x + 2x - 4 = 14$

$5x - 4 = 14$

$+4 \quad +4$

$\frac{5x}{5} = \frac{18}{5}$

$x = 3\frac{3}{5}$

2) $\frac{7}{7} \cdot \frac{2x}{5} + \frac{5}{5} \cdot \frac{x}{7} = 3$

$\frac{14x}{35} + \frac{5x}{35} = \frac{3}{1}$

$\frac{19x}{35} = \frac{3}{1}$

$\frac{105}{19} = \frac{19x}{19}$

$5.5 = x$

3) $15 = \frac{-m}{3} - 3$

$+3 \qquad +3$

$3 \cdot 18 = -\frac{m}{3} \cdot 3$

$\frac{54}{-1} = \frac{+1m}{-1}$

$-54 = m$

4) $\frac{1}{x} = \frac{3}{x-2}$

$3x = x - 2$

$-x \qquad -x$

$\frac{2x}{2} = \frac{-2}{2}$

$x = -1$

5) $\frac{1}{2}(18-5x) = \frac{1}{3}(6-4x)$

$9 - \frac{5}{2}x = 2 - \frac{4}{3}x$

CD: 6

$\frac{54}{6} - \frac{15}{6}x = \frac{12}{6} - \frac{8}{6}x$

$+\frac{15}{6}x \qquad +\frac{15}{6}x$

$\frac{54}{6} = \frac{12}{6} + \frac{7}{6}x$

$-\frac{12}{6} \qquad -\frac{12}{6}$

$\frac{\cancel{6}}{\cancel{7}_1} \cdot \frac{\cancel{42}^{6}}{\cancel{6}} = \frac{7}{6}x$

$\cdot\frac{6}{7}$

$6 = x$

6) $9 + 5n = 5n - 1$

$-5n \quad -5n$

$9 = -1$

NO SOLUTION

7) $\frac{5}{3}q + \frac{1}{3}q = 13\frac{1}{3} + \frac{8}{3}q$

$\frac{6}{3}q = 13\frac{1}{3} + \frac{8}{3}q$

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

$-\frac{2}{3}q = 13\frac{1}{3}$

$\frac{-2q}{3} = \frac{40}{3}$

$\frac{120}{-6} = \frac{-6q}{-6}$

$-20 = q$

8) $-3(b-4) = -24$

$-3b + 12 = -24$

$-12 \qquad -12$

$\frac{-3b}{-3} = \frac{-36}{-3}$

$b = 12$

9) $0.5x + 8.75 = 13.25$

$-8.75 \quad -8.75$

$\frac{0.5x}{0.5} = \frac{4.5}{0.5}$

$\boxed{x = 9}$

10) $7x - [4x - 3(x-1)] = x + 12$

$7x - [4x - 3x + 3] = x + 12$

$7x - 4x + 3x - 3 = x + 12$

$6x - 3 = x + 12$

$-x \quad -x$

$5x - 3 = 12$

$+3 \quad +3$

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

$\boxed{x = 3}$

11) $x(1-x) + 2x - 4 = 8x - 24 - x^2$

$x - x^2 + 2x - 4 = 8x - 24 - x^2$

$+x^2 \qquad\qquad +x^2$

$x + 2x - 4 = 8x - 24$

$3x - 4 = 8x - 24$

$+24 \qquad\qquad +24$

$3x + 20 = 8x$

$-3x \qquad\quad -3x$

$\frac{20}{5} = \frac{5x}{5}$

$\boxed{4 = x}$

12) $10 - 8a = 2(5 - 4a)$

$10 - 8a = 10 - 8a$

Infinitely Many Solutions

13) $\frac{8}{8}\left(\frac{2}{3}x\right) - \left(\frac{5}{8}x\right)\frac{3}{3} = 26$

CD: 24

$$\frac{16x}{24} - \frac{15x}{24} = 26$$

$$24 \cdot \frac{x}{24} = 26 \cdot 24$$

$$x = 624$$

14) $\frac{3}{4}x - 2 = 10 + 0.75x$

$+2 \quad +2$

$\frac{3}{4}x = 12 + 0.75x$

$-0.75x \quad -0.75x$

$0 = 12$

No Solution

15) $x^2 + 7 = 88$

$-7 \quad -7$

$\sqrt{x^2} = \sqrt{81}$

$\boxed{x = \pm 9}$

16) $2\sqrt{x} - 3 = 21$

$+3 \quad +3$

$\frac{2\sqrt{x}}{2} = \frac{24}{2}$

$(\sqrt{x})^2 = (12)^2$

$\boxed{x = 144}$

17) $\sqrt[3]{x^3} = \sqrt[3]{8}$

$\sqrt[3]{125}$

$\boxed{x = \frac{2}{5}}$

18) $\frac{\sqrt[3]{x}}{3} + 5 = 7$

$-5 \quad -5$

$3 \cdot \frac{\sqrt[3]{x}}{3} = 2 \cdot 3$

$(\sqrt[3]{x})^3 = (6)^3$

$\boxed{x = 216}$