

REVIEW: FUNCTIONS – PART 2

Use the following story to answer questions 1 – 5.

Mrs. Anderson bought a package of 500 stickers at the beginning of the school year. She plans to give away 5 stickers each school day to her hard-working Algebra 1 students.

1. Write a function to find  $N$ , the number of stickers remaining after  $d$  school days.

\_\_\_\_\_

2. What is the dependent quantity in this situation?

\_\_\_\_\_

3. What is the independent quantity in this situation?

\_\_\_\_\_

4. How many stickers will Mrs. Anderson have left after 40 school days?

\_\_\_\_\_

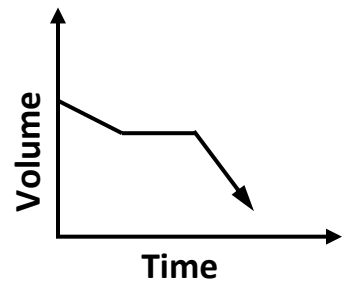
5. If Mrs. Anderson continues to give away 5 stickers each school day, after how many days will she have 150 stickers remaining?

\_\_\_\_\_

**Choose the best answer.**

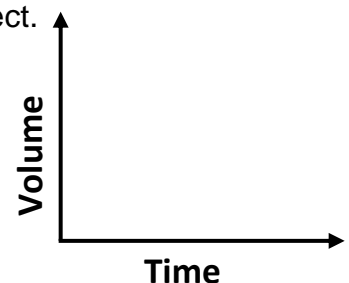
6. Which of the following best describes the graph?

- A. Marisa begins filling an empty pitcher with water at a constant rate. She turns the water off when she hears her phone ringing. After talking for a few minutes, she returns to the faucet and continues to fill the pitcher at a faster rate than before.
- B. Marisa begins pouring water from a full pitcher at a constant rate. She stops pouring when she hears her phone ringing. After talking for a few minutes, she continues to pour the rest of the water from the pitcher at a faster rate than before.



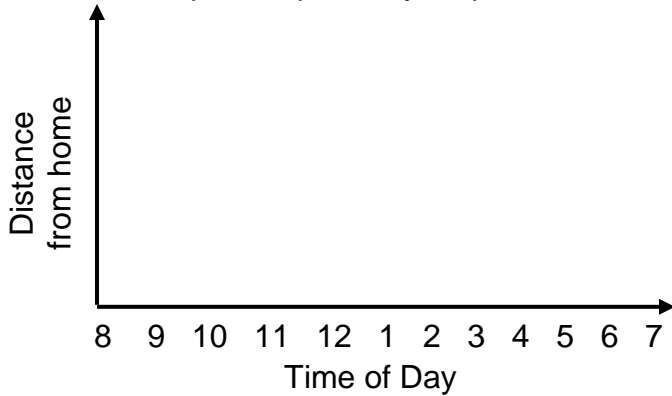
7. Draw what the graph would look like in #6 for the *other* answer to be correct.

\_\_\_\_\_ depends on \_\_\_\_\_.



**Sketch a reasonable graph for the situation. Label the axes, identify the dependent and independent variables, and complete the statement.**

8. The Jefferson's leave home at 8am for a trip. They travel at a steady pace, until they stop for lunch at noon. Two hours later, they get back in the car and travel at a slower pace than before because of traffic. From 6pm to 7pm, they stop to eat dinner.



Dependent Variable: \_\_\_\_\_

Independent Variable: \_\_\_\_\_

\_\_\_\_\_ is a function of

\_\_\_\_\_.

9. One day at football practice, Jason punts a football. It bounces once, and then his friend, Devon, catches it. Jason records the height of the ball from the time it leaves his foot until Devon catches it.



Dependent Variable: \_\_\_\_\_

Independent Variable: \_\_\_\_\_

\_\_\_\_\_ is a function of

\_\_\_\_\_.

**Answer the following.**

\_\_\_\_\_ 10. Callie is making an isosceles triangle to use as a model in math class. Its perimeter will be 24 inches. Callie uses the equation  $b = 24 - 2s$  to find  $b$ , the length of the triangle's third side, in terms of  $s$ , the length of each of its two congruent sides. Which statement is true?

- A.  $b$  is the dependent variable and  $s$  is the independent variable
- B.  $s$  is the dependent variable and  $b$  is the independent variable
- C. 24 is the dependent variable and  $s$  is the independent variable
- D.  $s$  is the dependent variable and 24 is the independent variable

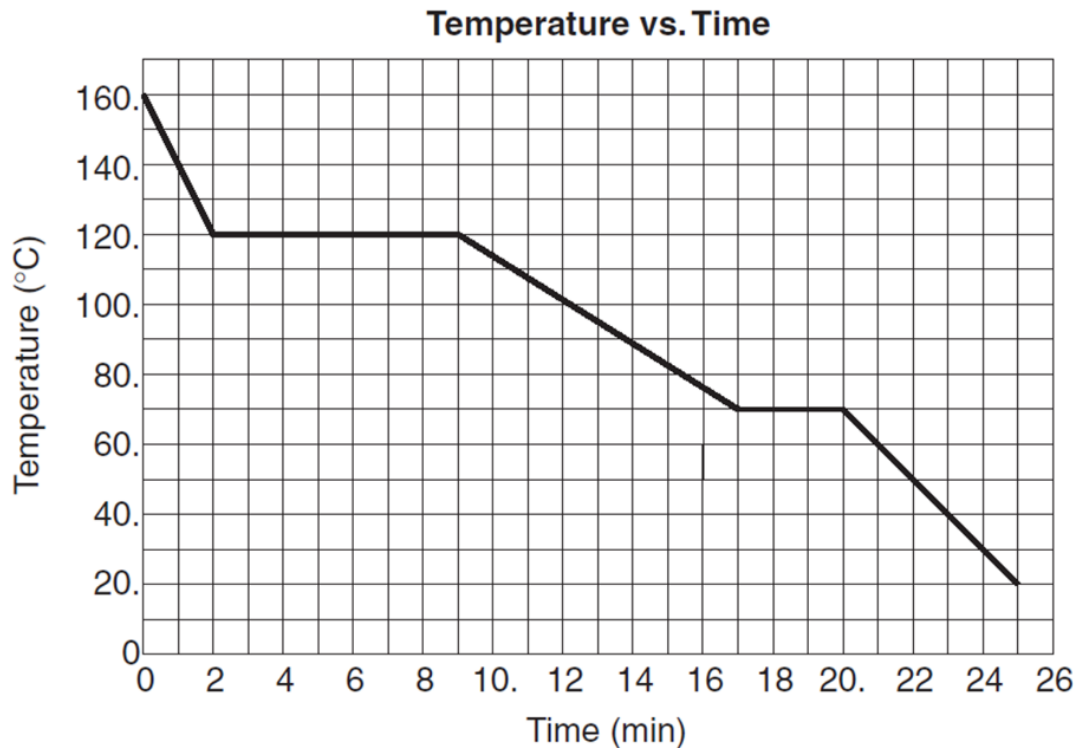
11. The cost to rent bowling shoes and to bowl games is represented by the relationship  $C = 2.99g + 3$  where  $C$  represents the total cost and  $g$  represents the number of games played. What is the dependent quantity in this relationship?

\_\_\_\_\_

12. Carina wants to sell hot chocolate at the football game. She knows that there is a relationship between the number of cups of hot chocolate she sells and the temperature outside. What is the independent quantity in this relationship?

\_\_\_\_\_

The temperature,  $T$ , of a substance over time in minutes,  $m$ , is shown in the graph below.



\_\_\_\_\_ 13. Which statement is false about the relationship?

- A. The temperature of the substance is a function of the time.
- B. The temperature of the substance is decreasing over time.
- C. The temperature decreases the fastest from 9 minutes to 17 minutes.
- D. At 21 minutes, the temperature of the substance is  $60^{\circ}\text{C}$ .

14. On what time intervals does the temperature of the substance remain the same? (Write your answer as a compound inequality.)

15. Find the value of  $T(18) =$  \_\_\_\_\_

16. When  $T(m) = 50$ , the value of  $m =$  \_\_\_\_\_

17. What does the ordered pair  $(4, 120)$  mean? Explain your answer in a complete sentence.

The table below shows the relationship between total tuition cost,  $T$ , and the number of semester hours,  $h$ , taken at Blinn College.

semester hours taken, $h$	total tuition cost, $T$
1	553
2	581
3	609
4	637

\_\_\_\_\_ 18. Which statement is true?

- A. The hours taken depends on the total tuition costs
- B. The total tuition cost depends on the amount of fees.
- C. The total tuition cost depends on the hours taken.
- D. Cannot be determined

19. What are the ordered pairs that represent this relation?

20. The function that would represent this relationship is  $T(h) = 28h + 525$ . How many semester hours could a student take if the tuition costs were \$917?

21. If you took 16 hours, what would be the tuition cost?

**Suppose the total cost,  $C$ , of renting a car is \$25 per day,  $d$ , plus an initial fee of \$100.**

22. Write a function that could be used to find the cost,  $c$ , of renting the car for  $d$  days.

23. What would be the total cost of renting the car for 9 days?

24. Find the number of days you could rent the car for \$275.

\_\_\_\_\_25. A function is described by the function  $f(x) = -x - 3$ . The replacement set for the independent variable is  $\{-2, 0, 3, 5\}$ . Which of the following is contained in the corresponding set for the dependent variable?

A. -5

B. -3

C. 0

D. 2

26. Marisa's Flower Shop charges \$3 per rose plus \$16 for delivery. Chris wants to spend between \$25 and \$35 to have a bouquet of roses delivered to his mother.

a) What function could be used to find the cost,  $c$ , of ordering  $r$  roses?

b) Write an inequality to represent the domain in this situation.

27. What are the domain and range of the relation shown in the table?

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

x	y
7	-1
2	-5
-3	$\frac{3}{4}$
5	-2

\_\_\_\_\_28. Which of the following sets does not represent a function?

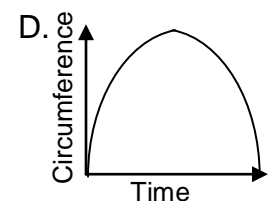
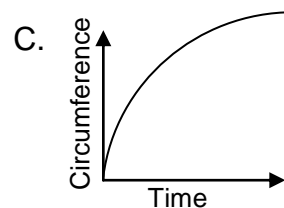
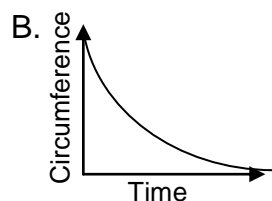
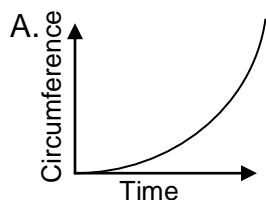
A.  $\{(-1, 2), (-2, 2), (-3, 2), (-4, 2)\}$

C.  $\{(5, -2), (-3, 6), (1, 8), (7, 5)\}$

B.  $\{(-5, 4), (-1, 5), (-5, 2), (-1, 7)\}$

D.  $\{(6, -2), (3, 9), (-3, 5), (9, -1)\}$

\_\_\_\_\_29. Which graph could represent the circumference of a balloon as the air is being let out?



Solve:  
30.  $4 - 3(x - 6) = 61$

Solve:  
31.  $5x + 2 = 8x - 10$

Simplify:  
32.  $4(x - 2) + 5(x + 4)$

33. Katie assembles computers on a part time basis. She earns a weekly base salary of \$100 per week plus \$65 per computer that she can assemble in a week. Which equation can be used to determine how many computers she has to assemble in order to make \$1000 in a week?

- A.  $100 + 65c = 1000$                       C.  $100c + 65 = 1000$   
 B.  $100 - 65c = 1000$                       D.  $100c - 65 = 1000$

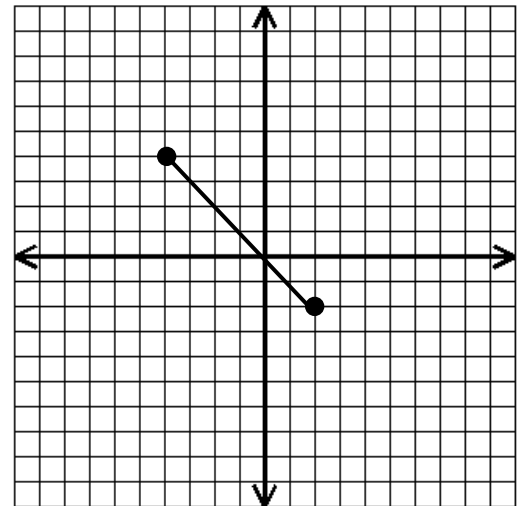
Using the given graph, answer the following questions.

34. What is the domain of the following function?

- A.  $-4 \leq y \leq 2$                       C.  $-2 \leq y \leq 4$   
 B.  $-4 \leq x \leq 2$                       D.  $-2 \leq x \leq 4$

35. What is the range of the following function?

- A.  $-4 \leq x \leq 2$                       C.  $-2 \leq x \leq 4$   
 B.  $-4 \leq y \leq 2$                       D.  $-2 \leq y \leq 4$



Answers in random order except #7 – 9:

A	A	B	B	B	B	C
C	D	B	7	-13	$c = 3r + 16$	
4	973	22	$\{7, 2, -3, 5\}$	70	$N = 500 - 5d$	
325	14	70	$\{-1, -5, \frac{3}{4}, -2\}$	c, total cost	At 4 mins, the temperature of the substance is $120^\circ\text{C}$ .	
$9x + 12$	$\{(1, 553), (2, 581), (3, 609), (4, 637)\}$			temperature	# of school days	
# of stickers	300	$3 \leq r \leq 6$	$c(d) = 25d + 100$		$2 \leq m \leq 9, 17 \leq m \leq 20$	