

Warm Up
Try These!!!

Quiz tomorrow

Domain/Range

Linear/Non-Linear

Continuous/Discrete

Function notation

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

a) $f(-2)$

b) $f(3)$

$$x^2 = 16$$

$$\sqrt{x^2} = \sqrt{16}$$

$$x = \pm 4$$

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

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

Follow BEDMAS

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

$= -16 - (-2) + 10$

↓ ↓
 add opp

$= -16 + (+2) + 10$

$= -14 + 10$

$= -4$

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

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

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

$= -36 - 3 + 10$

$= -39 + 10$

$= -29$

$$\begin{matrix} x & f(x) \\ (3, & -29) \end{matrix}$$

 Worksheet

From LAST
Wednesday

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

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

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

a) $f(2)$

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

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

$$= -4 + 3$$

$$= -1$$

$(2, -1)$

b) $f(x) = 31$

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

$$31 = -2x + 3$$

Rearrange and solve for x

$$31^{-3} = -2x + 3^{-3}$$

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

$$\boxed{-14 = x} \quad (-14, 31)$$

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

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

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

c) $g(\underbrace{f(5)}_{\text{found}})$
 $g(-7)$

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

$$f(5) = \underbrace{-2(5)}_{-10} + 3$$

$$= -7$$

Then do

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

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

$$= 3 \cdot \underbrace{(49)}_{49} + 4$$

$$= 147 + 4$$

$$g(-7) = 151$$

With functions
work inside
out

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

$$h(x) = 6$$

$$x \cdot 6 = \frac{12}{x} \cdot x$$

solve for "x"

$$\frac{6x}{6} = \frac{12}{6}$$

$$x = 2$$

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

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

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

d) $h(8) - f(1)$

$$\begin{aligned} h(x) &= 5(x-1) \\ h(8) &= 5(8-1) \\ &= 5(7) \end{aligned}$$

$$h(8) = 35$$

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

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

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

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

$$35 - 1$$

e) $g(x) = 80$

Homework

Page 272:

Questions: 14 to 19 ~~14 to 19~~ leave out (18c)

finish page 275 if you are done and did not finish it last Wednesday

STUDY FOR QUIZ

$$19 \text{ bi) } C(f) = 20$$

$$C(f) = \frac{5}{9}(f-32)$$

$$9 \cdot 20 = \frac{5 \cdot 9}{9}(f-32)$$

$$\frac{180}{5} = \frac{5}{5}(f-32)$$

$$36^{+32} = f - 32 + 32$$

$$68 = f$$

20°C is 68°F

$$9. C(x) = \frac{5}{9}(x - 32)$$

b i)

$$9(C(x) + 32) = x - 32 + 32$$

$$9(C(x) + 32) = F$$

$$1b) \quad C(i) = 2.54i$$

$$a) \quad C = 2.54i$$

$$b) \quad C(12)$$

$$C(i) = 2.54i$$

$$C(12) = \underbrace{2.54 \times 12}$$

=

CHECKPOINT 1

Connections

Here is a Frayer model for a function.

Function

<p>Definition</p> <p>A function is a relation where each element in the first set is associated with exactly one element in the second set.</p>	<p>Essential Characteristics</p> <p>The domain is the set of first elements in the ordered pairs. These are the values of the independent variable.</p> <p>The range is the set of second elements in the ordered pairs. These are the values of the dependent variable.</p>																				
<p>Example</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 2px 10px;">x</th> <th style="padding: 2px 10px;">y</th> </tr> </thead> <tbody> <tr><td style="padding: 2px 10px;">0</td><td style="padding: 2px 10px;">4</td></tr> <tr><td style="padding: 2px 10px;">1</td><td style="padding: 2px 10px;">5</td></tr> <tr><td style="padding: 2px 10px;">2</td><td style="padding: 2px 10px;">6</td></tr> <tr><td style="padding: 2px 10px;">3</td><td style="padding: 2px 10px;">7</td></tr> </tbody> </table> <p style="margin-top: 10px;">{(0, 4), (1, 5), (2, 6), (3, 7)}</p> <div style="margin-top: 10px;"> <p style="text-align: center;">plus 4 equals →</p> </div>	x	y	0	4	1	5	2	6	3	7	<p>Non-examples</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 2px 10px;">Number of Faces</th> <th style="padding: 2px 10px;">Object</th> </tr> </thead> <tbody> <tr><td style="padding: 2px 10px;">4</td><td style="padding: 2px 10px;">triangular pyramid</td></tr> <tr><td style="padding: 2px 10px;">5</td><td style="padding: 2px 10px;">square pyramid</td></tr> <tr><td style="padding: 2px 10px;">6</td><td style="padding: 2px 10px;">cube</td></tr> <tr><td style="padding: 2px 10px;">6</td><td style="padding: 2px 10px;">rectangular prism</td></tr> </tbody> </table> <p style="margin-top: 10px;">{(4, triangular pyramid), (5, square pyramid), (6, cube), (6, rectangular prism)}</p> <div style="margin-top: 10px;"> <p style="text-align: center;">is the number of faces on a →</p> </div>	Number of Faces	Object	4	triangular pyramid	5	square pyramid	6	cube	6	rectangular prism
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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)				<table border="1"> <thead> <tr> <th>Number</th> <th>Number of Factors</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>2</td> </tr> <tr> <td>3</td> <td>2</td> </tr> <tr> <td>4</td> <td>3</td> </tr> </tbody> </table>	Number	Number of Factors	1	1	2	2	3	2	4	3
Number	Number of Factors													
1	1													
2	2													
3	2													
4	3													
c)			<p>is usually coloured →</p>											
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