Addition and Multiplication Principles Combined
Solutions

1.
$$7x + 3 = 24$$
$$7x + 3 - 3 = 24 - 3$$
$$7x = 21$$
$$\frac{7x}{7} = \frac{21}{7}$$
$$x = 3$$

2.
$$2z - 1 = 15$$
$$2z - 1 + 1 = 15 + 1$$
$$2z = 16$$
$$\frac{2z}{2} = \frac{16}{2}$$
$$z = 8$$

3.
$$-3x + 7 = -11$$
$$-3x + 7 - 7 = -11 - 7$$
$$-3x = -18$$
$$\frac{-3x}{-3} = \frac{-18}{-3}$$
$$x = 6$$

4.
$$9w - 4 = 77$$
$$9w - 4 + 4 = 77 + 4$$
$$9w = 81$$
$$\frac{9w}{9} = \frac{81}{9}$$
$$w = 9$$

5.
$$-5q + 4 = -19$$
$$-5q + 4 - 4 = -19 - 4$$
$$-5q = -23$$
$$\frac{-5q}{-5} = \frac{-23}{-5}$$
$$q = \frac{23}{5}$$

6.
$$6p - 3 = 51$$
$$6p - 3 + 3 = 51 + 3$$
$$6p = 54$$
$$\frac{6p}{6} = \frac{54}{6}$$
$$p = 9$$

7.
$$2t - 5t = -27$$
$$-3t = -27$$
$$\frac{-3t}{-3} = \frac{-27}{-3}$$
$$t = 9$$

8.
$$15a + 5 = 13a - 9$$
$$15a - 13a + 5 = 13a - 13a - 9$$
$$2a + 5 = -9$$
$$2a + 5 - 5 = -9 - 5$$
$$2a = -14$$
$$\frac{2a}{2} = \frac{-14}{2}$$
$$a = -7$$

9.
$$\frac{1}{2}d + 3d = -49$$
$$\frac{1}{2}d + \frac{6}{2}d = -49$$
$$\frac{7}{2}d = -49$$
$$\left(\frac{2}{7}\right)\left(\frac{7}{2}\right)d = (-49)\left(\frac{2}{7}\right)$$
$$d = -14$$

10.
$$10 - 12x = -6x + 2x + 15$$
$$10 - 12x = -4x + 15$$
$$10 - 12x + 12x = -4x + 12x + 15$$
$$10 = 8x + 15$$
$$10 - 15 = 8x + 15 - 15$$
$$-5 = 8x$$
$$\frac{-5}{8} = \frac{8x}{8}$$
$$-\frac{5}{8} = x$$

11.
$$\frac{2}{3}t + 5 = \frac{2}{6}$$

$$\frac{2}{3}t + 5 - 5 = \frac{2}{6} - 5$$
$$\frac{2}{3}t = \frac{2}{6} - \frac{30}{6}$$
$$\frac{2}{3}t = -\frac{28}{6}$$
$$\left(\frac{3}{2}\right)\left(\frac{2}{3}\right)t = \left(-\frac{14}{3}\right)\left(\frac{3}{2}\right)$$
$$t = -7$$

12.
$$1.2x - 5.1 = -4.5$$
$$1.2x - 5.1 + 5.1 = -4.5 + 5.1$$
$$1.2x = .6$$
$$\frac{1.2x}{1.2} = \frac{.6}{1.2}$$
$$x = .5$$

13.
$$4(2x - 7) = -14$$
$$8x - 28 = -14$$
$$8x - 28 + 28 = -14 + 28$$
$$8x = 14$$
$$\frac{8x}{8} = \frac{14}{8}$$
$$x = \frac{7}{4}$$

14.
$$14x + 5 - 17x = 2x - 7$$
$$-3x + 5 = 2x - 7$$
$$-3x + 3x + 5 = 2x + 3x - 7$$
$$5 = 5x - 7$$
$$5 + 7 = 5x - 7 + 7$$
$$12 = 5x$$
$$\frac{12}{5} = \frac{5x}{5}$$
$$x = \frac{12}{5}$$

15.
$$13 - 12x = 25$$
$$13 - 13 - 12x = 25 - 13$$
$$-12x = 12$$
$$\frac{-12x}{-12} = \frac{12}{-12}$$
$$x = -1$$

16.
$$-8v - 15 = 1$$
$$-8v - 15 + 15 = 1 + 15$$
$$-8v = 16$$
$$\frac{-8v}{-8} = \frac{16}{-8}$$
$$v = -2$$

17.
$$-.12w + .14 = .38$$
$$-.12w + .14 - .14 = .38 - .14$$
$$-.12w = .24$$
$$\frac{-.12w}{-.12} = \frac{.24}{-.12}$$
$$w = -2$$

18. $-7(-3x+4)=14$

$$21x-28=14$$
$$21x-28+28=14+28$$
$$21x=42$$
$$\frac{21x}{21}=\frac{42}{21}$$
$$x=2$$

19. $6r-(3r-7)=16$

$$6r-3r+7=16$$
$$3r=9$$
$$\frac{3r}{3}=\frac{9}{3}$$
$$r=3$$

20.

$$\frac{5}{4}w-\frac{1}{4}=\frac{3}{4}w+\frac{1}{4}$$
$$\frac{5}{4}w-\frac{3}{4}w-\frac{1}{4}=\frac{3}{4}w-\frac{3}{4}w+\frac{1}{4}$$
$$\frac{2}{4}w-\frac{1}{4}=\frac{1}{4}$$
$$\frac{1}{2}w-\frac{1}{4}+\frac{1}{4}=\frac{1}{4}+\frac{1}{4}$$
$$\frac{1}{2}w=\frac{2}{4}$$
$$\left(\frac{2}{1}\right)\left(\frac{1}{2}\right)w=\left(\frac{1}{2}\right)\left(\frac{2}{1}\right)$$
$$w=1$$

21.

$$-1.2s+14.7=46.8s+10.7$$
$$-1.2s-46.8s+14.7=46.8s-46.8s+10.7$$
$$-48s+14.7=10.7$$
$$-48s+14.7-14.7=10.7-14.7$$
$$-48s=-4$$
$$\frac{-48s}{-48}=\frac{-4}{-48}$$
$$s=\frac{1}{12}$$

22. $1.5q+2.5q=7$

$$4q=7$$
$$\frac{4q}{4}=\frac{7}{4}$$
$$q=\frac{7}{4}$$

23. $-\frac{1}{3}x-\frac{2}{3}x=15$

$$-\frac{3}{3}x=15$$
$$-x=15$$
$$\frac{-x}{-1}=\frac{15}{-1}$$
$$x=-15$$

24.

$$\frac{2}{5}d - \frac{3}{5} = \frac{1}{5}d - \frac{4}{5}$$

$$\frac{2}{5}d - \frac{1}{5}d - \frac{3}{5} = \frac{1}{5}d - \frac{1}{5}d - \frac{4}{5}$$

$$\frac{1}{5}d - \frac{3}{5} = -\frac{4}{5}$$

$$\frac{1}{5}d - \frac{3}{5} + \frac{3}{5} = -\frac{4}{5} + \frac{3}{5}$$

$$\frac{1}{5}d = -\frac{1}{5}$$

$$\left(\frac{5}{1}\right)\left(\frac{1}{5}\right)d = \left(-\frac{1}{5}\right)\left(\frac{5}{1}\right)$$

$$d = -1$$

25.

$$2w - 3 = 5$$

$$2w - 3 + 3 = 5 + 3$$

$$2w = 8$$

$$\frac{2w}{2} = \frac{8}{2}$$

$$w = 4$$

26.

$$14z - 21 = -35$$

$$14z - 21 + 21 = -35 + 21$$

$$14z = -14$$

$$\frac{14z}{14} = \frac{-14}{14}$$

$$z = -1$$