

Horizons

Pre-Algebra

Student Book



$$p(n,r) = \frac{n!}{(n-r)!}$$

$$4^3 = 64$$



$$6x + 15 > 5x - 16$$



$$\frac{4x^2 + 3x - 5}{x + 3}$$

$$3x = 1$$

- 4 Find the greatest common factor of each set of numbers.

18, 24, and 36

14, 35, and 42

20, 32, and 36

- 5 Simplify.

$43.2 \times 10^0 =$

$0.063 \times 10^0 =$

$2.7 \div 10^0 =$

$0.871 \times 10^{-1} =$

$27.96 \times 10^1 =$

$66.49 \div 10^1 =$

$6.492 \times 10^{-2} =$

$3.18 \div 10^2 =$

$31.45 \div 10^2 =$

$0.5 \times 10^{-3} =$

$549.618 \div 10^3 =$

$0.088 \div 10^3 =$

- 6 Solve the word problems. Remember to label your answers.

Recipe for Buttermilk Biscuits (Makes 4 dozen biscuits)

8 cups flour

8 tablespoons butter

5 teaspoons baking powder

8 tablespoons shortening

1 teaspoon baking soda

4 cups buttermilk, chilled

1 tablespoon salt

Diann is cooking for 192 people at church on Wednesday night. How much of each ingredient does Diann need to serve one biscuit to each person?



A 5-pound bag of flour contains about 20 cups of flour. How many 5-pound bags of flour must Diann purchase to ensure she has enough flour to bake biscuits for 192 people?

1. The aerial bucket ride at an amusement park allows a maximum of 8 park guests to exit or board at each stop. The chart below shows how many guests boarded and exited the bucket ride in each of the first 5 stops. If there were 38 guests on the ride at the start, how many were on the ride after the 5th stop?

Stop	A	B	C	D	E
Boarded	6	4	7	8	8
Exited	2	8	5	4	3

- A. 10
B. 16
C. 34
D. 38
E. 49
2. Given $x + 3 = 7$ and $y + 12 = 20$, what is the value of $x + y$?
- A. 4
B. 8
C. 12
D. 32
E. 42
3. In a football game, a touchdown with an extra point is worth a total of 7 points. A field goal is worth 3 points. If a team has 23 points, how many field goals have they scored? (Assume all extra points were made and no safeties or 2-point conversions were scored.)
- A. 1
B. 2
C. 3
D. 4
E. 5
4. Given x is the square of an integer and a multiple of 9 and 18, find the value of x .
- A. 3
B. 6
C. 9
D. 18
E. 36



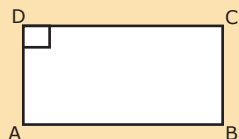
A **rectangle** is a parallelogram with four congruent angles. Because a rectangle is a parallelogram, the formulas for perimeter and area remain the same.

A **square** is a rectangle with four congruent sides. Because a square has four congruent angles and four congruent sides, the formulas for perimeter and area can be simplified as follows:

$$P = 4s, \text{ where } s \text{ is the length of a side}$$

$$A = s^2, \text{ where } s \text{ is the length of a side}$$

List everything you know to be true about the diagram below. Find the perimeter and area.



Given: $\square DCBA$; $DC = 7$; $CB = 4$

What you know:

It is a parallelogram. It is rectangle.

$$\overline{AB} \parallel \overline{DC}, \overline{AD} \parallel \overline{BC}, \overline{AB} \cong \overline{DC}, \overline{AD} \cong \overline{BC}$$

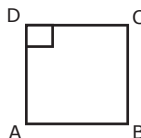
Each of the angles is equal to $360^\circ \div 4 = 90^\circ$.

Perimeter is $2(7) + 2(4) = 14 + 8 = 22$ units.

The area is $7(4) = 28$ square units.

1 CLASSWORK

List everything you know to be true about the diagram below. Include the perimeter and area.



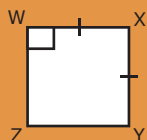
Given: $\square DCBA$; $DC = 5$; $CB = 5$

ACTIVITIES

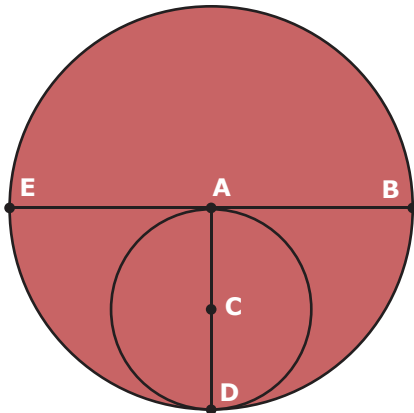
2 List everything you know to be true about the diagrams below. Include the perimeter and area.



Given: $\square WXYZ$; $WX = 4\frac{1}{2}$; $XY = 2\frac{1}{4}$

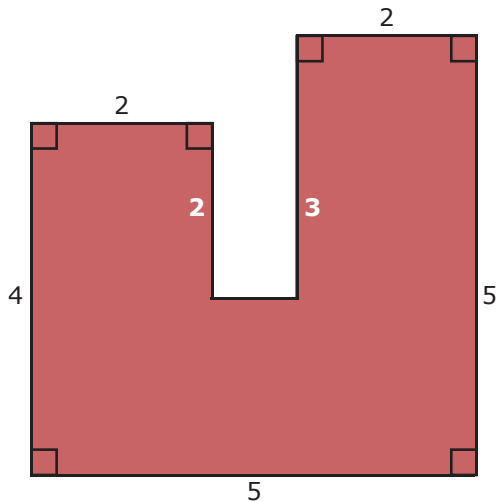


Given: $\square WXYZ$; $WX = 4\frac{1}{2}$



- In the figure above, A is the center of the large circle and C is the center of the small circle. If $CD = 3$, what is the length of \overline{EB} ?

 - A. 6
 - B. 9
 - C. 12
 - D. 15
 - E. 18



- What is the area of the figure above?

 - A. 20
 - B. 22
 - C. 23
 - D. 24
 - E. 25



A Math Minute with...

Amie D. – Missionary Nurse

What is your occupation? I am a registered nurse and missionary wife.

Where do you work? I work in Soroti, Uganda. I am the mother of three. I am also the nurse for 30 orphans at the Soroti Orphan Assistance project (S.O.A.P) orphanage.

Did you attend college? If so, what was your major? Yes, I have a B.S. degree in nursing.

What parts of your job require the use of math? The recipes that I use have the oven temperatures in degrees Fahrenheit while the ovens I use are in Celsius. I need to convert the oven temperatures from Fahrenheit to Celsius. I also use math to calculate the medication dosages for children.

What is the biggest “problem” you have faced that required the use of math to solve? When a child needs medicine, I need to convert the dosages of the medication for that specific child.

Are there any other interesting math uses you have experienced? I use math to determine how much flour, sugar, etc. I need to buy to make various recipes. I also need to keep within a grocery shopping budget. This is difficult because I don't know the value of the dollar until I arrive in the capital city. When I get there, I buy groceries for the next two months. I need to determine how many kilos of ground beef I will need for two months of dinners.



A **function** is an equation in which each value of the independent variable has exactly one corresponding value of the dependent variable.

The values assigned to the independent variable are called the **domain**.

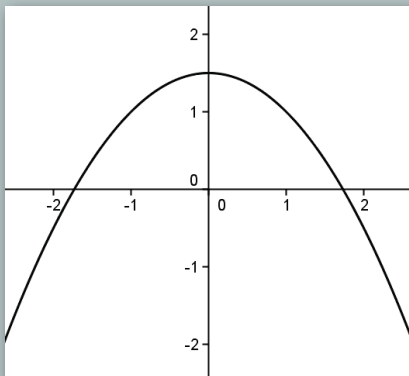
The corresponding values of the dependent variable are called the **range**.

A function is written in the format $f(x)$ and is read, "the function f of x ," or, "the f of x ."

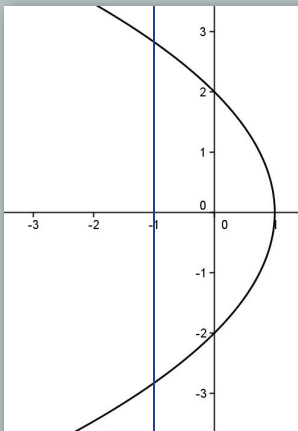
When graphing a function, the $f(x)$ side of the equation corresponds to the y portion of an equation. Plot points as usual and graph.

To look at a graph and instantly determine whether or not the graph is a function, use the **vertical line test**. If you can draw a vertical line on the graph and cross the graph in two or more points, the graph is not a function. Otherwise, the graph is a function.

Tell whether or not each graph is a function.



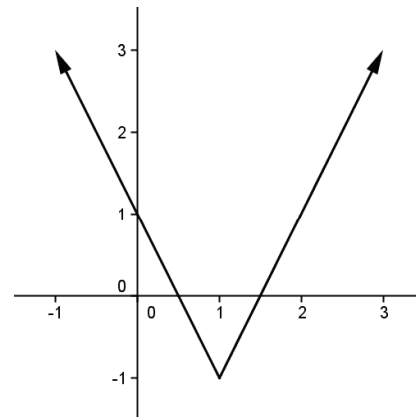
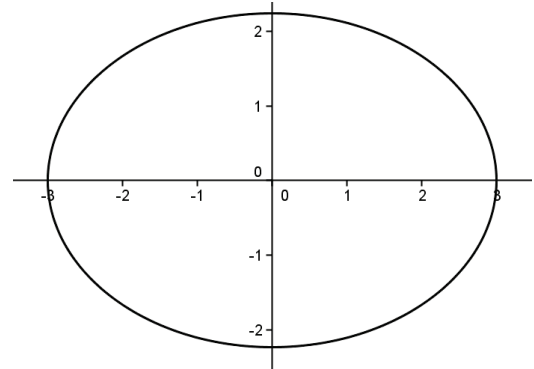
Yes. There is no way to draw a vertical line that intersects the graph in more than one point.



No. Notice that the blue vertical line intersects the graph in two places.

1 CLASSWORK

Tell whether or not each graph is a function.



Graph the function $f(x) = 2x - 1$.

ACTIVITIES

1 Find the area of each base, and the volume of a prism having the indicated height.

Base of Prism	Area of Base	Prism Height	Volume of Prism
		$3\frac{3}{5}$ in.	
		2.1 cm	
		$4\sqrt{3}$ ft.	
		7.03 m	
		$5\sqrt{2}$ yd.	

2 Complete the chart for cones.

Radius	Height	Slant Height	Volume	Lateral Area	Surface Area
5.2 in.	1.8 in.	1.8 in.			
6 m	8 m	10 m			