

1.4.D2 – FUNCTIONS & THEIR CHARACTERISTICS

Spiral Review

If necessary, refer to the examples in the Chapter 1 Summary.

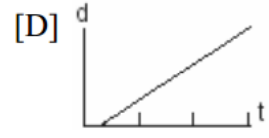
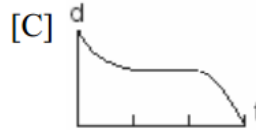
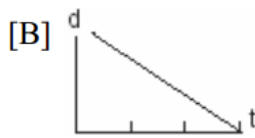
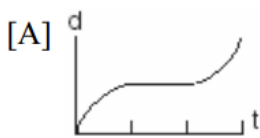
- Natasha is filling the bathtub with water in order to give her dog Buster a bath. The faucet fills the tub at an average rate of 12 gallons per minute.

Identify the independent quantity and the dependent quantity. (Include units.)

- A bug travels up a tree, from the ground, over a 30-second interval. It travels fast at first and then slows down. It stops for 10 seconds, then proceeds slowly, speeding up as it goes.

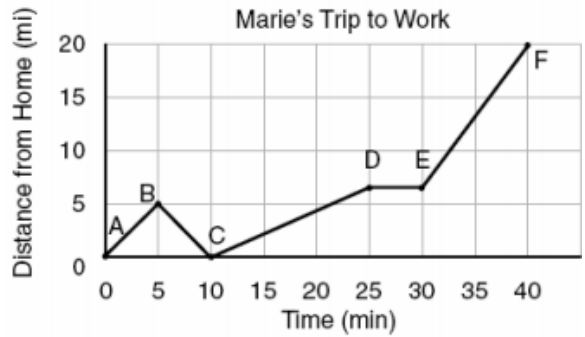
a. Identify the independent quantity and the dependent quantity. (Include units.)

- b. Which sketch best illustrates the bug's distance d from the ground over the 30-second time interval t ?



- The graph (at right) shows Marie's distance from home (point A) to work (point F) at various times during her drive.

a. Marie left her briefcase at home and had to return to get it. State which point represents when she turned back around to go home and explain how you arrived at that conclusion.



b. Refer to the list of KEY TERMS in the Chapter 1 Summary. Which terms describe the graph shown?

- Classify each function as increasing, decreasing, or constant.

a. $f(x) = -0.5x$

b. $f(x) = -5$

c. $f(x) = 4^x$

- Classify each function as a linear function, a linear absolute value function, a quadratic function, or an exponential function.

a. $f(x) = |x + 3|$

b. $f(x) = 2x - 1$

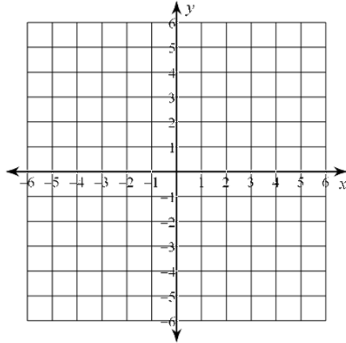
c. $f(x) = 5(x - 2)^2$

d. $f(x) = 3^x + 1$

Create an equation and sketch a graph for a function with each set of given characteristics. Use values that are any real numbers between -6 and 6.

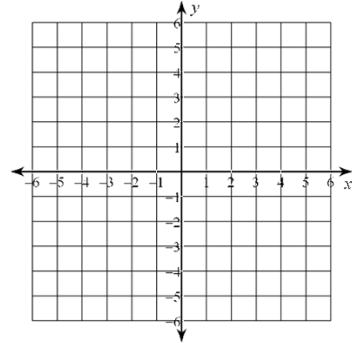
6. Create an equation and sketch a graph that:

- Is a function
- Is quadratic
- Is discrete
- Has an absolute minimum



7. Create an equation and sketch a graph that:

- Is a function
- Is a linear absolute value function
- Is continuous
- Has an absolute maximum



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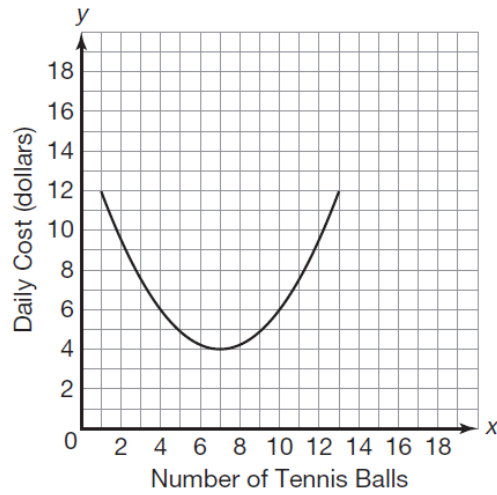
Refer to the scenarios, below, on pages 3 – 5. Complete the table to describe each scenario and its graph.

- a. Identify the appropriate function family: a linear function, a linear absolute value function, a quadratic function, or an exponential function.
- b. Identify the independent quantity (include units).
- c. Identify the dependent quantity (include units).
- d. Based on the problem situation, identify whether the data values represented in the graph are discrete or continuous.
- e. Identify whether the function has an absolute maximum, absolute minimum, or neither.
- f. Identify whether the function is increasing, decreasing, or is a combination of increasing and decreasing.

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
a.					
b.					
c.					
d.					
e.					
f.					

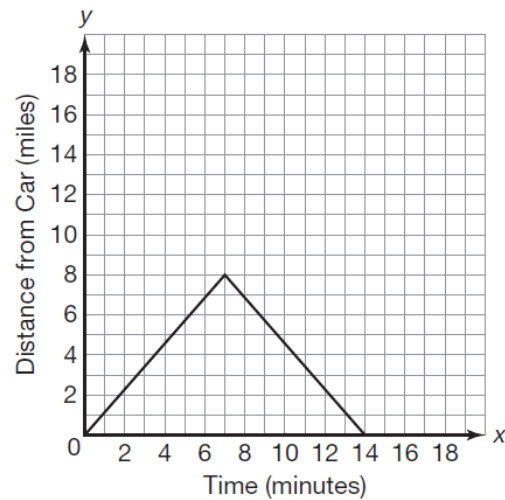
Scenario 1:

A manufacturing company finds that the daily costs associated with making tennis balls is high if they don't make enough balls and then becomes high again if they make too many balls. The function graphed models the daily costs of making x tennis balls.



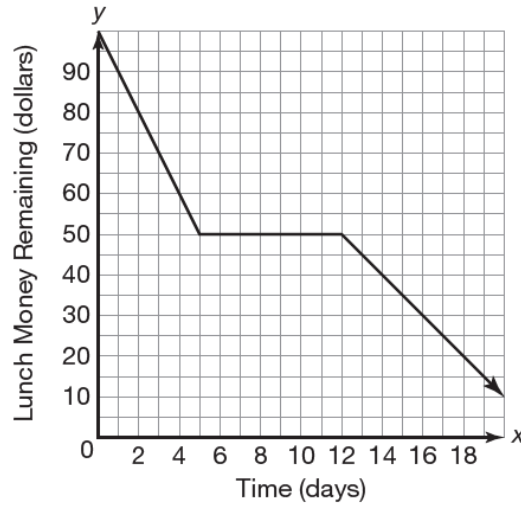
Scenario 2:

Greg is training for a mountain bike race. He leaves his car at the beginning of a trail and proceeds to bike 8 miles away and then comes back the same way to his car. If he bikes at a constant rate, the function graphed models the distance he is away from his car after x minutes.



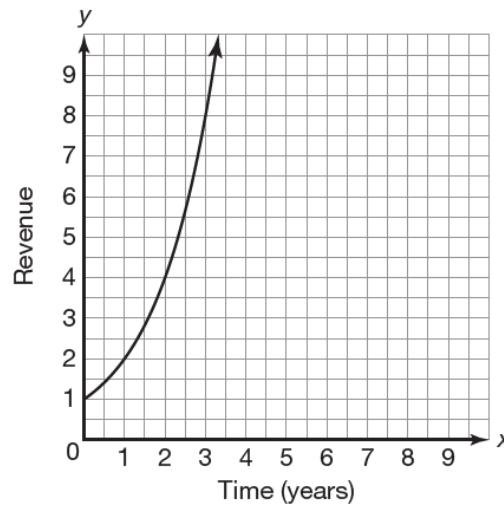
Scenario 3:

You have \$100 to spend on lunch over the next 20 days. The first five days, you spend \$10 on lunch each day. You pack your lunch for the next week and spend nothing. You then spend \$5 on lunch each of the remaining days until you have spent all your money. The function graphed models the amount of money left after x days.



Scenario 4:

A local television company determines that the revenue it gets from running ads doubles each year. The function graphed models the revenue from advertising after x years.



Scenario 5:

The Redwood Heights Women’s Club is hosting a summer nighttime party in the park. They are handing out glow sticks to all the children who attend. They start with 200 glow sticks and each child receives 3 glow sticks. The function graphed models the number of glow sticks they have left after x children have entered.

