Chapter 1:
Functions & Equations

"Do the best you can until you know better.
Then when you know better, do better." - Maya Angelou

Lesson 1-1: Translating Verbal Expressions

Vocabulary

Order of Operations:

P

E

M

D

A

S

Operation Words:

+	−	×	÷	=

Lesson 1-2: Identifying Functions

Vocabulary

Function: _____

_____

_____

Example: Non-example:

Domain: _____

_____

Range: _____

_____

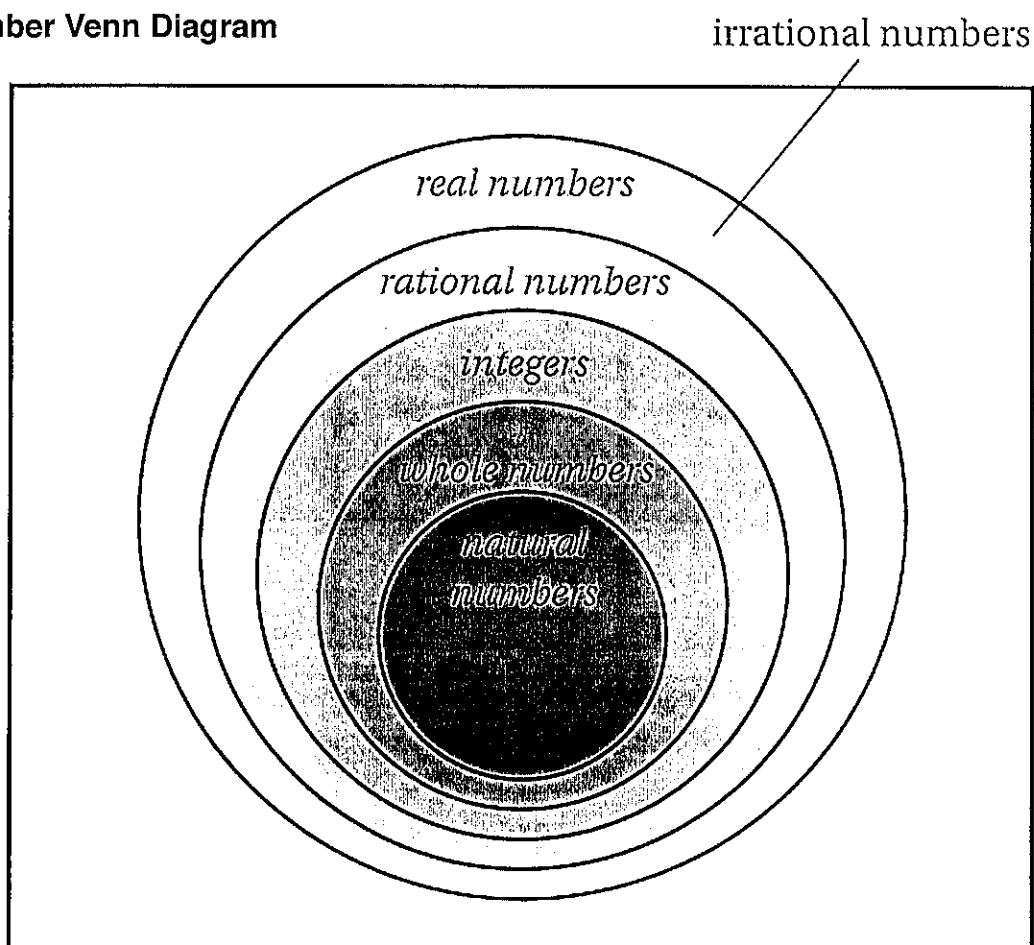## Types of Numbers: (from smallest set to largest set)

Natural Numbers: _____

Whole Numbers: _____

Integers: _____

Rational Numbers: _____

_____

Real Numbers: _____

_____

Real Number Venn Diagram

irrational numbers

real numbers

rational numbers

integers

whole numbers

natural numbers

Practice

1. The table shows a relation between the year Y and percent P of public high schools in the United States with desktop computers available for student use.

Y	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
P	42.7	57.8	86.1	94.6	97.4	98.7	99.0	99.1	99.1	98.8	99.4

Is P a function of Y? Explain...

Give the domain and range.

Domain:

Range:

2.   Use the equation $y = x^2$ for the following.

A.   Is it a function? Explain...

B.   Identify the domain and range if it is a function. If not, write "not applicable."

3.   Use the equation $y = \sqrt{x}$ for the following.

A.   Is it a function? Explain...

B.   Identify the domain and range if it is a function. If not, write "not applicable."

4.   Use the equation $y = \dfrac{25}{x^2 - 36}$ for the following.

A.   Is it a function? Explain...

B.   Identify the domain and range if it is a function. If not, write "not applicable."

Lesson 1-3: Function Notation

Vocabulary

f(x): _____

*Note: the parentheses do NOT mean multiplication!

This notation was created by a Swiss mathematician by the name of

_____. He lived from _____ to _____ and

wrote some of the most influential algebra books of all time!

T(x) = x is read as "_____"

$B(x) = \dfrac{x^2}{20}$ is read as "_____"

Practice

1. Use the function $B(x) = \dfrac{x^2}{20}$ for the following:

   A. Evaluate B(45).

   B. Evaluate B(-10).

2. If $f(x) = \dfrac{24+x}{2x^2}$, evaluate each of the following:

   A. f(4)   C. f(z)

   B. f(-8)   D. f(3z)
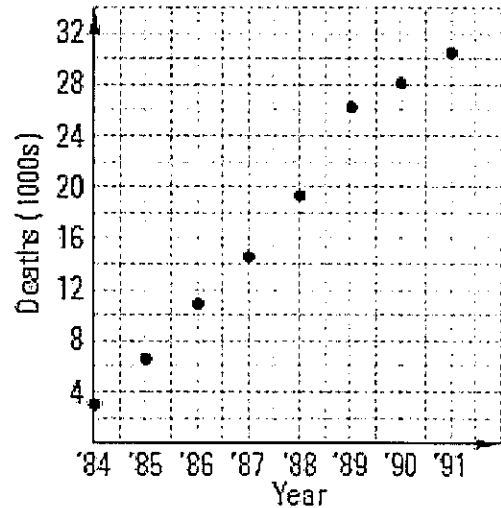
Lesson 1-4: Graphs of FUNctions

Vocabulary

Function: _____
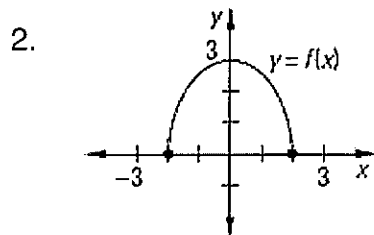
_____

Vertical Line Test (VLT): _____

_____

Practice

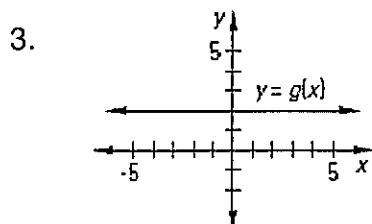1. The graph gives the numbers of deaths due to AIDS from 1984 to 1991 in the U.S.

   A.   Estimate D(1988).

   B.   Estimate D(1991) - D(1990) and write a sentence that describes what this result means.
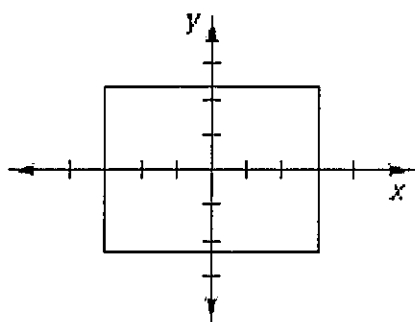

In #2 & 3 a function is graphed.

2.

   a. Give the range. _____

   b. Give the domain. _____

   c. For what values of x is $f(x) = 0$? _____

3.
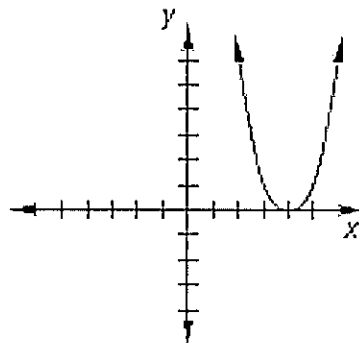

   a. Give the range. _____

   b. Give the domain. _____

   c. Find g(-3). _____

Determine whether or not the graph represents a function. Explain...
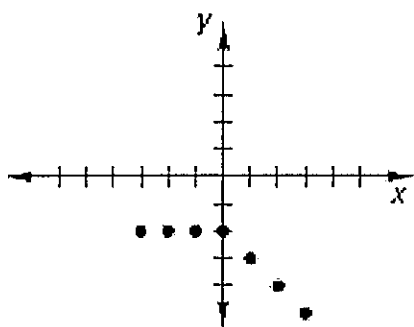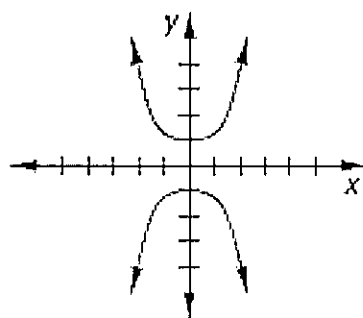
4.

5.

6.

7.

Lesson 1-5: Solving Equations

1.   If there are parentheses, <u>distribute</u>!
2.   If there are "like terms" on the left side, <u>combine</u>! If there are "like terms" on the right side, <u>combine</u>!
3.   If there are "like terms" on opposite sides, move one over to <u>combine</u>! (Any time you are moving to the other side, remember to "un-do" the operation)
4.   Get your variable all alone, using reverse PEMDAS!

Practice

1. $5t - 8 = -28$ 2. $3(c - 2) = 15$

3. $\dfrac{m}{3} - 7 = -10$ 4. $40 = \dfrac{10}{20c}$

5. $0.4(k - 20) - 0.2k = 36$ 6. $7y + 3 = 4y - 18$

7. $3(x + 2) = -5 - 2(x - 3)$ 8. $\dfrac{1}{6}(12 - 6x) = 5(x + 4)$

Lesson 1-6: Solving for a Variable

Vocabulary

To "solve for a variable," means you should _____ the given variable.

"_____" means to get the variable alone - it's just like equation solving!

Practice

1. Solve for x.

    A. $3x + 1 = 25$ B. $3x + y = z$

2. Pierre lives in New Orleans, where he measures temperature using the Fahrenheit scale. When he visited his cousin Rae in Montreal, Canada, he found that temperature was reported in degrees Celsius. Because Celsius temperature readings didn't mean much to him, Pierre converted temperatures in Celsius C to Fahrenheit F using this formula: $F = 32 + 1.8C$.

    Rae visited Pierre the following summer. Rewrite the formula so she can use it to convert degrees Fahrenheit to Celsius.

3. Scuba divers use the formula $t = \dfrac{33v}{x + 33}$ to determine the time t (in minutes) they can dive with a given volume v of air compressed into tanks (in cubic feet) to a depth of x feet below sea level. Rewrite the formula for v in terms of x and t.

4. Solve $A = \dfrac{1}{2}bh$ for b.

5. Solve $L = \dfrac{2A}{z - x}$ for x.