

1. Consider the function f shown in Figure 1.

- What are the domain and range of f ?
- What are the values of $f(-6)$ and $f(6)$?
- For what value(s) of x does $f(x) = -3$?
- For what values of x does $f(x) = 0$?

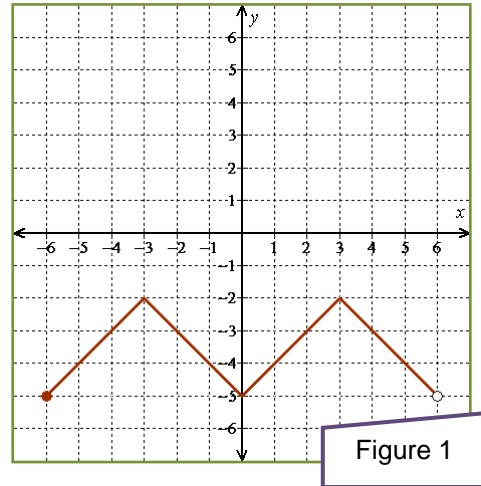


Figure 1

2. Consider each of the following equations.

$$2 + 7 = 7 + 2$$

$$4 \cdot (3 \cdot 7) = (4 \cdot 3) \cdot (4 \cdot 7)$$

$$4 + (5 + 9) = (4 + 5) + 9$$

$$2 \cdot (6 \cdot 3) = (2 \cdot 6) \cdot 3$$

$$2 + 6 \cdot 8 = 2 + 48$$

$$6 \cdot (5 + 7) = 6 \cdot 5 + 6 \cdot 7$$

- Does one of the equations illustrate the commutative property of multiplication? If so, which one?
- Does one of the equations illustrate the associative property of addition? If so, which one?
- Does one of the equations illustrate the distributive property? If so, which one?
- Is one of the equations a contradiction? If so, which one?
- Does one of the equations illustrate a part of order of operations? If so, which one?

3. Solve each formula for the indicated variable.

a. Solve $V = \frac{1}{3}\pi r^2 h$ for h . b. Solve $P = 2r + rA$ for A .

c. Solve $P = 2r + rA$ for r . (HINT: "Undistribute" r on the right side of the equation.)

4. Hamid is taking "hands on algebra" at KCCC. Hamid is given a piece of wire that is 46 cm long is told to bend it into a rectangle whose length is 1 cm more than twice its width. Write an equation that describes Hamid's project (don't forget to define your variable) and solve your equation to determine the dimensions into which Hamid should bend his wire.

5. Find each value carefully illustrating order of operation.

a. $-4^2 + (8 - 2) \cdot 3^2$

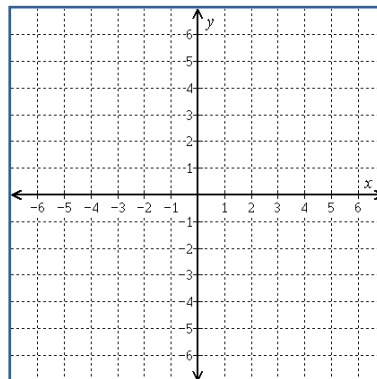
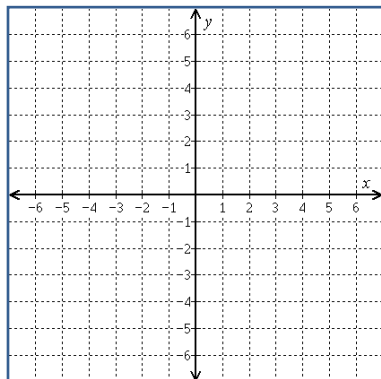
b. $3 + 4 \cdot \frac{1}{-|-3 + 9|}$

6. Find the area of a triangle by using the formula $A = \frac{1}{2}bh$ where $b = 7$ ft and $h = 17$ ft.
Include the units when making your calculation.

7. Solve each inequality. State each solution set using interval notation.

a. $3x + 1 \leq 9$ b. $5 - (2 - x) > 3$ c. $5 - 3x \geq -22$

8. a. Graph $y = -\frac{x}{3} + 2$ b. Graph $2x - 5y = 7$



9. Hole foods was having a sale on specialty bagels; all specialty bagels were 25% off. The sales price was \$1.35. What was the normal cost of a specialty bagel? (To get full credit, you need to define a variable and write an equation that models this situation.)

10. Find the solution set for each equation.

a. $3 + 2(5 - 2t) = 5t - (t + 13)$

b. $4 + 5[3x - 2(1 + x)] = 5x - 6$

c. $\frac{5a + 2}{3} = \frac{3a - 1}{2}$

d. $-(-2x + 5) = -x - (4 - 3x)$

e. $\frac{4}{x + 2} = \frac{7}{x - 4}$

11. Completely simplify each expression.

a. $3 - 2(t - 7) - (8 - t)$

b. $4a(1 - a) + (2a)^2$

12. Find the equation of the line that passes through each pair of points.

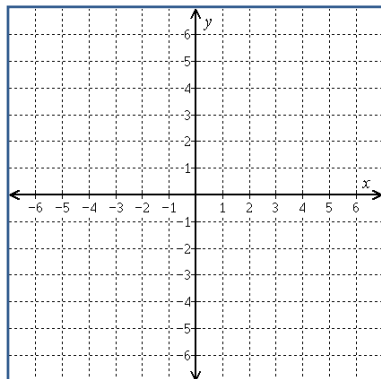
a. $(17, -6)$ and $(4, -33)$

b. $\left(\frac{1}{4}, \frac{9}{7}\right)$ and $\left(\frac{1}{4}, \frac{16}{7}\right)$

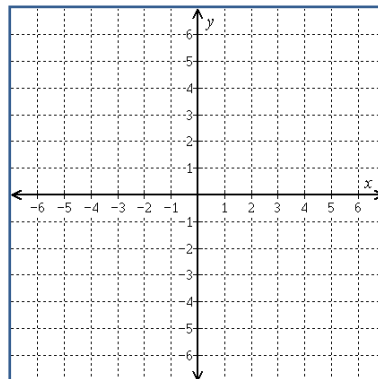
c. $(0, 0)$ and $(7, 0)$

13. Find the equation of the line that passes through the point $(8,0)$ that is perpendicular to the line with equation $4x - 12y = 18$.

14. a. Graph $y < 6 - 2x$



b. Graph $2x - 3y \leq 12$



15. Find the slope - *including unit* - of the line connecting the points in Table 1.

Table 1

Number of pancakes consumed	Amount of time spent felling bloated (hr)
3	3.3
11	26.5

16. Completely simplify each expression.

a. $-x^2 x^9$

b. $(3x)^3$

c. $(4xy^5)^2(3x)$

d. $w^7 + w^7$

e. $a^6(a^6)^5$

f. $t^2(t^5 t^8)^2$

g. $(5x)^2 + 5x^2$

h. $(1+5)^2$

17. Find each function value.

a. Find $f(7)$ when $f(x) = -x^2$.

b. Find $g(-8)$ when $g(x) = 3 - x$.

c. Find $k(8)$ when $k(x) = 19$.

18. Joe Moma had \$12.36 in his pocket and not a credit card to his name. He wanted to buy as many licorice sticks as possible, and the sticks were sold at a price of 3 sticks for \$1.19. Use an appropriate proportion to determine how many sticks of licorice Joe could buy.