

KEY

Solve each equation: (1-6)

$$2 + 5k = 3k - 6$$

$$\begin{array}{r} 2 + 5k = 3k - 6 \\ -3k \quad -3k \\ \hline 2 + 2k = -6 \\ -2 \quad -2 \\ \hline 2k = -8 \\ \frac{2k}{2} = \frac{-8}{2} \\ \boxed{k = -4} \end{array}$$

2. $3(3m - 2) = 2(3m + 3)$

$$\begin{array}{r} 9m - 6 = 6m + 6 \\ -6m \quad -6m \\ \hline 3m - 6 = 6 \\ +6 \quad +6 \\ \hline 3m = 12 \\ \frac{3m}{3} = \frac{12}{3} \\ \boxed{m = 4} \end{array}$$

3. $6(3a + 2) - 30 = 3a - 3(3a - 4) - 6$

$$\begin{array}{r} 18a + 12 - 30 = 3a - 9a + 12 - 6 \\ 18a - 18 = -6a + 6 \\ +6a \quad +6a \\ \hline 24a - 18 = 6 \\ +18 \quad +18 \\ \hline 24a = 24 \\ \frac{24a}{24} = \frac{24}{24} \\ \boxed{a = 1} \end{array}$$

4. $\frac{5x - 4}{10} = \frac{4}{5}$

$$\begin{array}{r} 5(5x - 4) = 4(10) \\ 25x - 20 = 40 \\ +20 \quad +20 \\ \hline 25x = 60 \\ \frac{25x}{25} = \frac{60}{25} \\ x = \frac{60}{25} = \frac{12}{5} \\ \boxed{x = \frac{12}{5} \text{ or } 2.4} \end{array}$$

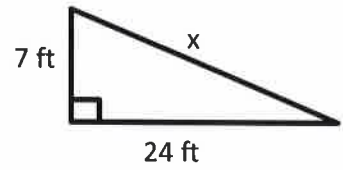
5. $\frac{2n - 4}{5} = \frac{3n + 3}{10}$

$$\begin{array}{r} 10(2n - 4) = 5(3n + 3) \\ 20n - 40 = 15n + 15 \\ -15n \quad -15n \\ \hline 5n - 40 = 15 \\ +40 \quad +40 \\ \hline 5n = 55 \\ \frac{5n}{5} = \frac{55}{5} \\ \boxed{n = 11} \end{array}$$

6. In 2 years Starbucks opened 232 stores. At this rate, how many new stores will they open in the next 3 years?

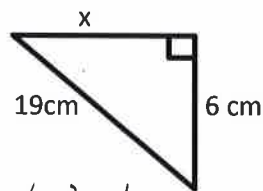
$$\begin{array}{r} \frac{2}{232} = \frac{3}{x} \\ 2x = 3(232) \\ 2x = 696 \\ \frac{2x}{2} = \frac{696}{2} \\ \boxed{x = 348} \end{array}$$

7-9. Find the missing side, round to the nearest tenth.




$$\begin{array}{r} (leg)^2 + (leg)^2 = hyp^2 \\ 7^2 + 24^2 = x^2 \\ 49 + 576 = x^2 \\ 625 = x^2 \\ \sqrt{625} = x \\ 25 = x \\ \boxed{x = 25 \text{ ft}} \end{array}$$

8.



$$\begin{array}{r} (leg)^2 + (leg)^2 = hyp^2 \\ x^2 + 6^2 = 19^2 \\ x^2 + 36 = 361 \\ -36 \quad -36 \\ \hline x^2 = 325 \\ x = \sqrt{325} \\ \boxed{x \approx 18.0 \text{ cm}} \end{array}$$

9. Find the diagonal of a SQUARE, with side length 5m.



$$\begin{array}{r} (leg)^2 + (leg)^2 = hyp^2 \\ 5^2 + 5^2 = x^2 \\ 25 + 25 = x^2 \\ 50 = x^2 \\ x = \sqrt{50} \approx 7.1 \\ \boxed{x \approx 7.1 \text{ m}} \end{array}$$

10. Find the slope of the line containing (-2,3) and (4,-8).

$$m = \frac{-8-3}{4-(-2)} = \frac{-11}{6}$$

11. What is the slope and the y-intercept of

$$y = -\frac{2}{3}x + 8$$

Slope = $-\frac{2}{3}$

y-intercept = (0,8)

12. Find the equation of the line that goes through (-2,-9) and (3,-16)

$$m = \frac{-16 - (-9)}{3 - (-2)} = \frac{-7}{5}$$

$$y = -\frac{7}{5}x + B$$

$$-9 = -\frac{7}{5}(-2) + B$$

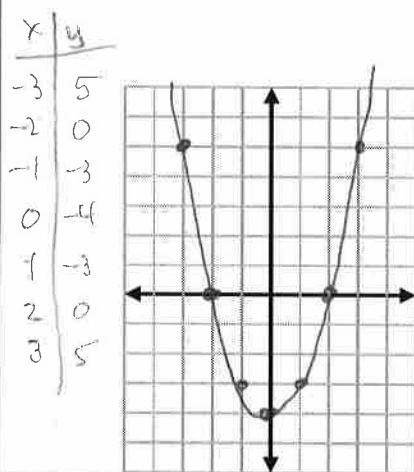
$$-9 = \frac{14}{5} + B$$

$$-\frac{45}{5} = \frac{14}{5} + B$$

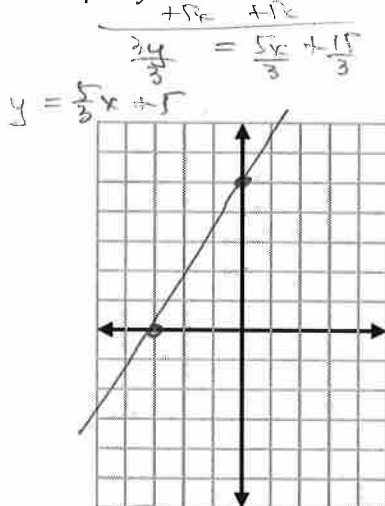
$$-\frac{59}{5} = B$$

$$y = -\frac{7}{5}x - \frac{59}{5}$$

13. Graph $y = x^2 - 4$



14. Graph $3y - 5x = 15$



15. Solve using quadratic formula. Round to nearest hundredth. $4x^2 - 4x = 11$

$$4x^2 - 4x - 11 = 0$$

$$a=4 \quad b=-4 \quad c=-11$$

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(4)(-11)}}{2(4)}$$

$$= \frac{4 \pm \sqrt{16 + 176}}{8} = \frac{4 \pm \sqrt{192}}{8}$$

$$x = \frac{4 + \sqrt{192}}{8} \approx 2.23$$

$$\text{or } x = \frac{4 - \sqrt{192}}{8} \approx -1.23$$

16-18. Solve the system of equations:

$$\begin{aligned} 2(x + 2y) &= 6 \\ 3x - 4y &= 28 \\ + 2x + 4y &= 12 \\ \hline 5x &= 40 \\ x &= 8 \end{aligned}$$

$$\begin{aligned} 8 + 2y &= 6 \\ -8 &= -8 \\ \hline 2y &= -2 \\ y &= -1 \end{aligned}$$

$$(8, -1)$$

17. $y = 2x + 1$
 $3x + y = -9$

$$\begin{aligned} 3x + 2x + 1 &= -9 \\ 5x + 1 &= -9 \\ -1 &= -1 \\ \hline 5x &= -10 \\ x &= -2 \end{aligned}$$

$$y = 2(-2) + 1 = -4 + 1 = -3$$

$$(-2, -3)$$

18. $2x + y = 4$
 $-2x + y = -4$

$$\begin{aligned} 2(2) + y &= 4 \\ 4 + y &= 4 \\ -4 &= -4 \\ \hline y &= 0 \end{aligned}$$

$$(2, 0)$$