

Name \_\_\_\_\_

1. Simplify the expression below. **1 point**

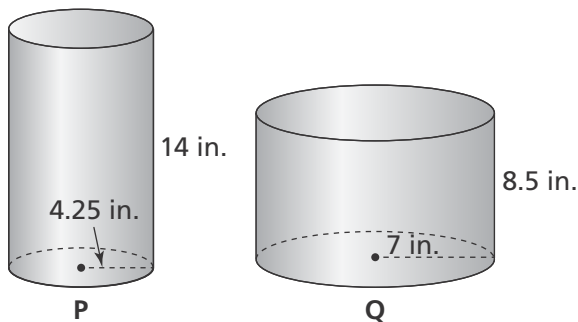
$$x^4 \cdot x^4 \cdot x^4$$

- (A)  $3x^4$
- (B)  $x^{12}$
- (C)  $3x^{12}$
- (D)  $x^{64}$

2. The library is located 1.8 miles west of Callie's house. The grocery store is located 2.4 miles south of the library. What is the length of a straight line between Callie's house and the grocery store? **1 point**

**3 miles**

3. Two cylinders are shown below. Which cylinder has the greatest volume? Use 3.14 for  $\pi$ . Round to the nearest hundredth. Explain. **2 points**



**Cylinder Q; Sample answer: Cylinder P has a volume of about 794.03 in.<sup>3</sup> and Cylinder Q has a volume of about 1,307.81 in.<sup>3</sup>.**

4. Which of the following functions are linear? **1 point**

**Function A**

<b>x</b>	3	6	9	12	15
<b>y</b>	9	36	81	144	225

**Function B**

<b>x</b>	5	10	15	20	25
<b>y</b>	8	16	24	32	40

- (A) Function A
- (B) Function B
- (C) Function A and Function B
- (D) None of the above

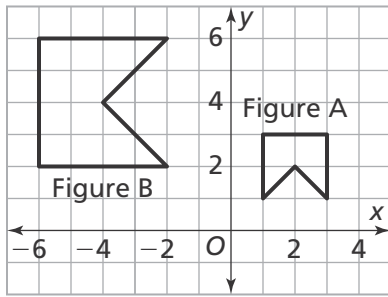
5. The results of a movie survey are represented in the two-way frequency table below.

Way to Watch Movies	People Surveyed		
	Male	Female	Total
Stream	17	29	46
Theater	33	21	54
Total	50	50	100

Which of the following statements is true? Select all that apply. **1 point**

- More males than females prefer to stream movies.
- More females prefer to stream movies.
- More males prefer to watch movies in a theater.
- More females prefer to watch movies in a theater.
- More people prefer to watch movies in a theater.

6. Describe a sequence of transformations that maps Figure A to Figure B. **1 point**



**Sample answer: A 90° rotation about the origin, and then a dilation of 2 with center (0, 0)**

7. The side lengths of different triangles are given. Which triangle is a right triangle? **1 point**

- (A) 6, 7, 13  
 (B)  $\sqrt{21}$ ,  $\sqrt{99}$ , 11  
 (C) 10, 60, 61  
 (D)  $\sqrt{35}$ ,  $\sqrt{14}$ , 7

8. Morgan uses  $\frac{1}{4}$  of her supply of raisins to make trail mix and  $\frac{3}{8}$  of her supply of raisins to make cookies. If Morgan uses 5 pounds of raisins, how many pounds of raisins are in her supply? **1 point**

- (A) 5 pounds  
 (B) 8 pounds  
 (C) 12 pounds  
 (D) 15 pounds

9. Jennie has 177 more songs downloaded on her mp3 player than Diamond. Together, they have 895 songs downloaded.

**Part A**

What system of equations could be used to determine how many songs each girl has downloaded? **1 point**

**Sample answer:**

$$j + d = 895;$$

$$j = d + 177$$

**Part B**

How many songs does each girl have? **1 point**

**Jennie has 536 songs and Diamond has 359 songs.**

10. The surface area of a sphere is 200.96 square centimeters. What is the approximate volume of the sphere? Use 3.14 for  $\pi$ . Round your answer to the nearest hundredth. **1 point**

- (A) 66.99 cm<sup>3</sup>  
 (B) 133.97 cm<sup>3</sup>  
 (C) 267.95 cm<sup>3</sup>  
 (D) 334.94 cm<sup>3</sup>

11. Saturn is  $8.867 \times 10^8$  miles away from the Sun. Uranus is  $1.787 \times 10^9$  miles away from the Sun. Approximately how many times farther is Uranus from the Sun than Saturn is? **1 point**

- (A) 0.2 times
- (B) 2 times**
- (C) 20 times
- (D) 200 times

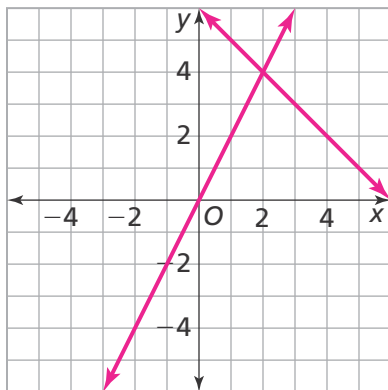
12. Wylie is renting a bicycle from a local shop that charges \$5 to rent a helmet, plus an hourly rate of \$8.50 for the bike. For how long can Wylie rent a bicycle if he pays a total of \$47.50? **1 point**

**5 hours**

13. Graph the system of equations below and find the solution. **2 points**

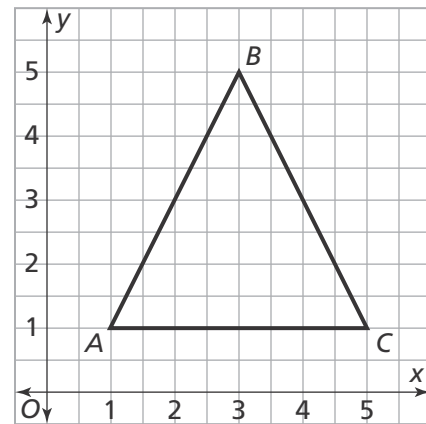
$$y = 2x$$

$$y = -x + 6$$



**$x = 2, y = 4$**

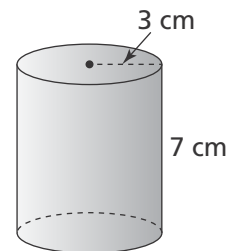
14. Zoe draws  $\triangle ABC$  on the coordinate plane.



What is the approximate perimeter of  $\triangle ABC$  to the nearest hundredth?

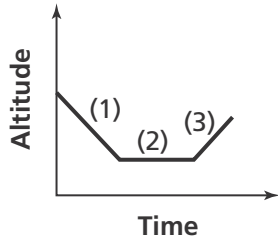
- (A) 8.47 units
- (B) 12 units
- (C) 12.94 units**
- (D) 15.31 units

15. What is the approximate volume of the cylinder? Use  $\frac{22}{7}$  for  $\pi$ . Round to the nearest whole. **1 point**



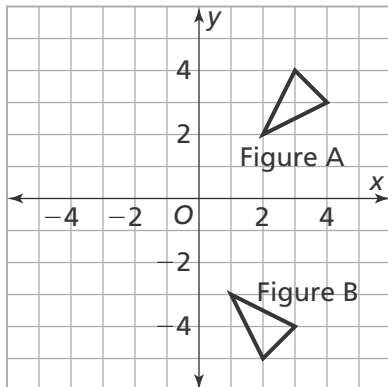
- (A)  $66 \text{ cm}^3$
- (B)  $132 \text{ cm}^3$
- (C)  $198 \text{ cm}^3$**
- (D)  $264 \text{ cm}^3$

16. How would you describe the graph of the function at interval 3? Select all that apply. **1 point**



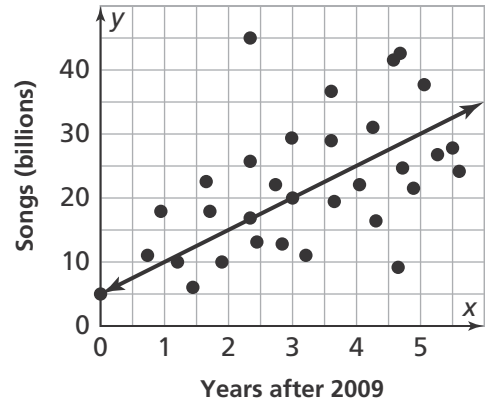
- The function is decreasing.  
 The function is increasing.  
 The function is constant.  
 The slope is negative.  
 The slope is positive.

17. What is the sequence of transformations that maps Figure A to Figure B? **1 point**



**Sample answer:**  
**A reflection across the x-axis, and then a translation 1 unit down and 1 unit left**

18. The scatter plot shows the total number of songs downloaded on a popular music service. **1 point**



What is the equation of the linear model using two points on the line?

- (A)  $y = x + 10$   
 (B)  $y = 5x + 5$   
 (C)  $y = 10x + 1$   
 (D)  $y = 8x + 2$

19. A box has a base of 12 inches by 12 inches and a height of 30 inches. What is the length of the interior diagonal of the box? Round to the nearest hundredth. **1 point**

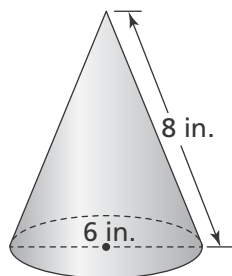
**About 34.47 inches**

20. Evaluate the expression when  $x = 4$  and  $y = 5$ . **1 point**

$$3x^2 + 4y^0 \cdot x^{-1}$$

**49**

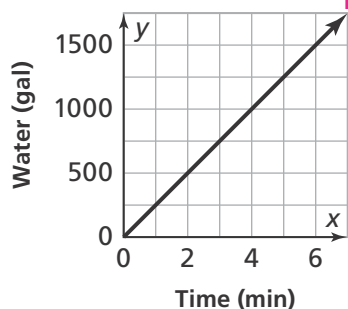
21. Aubrey is making cone-shaped hats for a birthday party. She mistakenly thinks that she will need about 104 square inches of paper for each hat.



What is the correct amount of paper Aubrey will need per hat? What mistake did Aubrey likely make? Explain. Use 3.14 for  $\pi$  and round to the nearest inch. **2 points**

**About 75 in.<sup>2</sup>; Sample answer: Aubrey found the surface area of the cone and included the base.**

22. The graph shows the relationship between the the amount of water that flows from a fountain and time. Write an equation to represent the amount of water that flows after  $x$  minutes.



**Sample answer:  
 $y = 250x$**

23. Use the two-way frequency table to complete the two-way relative frequency table which shows the distribution of data with respect to all pets. Round to the nearest percent. **1 point**

**Two-Way Frequency Table**

Type of Pet	Gender		
	Male	Female	Total
Dogs	20	30	50
Cats	40	40	80
Total	60	70	130

**Two-Way Relative Frequency Table**

Type of Pet	Gender		
	Male	Female	Total
Dogs	15%	23%	38%
Cats	31%	31%	62%
Total	46%	54%	100%

24. Solve the system of equations below. **1 point**

$$\begin{aligned} 8a + 12b &= 92 \\ 6a - 4b &= 4 \end{aligned}$$

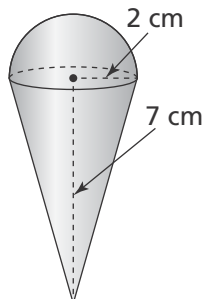
**$a = 4, b = 5$**

25. Carter draws one side of equilateral  $\triangle PQR$  on the coordinate plane at points  $P(-3, 2)$  and  $Q(5, 2)$ . Which ordered pair is a possible coordinate of vertex  $R$ ? **1 point**

- (A)  $(-3, -6)$
- (B)  $(0, 8)$
- (C)  $(1, 8.9)$
- (D)  $(1, -8.9)$

26. What is the approximate volume of the composite figure? Use 3.14 for  $\pi$ . Round to the nearest hundredth.

1 point



- (A)  $29.31 \text{ cm}^3$   
 (B)  $33.49 \text{ cm}^3$   
 (C)  $46.06 \text{ cm}^3$   
 (D)  $62.80 \text{ cm}^3$

27. What is the value of  $x$ ? 1 point

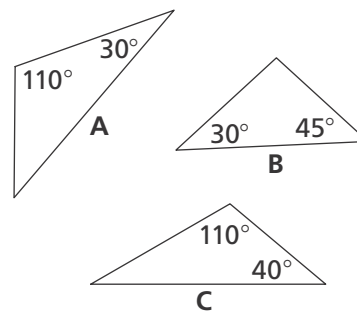
$$\frac{3}{5}x - \frac{1}{3}x = x - 1$$

$$x = \frac{15}{11}$$

28. The graph of a function is a line that passes through the points (3, 17) and (6, 32). How would you find the rate of change for the function? 1 point

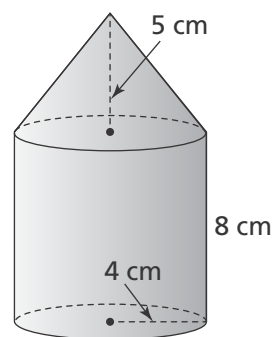
- (A)  $\frac{3 - 6}{17 - 32}$   
 (B)  $\frac{6 - 3}{32 - 17}$   
 (C)  $\frac{32 - 6}{17 - 3}$   
 (D)  $\frac{32 - 17}{6 - 3}$

29. Which triangles are congruent? 1 point



Triangles A and C

30. Use the figure below.



Part A

What is the surface area of the visible portion of the composite figure? Express your answer in terms of  $\pi$ . 1 point

$$89.61\pi \text{ cm}^2$$

Part B

What is the volume of the composite figure? Express your answer in terms of  $\pi$ . 1 point

$$154\frac{2}{3}\pi \text{ cm}^3$$