

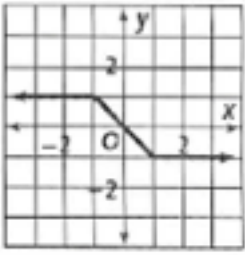
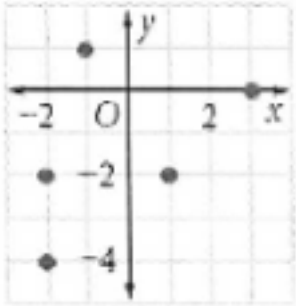
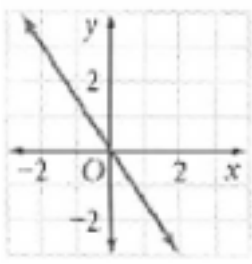
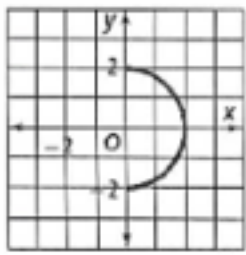
Functions Quiz Review Stations

Station 1: Dara recorded the temperatures at various times throughout the day and would like to create a graph representing the temperature fluctuation. She decided to use the times (in military times) as the x-values (for example, 1 represents 1:00 AM, 12 represents 12:00 noon, 18 represents 6:00PM, etc.) and the temperatures in degrees Fahrenheit as the y-values. She came up with the following set of points:

$$\{(5,71), (6,71), (13, 77), (14, 79), (18, 75), (20, 75), (21, 74)\}$$

<p>a. In terms of dependence/independence, why did Dara use time as the x-values and temperature as the y-values?</p>	<p>b. State the domain and range of the relation.</p>	<p>c. Is temperature a function in relation to time in this case? Explain.</p>	<p>d. Is time a function in relation to temperature in this case? Explain.</p>
---	---	--	--

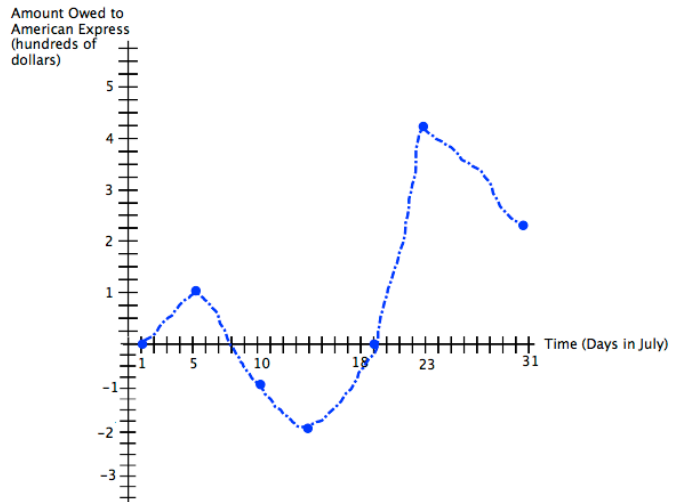
Station 2: State the domain and range for each graph and then determine which are/are not functions.

<p>a.</p> 	<p>b.</p> 	<p>c.</p> 	<p>d.</p> 
---	---	--	---

Station 3:

Amanda has a credit card account with American Express. She kept track of how much she should owe on certain days throughout July, according to the transactions and returns she made. To gain a visualization of her transactions, she connected the points on these days with a trend curve, $m(d)$, representing the amount of money, m , she owed on the d th day of July.

- Evaluate $m(5)$, and explain what $m(5)$ represents in this context.
- When was $m(d) = 0$, and what does this represent?
- State a domain on which $m(d)$ decreased.
- State the domain on which $m(x) < 0$. What could this mean in terms of the context?



Station 4: Use your knowledge of functions to fill in the missing information.

1. The amount of revenue a company accrues from selling t tickets to an event can be modeled by a function $R(t)$. If $R(210) = 7770$, then the company makes _____ in revenue if they sell _____ tickets to an event.

2. Jim is creating a fixture for which he needs a triangle of a fixed height. The width of the triangle can vary though, and will affect the area, represented by $A(w)$. For the piece of wood Jim chose, he knows that $A(8) = 24$. This means that the area of the piece of wood is _____ square inches, the height is _____ square inches, and the width is _____ square inches.

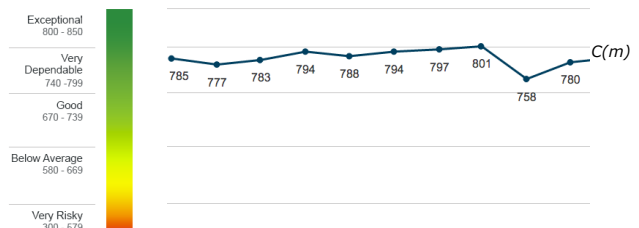
3. The body-mass index, B , of a person who is five feet and two inches tall and weighs p pounds can be

determined using the function $B(p) = \frac{.45p}{2.4025}$.

Determine $B(110)$ and $B(113)$, and explain what each value represents.

4. Multiple Choice: Samuel's credit score, C , is pictured in the table as $C(m)$, where m represents the month of the year (ex. 5 represents May). An auto sales associate uses the average credit score over the past year when determining the percent interest Samuel will pay per month on his car payments. Which expression represents the Samuel's average credit score from March through August?

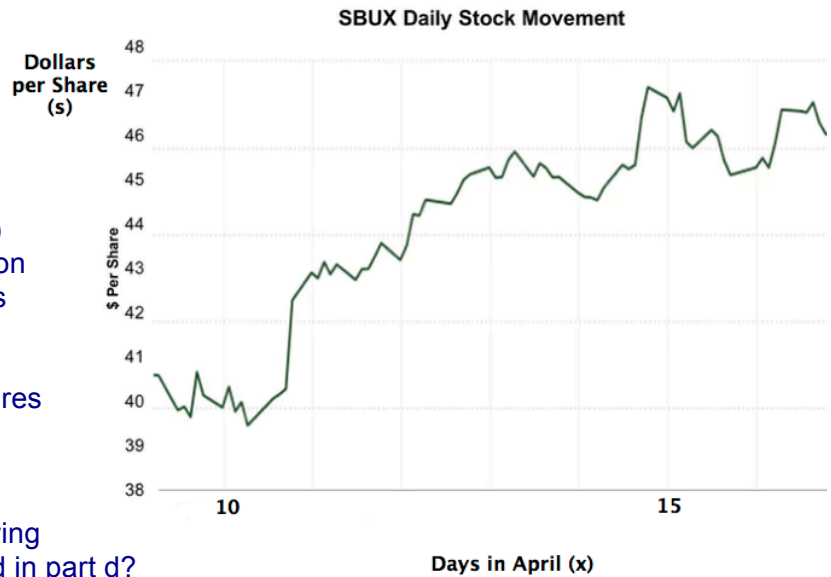
- $C(5)$
- $C(2.5)$
- $2C(3) + 2C(8)$
- $\frac{1}{2}C(3) + \frac{1}{2}C(8)$
- 791



Station 5:

The trend of the value of Starbucks stock over the course of some days in April is represented in the graph as $s(x)$.

- Evaluate $s(11)$, and explain what $s(11)$ represents in this context.
- State any domain on which $s(x) < 0$. What does this represent?
- Is the average rate of change of $s(x)$ increasing, decreasing, or constant on the interval $[15, 16]$? What does this represent in the context?
- Joyce owns three shares of stock in Starbucks. How much were her shares worth on April 12th?



- Multiple Choice: Which of the following represents the value you determined in part d?

i. $s(3)$ ii. $12s(3)$ iii. $s(12)$ iv. $3s(12)$ v. $s(36)$

- Determine $10s(15)$, and explain what this represents under this context.

Station 1 Solutions:

- a. Temperature depends on time; thus time must be the independent variable (x), and temperature must be the dependent variable (y).
- b. Domain: {5, 6, 13, 14, 18, 20, 21}
Range: {71, 74, 75, 77, 79}
- c. Yes, temperature is a function of time, because each time is mapped to one and only one temperature.
- d. No, time is not a function of temperature, because some temperatures map to more than one time. For example, 71 degrees maps to both 5:00AM and 6:00AM.

Station 2 Solutions:

<p>a.</p> <p>Domain: <i>left, right</i> (-infinity,infinity)</p> <p>Range: <i>down,up</i> [-1,1]</p> <p>This relation is a function Each x-value corresponds to exactly one y-value.</p>	<p>b.</p> <p>Domain: {-2, -1, 1, 3}</p> <p>Range: {-4,-2,0,1}</p> <p>This relation is not a function, since the x-value of -2 corresponds to both y-values of -2 and -4.</p>	<p>c.</p> <p>Domain: <i>left, right</i> (-infinity,infinity)</p> <p>Range: <i>down,up</i> (-infinity,infinity)</p> <p>This relation is a function. Each x-value corresponds to exactly one y-value.</p>	<p>d.</p> <p>Domain: <i>left, right</i> [0,2]</p> <p>Range: <i>down,up</i> [-2,2]</p> <p>This relation is not a function. It fails the Vertical Line Test, since every input corresponds to two outputs. For example, when 0 is put in, the resulting y-values are -2 and 2.</p>
--	--	---	--

Station 3 Solutions:

- a. \$100: Amanda owes \$100 on July 5th.

b. On July 1st, 8th, and 19th, Amanda did not owe any money.

c. (5,13) OR (23,31) interval notation
 $5 < d < 13$ OR $23 < d < 31$ inequality notation

d. (8, 19) interval notation; $8 < d < 19$ inequality notation.

This could mean that Amanda made returns that were of greater amounts than her purchases up until then.

Station 4 Solutions:

1. The company makes \$7770 in revenue if they sell 210 tickets to an event.

2. This means that the area of the piece of wood is 24 square inches, the height is 8 square inches, and the width is 6 square inches.

3.

B(110) is 20.6, representing a BMI of 20.6 for a 110 pound, five-foot-two inch person.

B(113) is 20.6, representing a BMI of 21.2 for a 113 pound, five-foot-two inch person.

4. D

Station 5 Solutions:

f. $s(11)$ is approximately 42.8, meaning each share was worth about \$42.80 on April 11th.
(any value between 42.5 and 42.9 is acceptable here)

g. $s(x)$ is never less than zero, meaning the stock was never worth less than \$0.

h. Decreasing, meaning the value of the stock decreased from April 15th to April 16th

i. About $\$43.50 * 3$, so around \$130.50

j. iv. $3s(12)$

f. $10 * 46.7 =$ approximately \$467
This represents the value of 10 shares on April 15th