ALGEBRA: Linear equations with unknowns on both sides Date: Name:

Copy and complete each problem into your exercise book and solve for the variable.

Show all your working. Set your working out clearly and neatly as you have been taught!

[A] $9g + 1 = 16g - 34$

[B] $24f - 11 = 14f + 89$

[C] $17d + 2 = 24d - 96$

[D] $14n - 12 = 9n + 113$

[E] $17y + 1 = 23y - 77$

[F] $20y - 12 = 13y + 135$

Round your answers to the below equations to 1 d.p., if necessary

[G] $16.3c + 2 = 23.3c - 84.1$

[H] $20f - 14 = 13f + 42.7$

[J] $16.5g + 2 = 19.5g - 38.5$

[K] $17m - 15 = 12m + 9.5$

ANSWERS

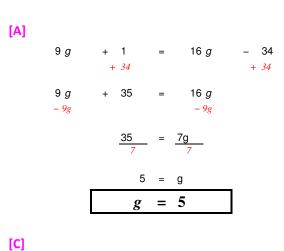## ALGEBRA: Linear equations with unknowns on both sides

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[A]

$$9g + 1 = 16g - 34$$
$$+\ 34 \qquad\qquad +\ 34$$
$$9g + 35 = 16g$$
$$-\ 9g \qquad\qquad -\ 9g$$
$$\frac{35}{7} = \frac{7g}{7}$$
$$5 = g$$

$$\boxed{g\ =\ 5}$$

[B]

$$24f - 11 = 14f + 89$$
$$+\ 11 \qquad\qquad +\ 11$$
$$24f = 14f + 100$$
$$-\ 14f \qquad -\ 14f$$
$$\frac{10f}{10} = \frac{100}{10}$$

$$\boxed{f\ =\ 10}$$

[C]

$$17d + 2 = 24d - 96$$
$$+\ 96 \qquad\qquad +\ 96$$
$$17d + 98 = 24d$$
$$-\ 17d \qquad\qquad -\ 17d$$
$$\frac{98}{7} = \frac{7d}{7}$$
$$14 = d$$

$$\boxed{d\ =\ 14}$$

[D]

$$14n - 12 = 9n + 113$$
$$+\ 12 \qquad\qquad +\ 12$$
$$14n = 9n + 125$$
$$-\ 9n \qquad\qquad -\ 9n$$
$$\frac{5n}{5} = \frac{125}{5}$$

$$\boxed{n\ =\ 25}$$

[E]

$$17y + 1 = 23y - 77$$
$$+\ 77 \qquad\qquad +\ 77$$
$$17y + 78 = 23y$$
$$-\ 17y \qquad\qquad -\ 17y$$
$$\frac{78}{6} = \frac{6y}{6}$$
$$13 = y$$

$$\boxed{y\ =\ 13}$$

[F]

$$20y - 12 = 13y + 135$$
$$+\ 12 \qquad\qquad +\ 12$$
$$20y = 13y + 147$$
$$-\ 13y \qquad\qquad -\ 13y$$
$$\frac{7y}{7} = \frac{147}{7}$$

$$\boxed{y\ =\ 21}$$

[G]

16.3 *c*   +   2.0   =   23.3 *c*   −   84.1
        + 84.1   + 84.1

16.3 *c*   +   86.1   =   23.3 *c*
− 16.3c   − 16.3c

$$\frac{86.1}{7} = \frac{7c}{7}$$

12.3   =   c

$$\boxed{c = 12.3}$$

[H]

20.0 *f*   −   14.0   =   13.0 *f*   +   42.7
        + 14.0   + 14.0

20.0 *f*   =   13.0 *f*   +   56.7
− 13f   − 13f

$$\frac{7f}{7} = \frac{56.7}{7}$$

$$\boxed{f = 8.1}$$

[J]

16.5 *g*   +   2.0   =   19.5 *g*   −   38.5
        + 38.5   + 38.5

16.5 *g*   +   40.5   =   19.5 *g*
− 16.5g   − 16.5g

$$\frac{40.5}{3} = \frac{3g}{3}$$

13.5   =   g

$$\boxed{g = 13.5}$$

[K]

17.0 *m*   −   15.0   =   12.0 *m*   +   9.5
        + 15.0   + 15.0

17.0 *m*   =   12.0 *m*   +   24.5
− 12m   − 12m

$$\frac{5m}{5} = \frac{24.5}{5}$$

$$\boxed{m = 4.9}$$