Describing Functional Relationships

~~Agenda~~

Warm-Up
HW Check
Stations
Progress Reports

~~Reminders~~

HW 23 due at end of class
Quiz Tuesday

~~Essential?~~

How do I write equations of functional relationships?

Warm-Up Friday

1. A group of mountain climbers begin an expedition with 265 pounds of food. They plan to eat a total of 15 pounds of food per day.

A) Write an equation relating the remaining food supply, r, to the number of days, d.

dep

ind.

$r = 265 - 15d$

$r(d)$

B) After 11 days, how much food remains?

$265 - 15(11)$

2. Jason borrowed money from his eccentric Aunt Bea to buy a lawn mower that costs $245. He decides to charge $18 to mow a lawn. Which equation below best describes the situation if Jason's profit, p, is a function of the number of lawns mowed, n?

A $p = 18n$

B $p = 18 + 245$

C $p = 18n - 245$

D $p = 245 + 18n$

Practice - Evaluating Functions

pp 245-251

Name _____ Date _____ Period _____

Find values for the following functions:

1. $f(x) = 3x + 7$
   a. $f(3) =$
   b. $4[f(10)] =$

2. $g(x) = x^2 - 1$
   a. $g(-2) =$
   b. $-3[g(1)] =$

3. Find the 10^{th} term of the sequence that has the rule $A(n) = 32 + (n-1)(-2)$.

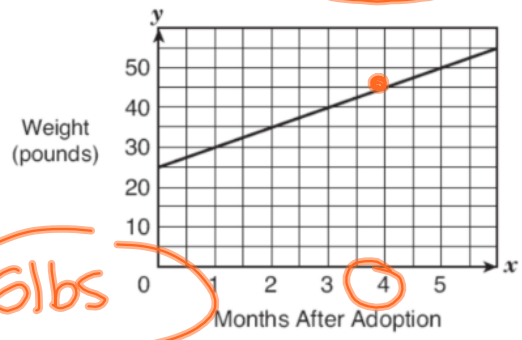
4. What is the input when the output is 58, using the function $A(n) = -5 + (n-1)(3)$?

5. If a function is defined by $f(x) = x^2 - 5$ and the domain is {2, 5}, what are the dependent values?

6. If $f(x) = 3x^2 + 4x - 6$, then what is f(☺)?

7. A recreational vehicle gets 21 miles per gallon. The relationship of the miles that the car can go to gallons of gas is expressed by the function $f(x) = 21x$, where x is the number of gallons of gasoline. Evaluate the function to determine the number of miles that the vehicle can travel on a full tank if the tank holds 14 gallons.

8. The graph below shows the weight of Denise's dog Elmo over the 6-month period after she adopted him. Evaluate the function to determine the weight of Elmo, if Denise has had him for a period of four months.



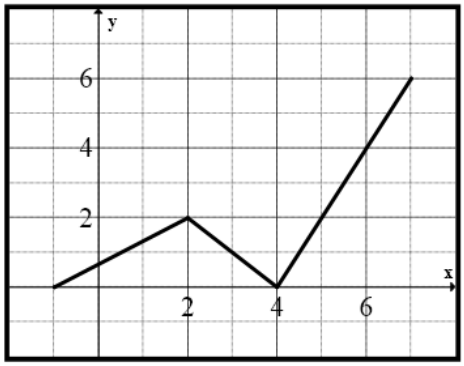
Use the graph to the right to answer the following questions.

9. What is the value of $f(4)$?

10. For what value or values of x does $f(x) = 2$?

11. For what x-values is $f(x)$ greater than or equal to 2?

12. What are the domain and range of the function shown on the graph?



Algebra I – Unit 3: Topic 1 – Describing Functional Relationships

Stations Recording Sheet Name _____

Station 1

1. Equation: _____
2. Independent Variable: _____
3. Dependent Variable: _____
4.

Nights	Total Cost
1	
2	
3	
4	
5	

Station 2

1. Length of rectangle, simplified in terms of x (show work)
2. Draw the rectangle and label both the length and the width.
3. Perimeter of rectangle, simplified in terms of x

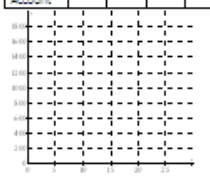
Station 3

1. Equation: _____
2. Dependent Variable: _____
3. Independent Variable: _____
4. _____
5. _____

Station 4

1. Equation: _____
2. Independent Variable: _____
3. Dependent Variable: _____
4.

# months	5	10	15	20
Amount in Account				



5. _____

When the timer goes off, switch stations.

Algebra I - Unit 3: Topic 1 – Describing Functional Relationships

Stations – Describing Functional Relationships **No Textbook Correlation**

Station 1

Benji boarded his dog, Bruno, at Doggy Bark Hotel. It cost $25 per day for boarding and an additional $15 for grooming.

1. Write an equation that would find the total cost, *c*, of boarding and grooming Bruno for *d* days.

$c = 25d + 15$

2. What is the independent variable?

days (d)

3. What is the dependent variable?

cost (c)

4. Complete the table for boarding Bruno for the first five nights.

~~Nights~~	~~Total~~ cost
1	40
2	65
3	90
4	115

Algebra I - Unit 3: Topic 1 – Describing Functional Relationships

Station 2

A rectangle's length is 6 meters longer than twice its width. The width of the rectangle is (2x+3) meters.

1. What is the length of the rectangle, simplified in terms of *x*?

$6+2(2x+3)$

$6+4x+6$

$4x+12$

2. Draw a picture of the rectangle and label the length and width.

3. What is the perimeter, p, of the rectangle, simplified in terms of *x*?

$2(4x+12)+2(2x+3)$

$12x+30$

Algebra I - Unit 3: Topic 1 – Describing Functional Relationships

Station 3

The Parker family is taking a vacation. During their vacation they will drive a total of 575 miles at an average speed of 55 miles per hour.

1. Write an equation that describes how many miles, *m*, remain after *h*, hours of driving.

$m = 575 - 55h$

2. What is the dependent variable?

m, miles

3. What is the independent variable?

h, hours

4. How many miles will they have left to drive after traveling for 7 hours?

190 miles

5. After how many hours of driving will the Parker family have only 25 miles left to drive?

$25 = 575 - 55h$

10 hours

Algebra I - Unit 3: Topic 1 – Describing Functional Relationships

Station 4

Shannon has $2000 in her saving account when she starts withdrawing money. She takes $75 out of the account each month.

1. Write an equation that best describes the total amount, *t*, that remains in the account after *m*, months.

$t = 2000 - 75m$

2. What is the independent variable?

m, months

3. What is the dependent variable?

t, total amount

4. Complete the table to find 4 points for this situation. Graph these points on the graph provided and connect to make the linear function. Make sure to label the axes.

See table & graph

5. After how many years will Shannon have $200 left in her account? 24 months → 2 years

$200 = 2000 - 75m$

Progress Reports due Wednesday 10/29 for a bonus HW grade

- This is the only printed copy you will receive.
- If you have a question about your grade, please see me before or after class.
- We will talk about TEKS Check corrections next week.

3rd period

- You will not be in class on Monday. You are still responsible for the work and will have a quiz on Tuesday. Check the weebly website for the notes and make sure you pick up the notes and packet RIGHT NOW. I will have tutorials on Monday & Tuesday morning.