

Name

Answers

Date

1.1 – Solving Simple Equations

1) $m + 4 = -12$

-4 -4

$$\boxed{m = -16}$$

2) $15 + b = 23$

-15 -15

$$\boxed{b = 8}$$

3) $k - 9 = -13$

+9 +9

$$\boxed{k = -4}$$

4) $n + 16 = 9$

-16 -16

$$\boxed{n = -7}$$

5) $\frac{14b}{14} = \frac{-56}{14}$

14 14

$$\boxed{b = -4}$$

6) $\frac{-104}{8} = \frac{8x}{8}$

8 8

$$\boxed{-13 = x}$$

7) $\frac{v}{8} = 2.8$

$$\boxed{v = 16}$$

8) $\frac{18}{18} - 6 = \frac{b}{18} \cdot 18$

$$\boxed{-108 = b}$$

$$9) \cancel{9} \cdot 16 = \frac{k}{11} \cdot \cancel{11}$$

$$\boxed{176 = k}$$

$$10) \frac{21}{\cancel{-7}} = \frac{-7n}{\cancel{-7}}$$

$$\boxed{-3 = n}$$

$$11) \frac{-15x}{\cancel{-15}} = \frac{0}{\cancel{-15}}$$

$$\boxed{x = 0}$$

$$12) \frac{m}{4} \cdot \cancel{4} = -13 \cdot \cancel{4}$$

$$\boxed{m = -52}$$

$$13) -16 + x = -15$$

$$+16 \quad +16$$

$$\boxed{x = 1}$$

$$14) -17 = x - 15$$

$$+15 \quad +15$$

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

$$15) \frac{\cancel{3}}{\cancel{1}} \cdot \frac{1}{3} n = -6 \cdot \frac{\cancel{3}}{\cancel{1}}$$

$$\boxed{n = -18}$$

$$16) \frac{\cancel{-4}}{\cancel{3}} \cdot \frac{3}{4} n = 24 \cdot \frac{\cancel{-4}}{\cancel{3}}$$

$$\boxed{n = -32}$$

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1.2 - Solving Multi-Step Equations

1) $d - 5.25 = -3.75$

$+5.25 \quad +5.25$

$$\boxed{d = 1.5}$$

2) $15 = b + 4.2$

$-4.2 \quad -4.2$

$$\boxed{10.8 = b}$$

3) $-2.5 = \frac{h}{7} \cdot 7$

$$\boxed{-17.5 = h}$$

4) $-0.08j = 2.4$

$\frac{-0.08}{-0.08} \quad \frac{-0.08}{-0.08}$

$$\boxed{j = -30}$$

5) $2x + 10 = 56$

$-10 \quad -10$

$$\frac{2x}{2} = \frac{46}{2}$$

$$\boxed{x = 23}$$

6) $-12 + \frac{j}{4} = 9$

$+12 \quad +12$

$$4 \cdot \frac{j}{4} = 21 \cdot 4$$

~~$$\boxed{j = 84}$$~~

$$\boxed{j = 84}$$

7) $9x + 9 = 12$

$-9 \quad -9$

$$\frac{9x}{9} = \frac{3}{9}$$

$$\boxed{x = \frac{1}{3}}$$

8) $-22 = -5b - 3b$

$\frac{-22}{-8} = \frac{-8b}{-8}$

$$\boxed{2.75 = b}$$

9) $3 + 4x + 6 = 17$

$$4x + 9 = 17$$

$$-9 \quad -9$$

$$\frac{4x}{4} = \frac{8}{4}$$

$$\boxed{x = 2}$$

10) $6k - 1 + 6k = 11$

$$12k - 1 = 11$$

$$+1 \quad +1$$

$$\frac{12k}{12} = \frac{12}{12}$$

$$\boxed{k = 1}$$

11) $r + 11 + 8r = 29$

$$9r + 11 = 29$$

$$-11 \quad -11$$

$$\frac{9r}{9} = \frac{18}{9}$$

$$\boxed{r = 2}$$

12) $18 = 3(3x - 6)$

$$18 = 9x - 18$$

$$+18 \quad +18$$

$$\frac{36}{9} = \frac{9x}{9}$$

$$\boxed{4 = x}$$

13) $-5(6n + 6) = 30$

$$-30n - 30 = 30$$

$$+30 \quad +30$$

$$\frac{-30n}{-30} = \frac{60}{-30}$$

$$\boxed{n = -2}$$

14) $37 = -3 + 5(b + 6)$

$$37 = -3 + 5b + 30$$

$$37 = 27 + 5b$$

$$-27 \quad -27$$

$$\frac{10}{5} = \frac{5b}{5}$$

$$\boxed{2 = b}$$

15) $-13 = 5(1 + 4m) - 2m$

$$-13 = 5 + 20m - 2m$$

$$-13 = 5 + 18m$$

$$-5 \quad -5$$

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

$$\boxed{-1 = m}$$

16) $3(v - 2) + 2(4 + 2v) = 37$

$$3v - 6 + 8 + 4v = 37$$

$$7v + 2 = 37$$

$$-2 \quad -2$$

$$\frac{7v}{7} = \frac{35}{7}$$

$$\boxed{v = 5}$$

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1.3 Solving Equations with Variables on Both Sides

1) $4x = 3x + 5$

$-3x \quad -3x$

$$\boxed{x = 5}$$

2) $8r + 1 = 9r$

$-8r \quad -8r$

$$\boxed{1 = r}$$

3) $15 - 2x = -7x$

$+2x \quad +2x$

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

$$\boxed{-3 = x}$$

4) $3s = s - 2$

$-s \quad -s$

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

$$\boxed{s = -1}$$

5) $8k = k$

$-k \quad -k$

$$\frac{7k}{7} = \frac{0}{7}$$

$$\boxed{k = 0}$$

6) $5n - 9 = n + 31$

$-n \quad -n$

$4n - 9 = 31$

$+9 \quad +9$

$$\frac{4n}{4} = \frac{40}{4}$$

$$\boxed{n = 10}$$

7) $9x + 9 = 9x - 12$

$-9x \quad -9x$

$9 = -12$

$$\boxed{\text{No solution}}$$

8) $2(x - 6) = 3x$

$2x - 12 = 3x$

$-2x \quad -2x$

$$\boxed{-12 = x}$$

$$9) \frac{1}{2}x + 5 = x$$

$$-\frac{1}{2}x \quad -\frac{1}{2}x$$

$$2 \cdot 5 = \frac{1}{2}x \cdot 2$$

$$\boxed{10 = x}$$

$$10) 1 + 6k = 6k + 1$$

$$-6k \quad -6k$$

$$1 = 1$$

Infinitely Many Solutions

$$11) r + 11 + 8r = 29 + 3r$$

$$9r + 11 = 29 + 3r$$

$$-3r \quad -3r$$

$$6r + 11 = 29$$

$$-11 \quad -11$$

$$\frac{6r}{6} = \frac{18}{6}$$

$$\boxed{r = 3}$$

$$12) \frac{4+y}{5} = y$$

$$4+y = 5y$$

$$-y \quad -y$$

$$4 = 4y$$

$$\frac{4}{4} = \frac{4y}{4}$$

$$\boxed{1 = y}$$

$$13) 5(2+n) = 3(n+6)$$

$$10 + 5n = 3n + 18$$

$$-3n \quad -3n$$

$$10 + 2n = 18$$

$$-10 \quad -10$$

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

$$\boxed{n = 4}$$

$$14) \frac{2}{3}x - 7 = x$$

$$-\frac{2}{3}x \quad -\frac{2}{3}x$$

$$3 \cdot -7 = \frac{1}{3}x \cdot 3$$

$$\boxed{-21 = x}$$

$$15) 3(2+v) - 4v = v + 16$$

$$6 + 3v - 4v = v + 16$$

$$6 - 1v = 1v + 16$$

$$+1v \quad +1v$$

$$6 = 2v + 16$$

$$-16 \quad -16$$

$$\frac{-10}{2} = \frac{2v}{2}$$

$$\boxed{-5 = v}$$

$$16) 6r + 2(2-r) = 4(2r-1)$$

$$6r + 4 - 2r = 8r - 4$$

$$4r + 4 = 8r - 4$$

$$-4r \quad -4r$$

$$4 = 4r - 4$$

$$+4 \quad +4$$

$$\frac{8}{4} = \frac{4r}{4}$$

$$\boxed{2 = r}$$

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Solving Proportions and Review

Solve the proportion. Check your solution.

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

$$\frac{2x}{2} = \frac{12}{2}$$
$$\boxed{x = 6}$$

2) $\frac{13}{6} = \frac{52}{z}$

$$\boxed{z = 24}$$

3) $\frac{3}{y} = \frac{15}{35}$

$$\boxed{y = 7}$$

4) $\frac{10}{45} = \frac{v}{27}$

$$v = 6$$

5) $\frac{5m}{6} = \frac{10}{12}$

$$\frac{60m}{60} = \frac{60}{60}$$
$$\boxed{m = 1}$$

6) $\frac{3k}{27} = \frac{2}{3}$

$$\frac{9k}{9} = \frac{54}{9}$$
$$\boxed{k = 6}$$

7) $\frac{6}{t+4} = \frac{42}{77}$

$$\frac{6}{t+4} = \frac{42}{77}$$

$$\boxed{t = 7}$$

8) $\frac{8}{12} = \frac{r}{r+1}$

$$3r = 2(r+1)$$

$$3r = 2r + 2$$

$$\boxed{r = 2}$$

$$9) \frac{n}{n-12} = \frac{9}{5}$$

$$5n = 9(n-12)$$

$$5n = 9n - 108$$

$$-4n = -108$$

$$\boxed{n = 27}$$

$$10) \frac{18}{d+13} = \frac{6}{d-13}$$

$$18(d-13) = 6(d+13)$$

$$18d - 234 = 6d + 78$$

$$12d = 312$$

$$\boxed{d = 26}$$

Describe AND correct the error in solving the proportion.

11)

$$\frac{4}{3} = \frac{16}{x}$$

$$4 \cdot 16 = 4 \cdot x$$

$$64 = 4x$$

$$16 = x$$



They incorrect cross-multiplied.

$$\boxed{x = 12}$$

12)

$$\frac{18}{14} = \frac{b+2}{b}$$

$$18b = 14b + 2$$

$$4b = 2$$

$$b = 0.5$$



They didn't distribute properly

$$18b = 14(b+2)$$

$$18b = 14b + 28$$

$$4b = 28$$

$$\boxed{b = 7}$$

Solve the following.

$$13) 4 - c = -3$$

$$\begin{array}{r} -4 \quad -4 \\ -c = -7 \end{array}$$

$$\boxed{c = 7}$$

$$14) -24 = x - 18$$

$$\begin{array}{r} +18 \quad +18 \\ -6 = x \end{array}$$

$$\boxed{-6 = x}$$

$$15) \frac{4}{3} \cdot \frac{3}{4} s = 12 \cdot \frac{4}{3}$$

$$\boxed{s = 16}$$

$$16) \frac{4r}{4} = \frac{-36}{4}$$

$$\boxed{r = -9}$$

$$17) 2d - 15 = 3$$

$$+15 \quad +15$$

$$\frac{2d}{2} = \frac{18}{2}$$

$$\boxed{d = 9}$$

$$18) 4 = \frac{m}{4} - 8$$

$$+8 \quad +8$$

$$4 \cdot 12 = \frac{m}{4} \cdot 4$$

$$\boxed{48 = m}$$

$$19) -3(n+6)+10=-8$$

$$-3n - 18 + 10 = -8$$

$$-3n - 8 = -8$$

$$+8 \quad +8$$

$$-3n = 0$$

$$\frac{-3}{-3} \quad \frac{0}{-3}$$

$$\boxed{n = 0}$$

$$20) 3(q-2) = -6 + 3q$$

$$3q - 6 = -6 + 3q$$

$$-3q \quad -3q$$

$$-6 = -6$$

$$\boxed{\text{Infinitely many solutions}}$$

$$21) 3(k+5) = -2(3k-6)$$

$$3k + 15 = -6k + 12$$

$$+6k \quad +6k$$

$$9k + 15 = 12$$

$$-15 \quad -15$$

$$\frac{9k}{9} = \frac{-3}{9}$$

$$\boxed{k = -\frac{1}{3}}$$

$$22) 8m + 2 + 4m = 2(6m + 2)$$

$$12m + 2 = 12m + 4$$

$$-12m \quad -12m$$

$$2 = 4$$

$$\boxed{\text{No real solution}}$$