

Show work in the space provided for partial credit. Scratch paper will not be graded.

1. Is $x = 3$ a solution of the equation $x^2 - x = 6$? You must show your calculation to receive full credit ("yes" or "no" answer alone is only worth 2 points).

$$\begin{aligned} 3^2 - 3 &= 6? \\ 9 - 3 &= 6 \\ 6 &= 6 \text{ yes} \end{aligned}$$

2. Solve: $51 - 2y = 13$

$$\begin{array}{r} -51 \quad -51 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ -51 \\ +13 \\ \hline -38 \end{array}$$

$$\frac{-2y}{-2} = \frac{-38}{-2}$$

$$y = 19$$

3. Solve: $32 = (7y - 11) - (6y - 11)$ — same stuff

$$32 = (7y - 6y) - 11$$

$$\begin{array}{r} 32 = 1y - 11 \\ +11 \quad +11 \end{array}$$

$$\underline{43} = y \rightarrow y = 43$$

4. Solve:

a) $-13p = 0$

$$\frac{-13p}{-13} = \frac{0}{-13}$$

divide by -13
 $p = 0$

b) $-29 = -k$

$$\frac{-29}{-1} = \frac{-k}{-1}$$

divide by -1
 $k = 29$

5. Solve: $11y - 2(y + 4) = 4y + 37$

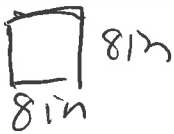
$$11y - 2y - 8 = 4y + 37$$

$$9y - 8 = 4y + 37$$

$$\begin{array}{r} -4y \\ 5y - 8 = 37 \end{array}$$

$$5y = 45, y = 9$$

6. a) Find the area of a square where the length of each side is 8 inches. $A = s^2$



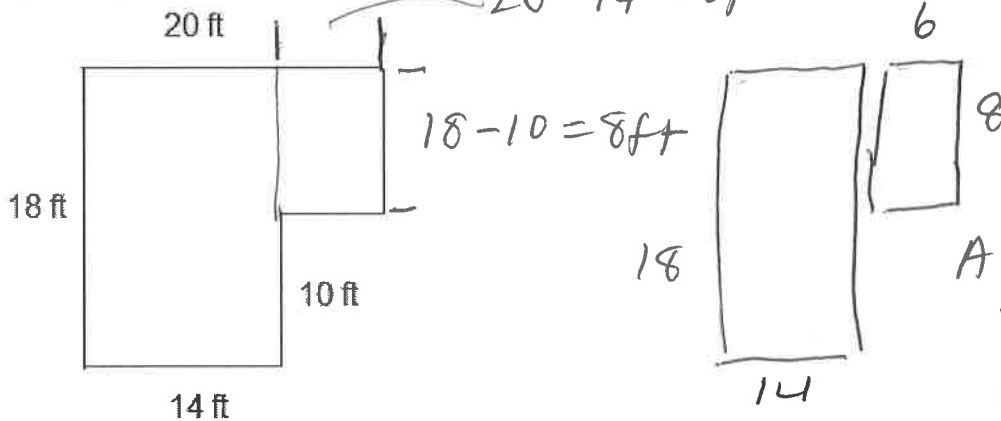
$$A = (8 \text{ in})^2 = 64 \text{ in}^2$$

b) Find the perimeter of the square where the length of each side is 8 inches.

$$P = 4s$$

$$P = 4(8 \text{ in}) = 32 \text{ in}$$

7. Find the area of the room below:



$$\begin{aligned} A &= 18 \cdot 14 + 6 \cdot 8 \\ &= 252 + 48 \\ &= 300 \text{ ft}^2 \end{aligned}$$

8. The perimeter of a rectangle is 60 ft, and the length is 19 ft. Find the width.

$$P = 2L + 2W$$

$$\begin{array}{cc} \uparrow & \uparrow \\ 60 & 19 \end{array}$$

$$60 = 2(19) + 2W$$

$$\begin{array}{r} 60 = 38 + 2W \\ -38 \quad -38 \\ \hline 22 \end{array}$$

$$\frac{22}{2} = \frac{2W}{2}$$

$$W = 11 \text{ ft}$$

9. Translate to algebra and solve: The product of 5 and a number decreased by 19 results in 11.

$$\text{translate} \rightarrow 5 \cdot n - 19 = 11$$

$$\text{solve} \rightarrow \begin{array}{r} 5n - 19 = 11 \\ +19 \quad +19 \end{array}$$

$$5n = 30$$

$$n = 6$$

10. At a lunch, 6 trays of sandwiches were bought. If 113 sandwiches were served and 7 were left over, how many sandwiches were on each tray?

$$n = \frac{\text{sandwiches on each tray}}{\text{total sandwiches}}$$

$$6n = 113 + 7$$

$$6n = 120$$

$$n = 20 \text{ sandwiches on each tray}$$

11. Simplify: $\frac{12pr^3}{30p^2r}$

$$= \frac{\overset{\cancel{6}}{12} \cdot p \cdot r \cdot r \cdot r}{\underset{\cancel{6}}{30} \cdot p \cdot p \cdot r} = \frac{2r^2}{5p}$$

12. a) Estimate each number and find the product of the estimates: $\left(-2\frac{1}{4}\right) \cdot \left(1\frac{2}{3}\right)$

$$\approx (-2)(2) = -4$$

- b) Find the exact value of the product: $\left(-2\frac{1}{4}\right) \cdot \left(1\frac{2}{3}\right)$

$$-2\frac{1}{4} \rightarrow -\frac{9}{4}$$

$$1\frac{2}{3} \rightarrow \frac{5}{3}$$

$$= \left(-\frac{9}{4}\right) \left(\frac{5}{3}\right) = \frac{-15}{4} = -3\frac{3}{4}$$

$$\begin{array}{r} 4 \overline{) 15} \\ \underline{12} \\ 3 \end{array}$$

13. Simplify: $\frac{-2a^3b^5}{25} \div \frac{-a^4}{40b}$

$= \frac{(-2 \cancel{a^3} \cdot a \cdot b b b b b)}{25} \cdot \frac{(40 \cancel{b})}{\cancel{7} \cdot \cancel{a} \cdot \cancel{a} \cdot \cancel{a} \cdot \cancel{a}}$

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

$\frac{4}{5} \cdot 5 = 4$

$= \frac{16b^4}{5}$

$= \frac{2 \cdot b b b b b \cdot 8b}{5}$

14. Simplify: $\frac{2}{5}y + \frac{5}{7}y$

$= \left(\frac{2 \cdot 7}{5 \cdot 7} + \frac{5 \cdot 5}{7 \cdot 5} \right) y$

$= \left(\frac{14}{35} + \frac{25}{35} \right) y = \frac{39}{35} y$

15. Simplify: $\frac{\frac{2}{3}}{\frac{4}{5}}$

$= \frac{2}{3} \cdot \frac{5}{4} = \frac{5}{6}$

16. Simplify: $\left(\frac{1}{3}\right)^3 \left(\frac{9}{5}\right)$

$= \left(\frac{1}{\cancel{3}^3}\right) \left(\frac{\cancel{9}^1}{5}\right) = \frac{1}{15}$

$\left(\frac{1}{3}\right)\left(\frac{1}{3}\right)\left(\frac{1}{3}\right)$

17. Evaluate: $D = x^2 - 4y$ for $x = \frac{1}{3}$, $y = \frac{3}{8}$

$$D = \left(\frac{1}{3}\right)^2 - 4\left(\frac{3}{8}\right)$$

$$= \frac{1}{9} - \frac{3}{2} = \frac{2}{18} - \frac{27}{18} = \frac{-25}{18} \leftarrow \text{OK}$$

18. Solve: $x - \frac{2}{3} = \frac{3}{7}$

$$x = \frac{3}{7} + \frac{2}{3} = \frac{9}{21} + \frac{14}{21} = \frac{23}{21}$$

19. Solve: $\frac{4}{3}x = -\frac{14}{9}$

multiplied

$$\frac{3}{4} \left(\frac{4}{3}\right) x = -\frac{14}{9} \left(\frac{3}{4}\right)$$

$$x = -\frac{7}{6}$$

20. Find the volume of a suitcase whose dimensions are 30 in. x 20 in. x 8 in.

$$V = (30 \text{ in})(20 \text{ in})(8 \text{ in})$$

$$= (30)(20)(8) \text{ in}^3$$

$$= (600)(8) \text{ in}^3$$

$$= 4800 \text{ in}^3$$

