Warm Up

Try These!!!

Quiz ~~tomorrow~~ Thursday

- Domain/Range
- Linear/Non-Linear
- Continuous/Discrete
- Function notation

#1. If $f(x) = -4x^2 - x + 10$

a) f(-2)

b) f(3)

$f(x) = -4x^2 - x + 10$

$f(-2) = -4(-2)^2 - -2 + 10$

follow Bedmas watch signs

$= -4(4) + 2 + 10$

$= -16 + 2 + 10$

$f(-2) = -4$

$(-2, -4)$

b)

$f(x) = -4x^2 - x + 10$

$f(3) = -4(3)^2 - 3 + 10$

$= -4(9) - 3 + 10$

$= -36 - 3 + 10$

$= -39 + 10$

$f(3) = -29$

$(3, -29)$

Completed for Homework

Evaluating Functions

Show all work

1) *If* $f(x) = 3x^2 - x - 6$, *find...*

a) $f(5)$

b) f(-7)

c) f(-3)

SOLUTIONS

a) $f(x) = 3x^2 - x - 6$

$f(5) = 3(5)^2 - 5 - 6$

$= 3(25) - 5 - 6$

$= 75 - 5 - 6$

$= 64$

b) $f(x) = 3x^2 - x - 6$

$f(-7) = 3(-7)^2 - -7 - 6$

$= 3(49) - -7 - 6$

$= 147 - -7 - 6$

$= 147 + 7 - 6$

$= 148$

c) $f(x) = 3x^2 - x - 6$

$f(-7) = 3(-3)^2 - -3 - 6$

$= 3(9) - -3 - 6$

$= 27 - -3 - 6$

$= 27 + 3 - 6$

$= 24$

2) If g(x) = x + 3 and h(x) = -3x-2

a) g(5) b) g(7) c) h(-10) d) h(5)

e) g(h(4)) f) g(x) = 33 g) h(x)= -41

SOLUTIONS

a) g(x) = x + 3

g(5) = 5 + 3

= 8

b) g(x) = x + 3

g(7) = 7 + 3

= 10

c) h(x) = -3x-2

h(-10) = -3(-10) - 2

= 30 - 2

= 28

d) h(x) = -3x-2

h(5) = -3(5) - 2

= -15 - 2

= -17

e) g(h(4))

h(x) = -3x-2

h(4) = -3(4) - 2

= 12 - 2

= 10

g(10) = x + 3

g(5) = 10 + 3

= 13

f) g(x) = 33

g(x) = x + 3

33 = x + 3

33- 3 = x + 3-3

30 = x

g) h(x) = -41

h(x) = -3x-2

-41 = -3x - 2

-41 + 2 = -3x -2+2

-39 = -3x

$\frac{-39}{-3} = \frac{-3x}{-3}$

13 = x

Worksheet From LAST Thursday

Solutions

1 a) -29 b) 16 c) -6 d) 23 e) $29 + \frac{12}{a}$

f) x= -5 g) x = -6 h) x= ±4 i) 10 j) $-3\left(\frac{12}{x}\right)+1$

$= \frac{-36}{x} + 1$

2)a) (-1, 1) b) (2,7) c) (1,-1) d) (3,9)

3) a) f(-4) = 2 b) f(0) = 0 c) f(3) = 1.75 d) f(-5) = 0

e) x = -4 and x= -1 when f(x)= 2 f) f(x) = when x =-5 and x= 0

g) $h(x) = -2$

$h(x) = \frac{12}{x}$

$-2 = \frac{12}{x}$

$-2 \cdot x = \frac{12}{x} \cdot x$

$\frac{-2x}{-2} = \frac{12}{-2}$

$x = -6$

$(-6, -2)$

$f(x) = -2x + 3$ $g(x) = 3x^2 + 4$

$h(x) = 5(x-1)$

a) $f(2)$

$f(x) = -2x + 3$

$f(2) = -2(2) + 3$

$= -4 + 3$

$f(2) = -1$

$(2, -1)$

b) $f(x) = 31$

$f(x) = -2x + 3$

$31 - 3 = -2x + 3 - 3$

$28 = -2x$

$\frac{28}{-2} = \frac{-2x}{-2}$

$-14 = x$

$(-14, 31)$

$f(x) = -2x + 3$ $g(x) = 3x^2 + 4$

$h(x) = 5(x-1)$

c) $g(f(5))$

$f(5) = -2(5) + 3$

$= -10 + 3$

$f(5) = -7$

$g(-7)$

$g(x) = 3x^2 + 4$

$g(-7) = 3(-7)^2 + 4$

$= 3(49) + 4$

$= 147 + 4$

$= 151$

$g(f(5)) = 151$

$f(x) = -2x + 3$ $g(x) = 3x^2 + 4$

$h(x) = 5(x-1)$

d) h(8) -f(1)

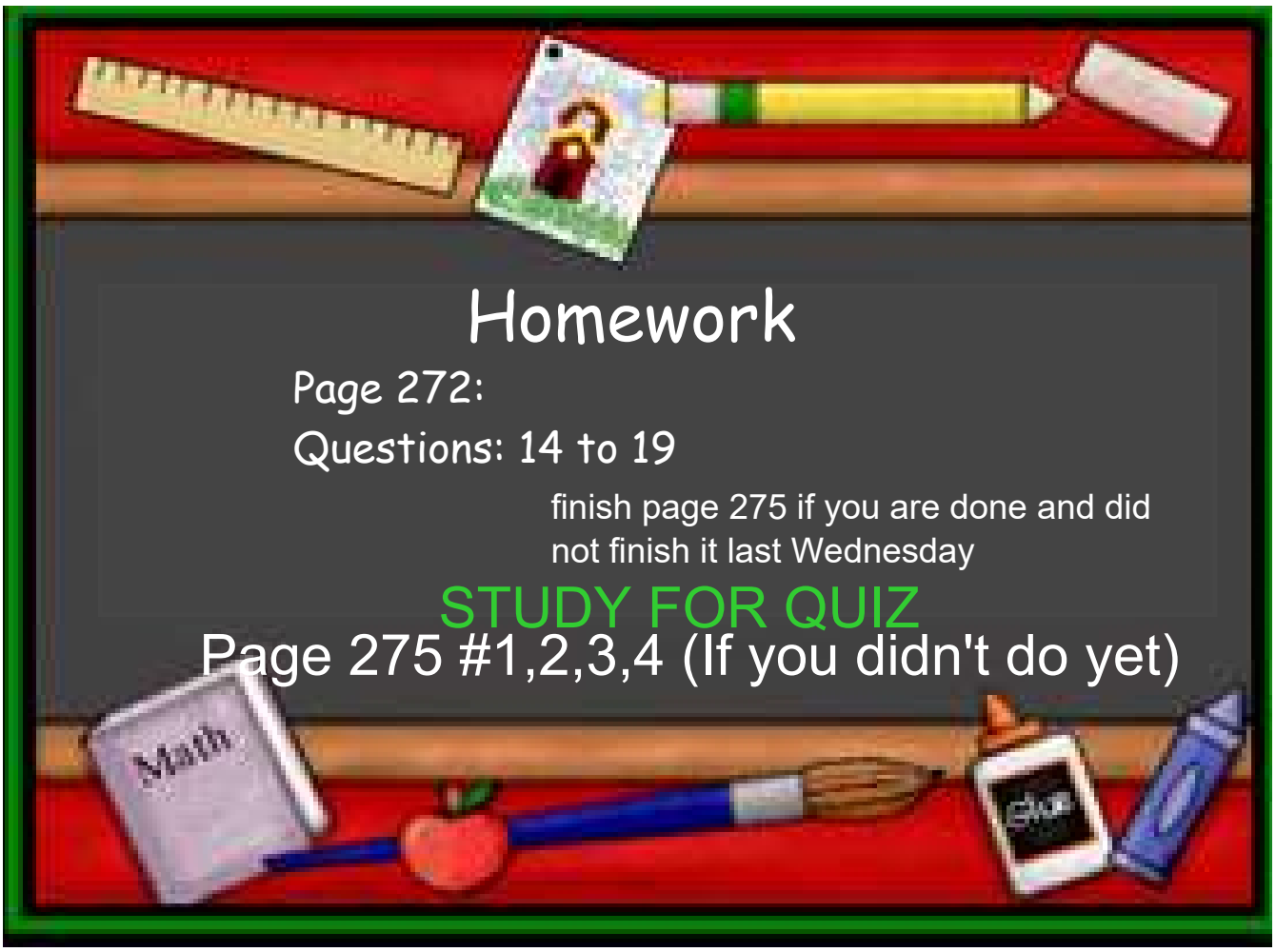
$h(8) = 5(8-1)$
$= 5(7)$
$= 35$

$f(1) = -2(1) + 3$
$= -2 + 3$
$= 1$

$h(8) - f(1)$
$35 - 1$
34

e) g(x) = 80

$g(x) = 3x^2 + 4$
$80 = 3x^2 + 4$
$80 - 4 = 3x^2 + 4 - 4$
$76 = 3x^2$
$\frac{76}{3} = \frac{3x^2}{3}$
$25.3 = x^2$
$\sqrt{25.3} = \sqrt{x^2}$
$5.03 \simeq x$



QUIZ OUTLINE (GIVEN LAST DAY)

#1) Given two graphs state the

Domain, Range, if a Function/Non-Function, Linear/Non-Linear, Continuos/Discrete (10 points)

#2) Evaluate G(x) a) when given an x b) when given a g(x)

(Ex $G(x) = -3x^2 - 5$ a) g(4) b) g(x) = -305)

#3) Word problem . With equation given

a) Given an equation, write it as function notation

b) Determine a value when given x, explain what the answer means

c) Determine a value of y, and explain what it means.

CHECKPOINT 1

Connections

Here is a Frayer model for a function.

Definition

A function is a relation where each element in the first set is associated with exactly one element in the second set.

Essential Characteristics

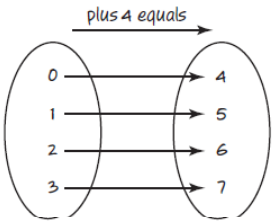
The domain is the set of first elements in the ordered pairs. These are the values of the independent variable. The range is the set of second elements in the ordered pairs. These are the values of the dependent variable.

Function

Example

x	y
0	4
1	5
2	6
3	7

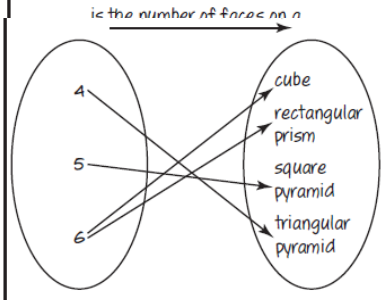
{(0, 4), (1, 5), (2, 6), (3, 7)}



Non-examples

Number of Faces	Object
4	triangular pyramid
5	square pyramid
6	cube
6	rectangular prism

{(4, triangular pyramid),
(5, square pyramid),
(6, cube),
(6, rectangular prism)}



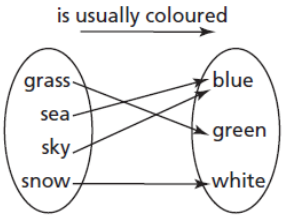
Concept Development

- **In Lesson 5.1**
  - You described a relation in words and represented it using: a set of ordered pairs, an arrow diagram, a table, and a bar graph.
- **In Lesson 5.2**
  - You identified a function by checking to see whether its ordered pairs had different first elements.
  - You listed the elements of the domain and of the range.
  - You related the elements of the domain to the independent variable and the elements of the range to the dependent variable.
  - You described functions in words, and algebraically using function notation.

Assess Your Understanding

5.1

1. Copy and complete this table for different representations of relations.

	Description in Words	Set of Ordered Pairs	Arrow Diagram	Table or Graph
a)		{(skin, drum), (skin, kayak), (bark, basket), (stone, inukshuk), (stone, carving)}		
b)				Number / Number of Factors: 1 / 1; 2 / 2; 3 / 2; 4 / 3
c)				
d)	For the numbers 1 to 4, the first number in an ordered pair is greater than the second number.			

5.2

2. **a)** Which relations in question 1 are functions? Justify your answers.
b) State the domain and range of each function.

3. **a)** Think about two sets of numbers and an association.
i) Create a relation that is not a function.
ii) Create a function.
b) Represent each relation in part a in different ways.

4. The temperature, T degrees Celsius, of Earth's interior is a function of the distance, d kilometres, below the surface: $T(d) = 10d + 20$
a) Identify the dependent and independent variables.
b) Write this function as an equation in two variables.
c) Determine the value of $T(5)$. Describe what this number represents.
d) Determine the value of d when $T(d) = 50$. Describe what this number represents.

Attachments

FunctionNotationWorksheet.pdf