

1

William belongs to a music downloading club. He pays \$8 a month plus \$0.50 per song downloaded.

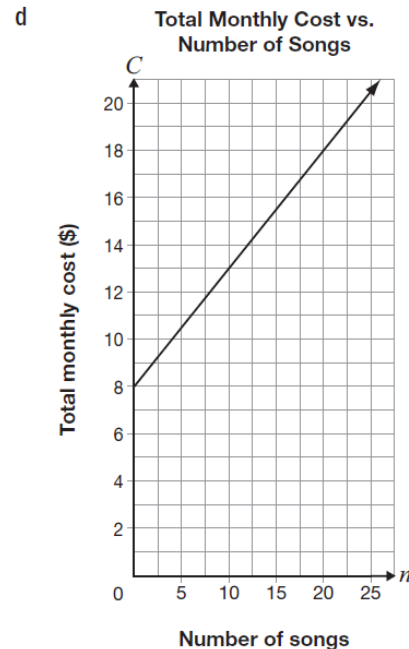
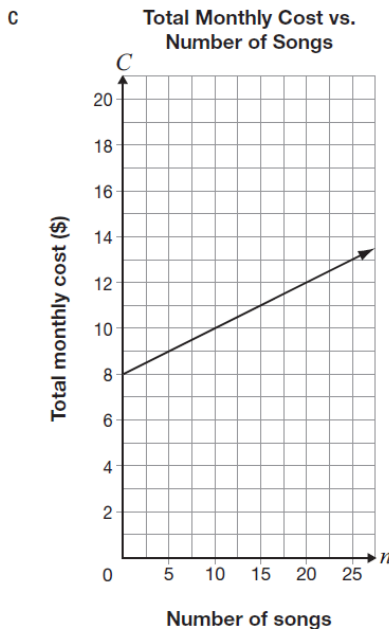
Which of the following shows information about the relationship between the total monthly cost, in dollars, and the number of songs downloaded?

a

Number of songs	Total monthly cost (\$)
10	8.00
20	13.00
30	18.00
40	23.00

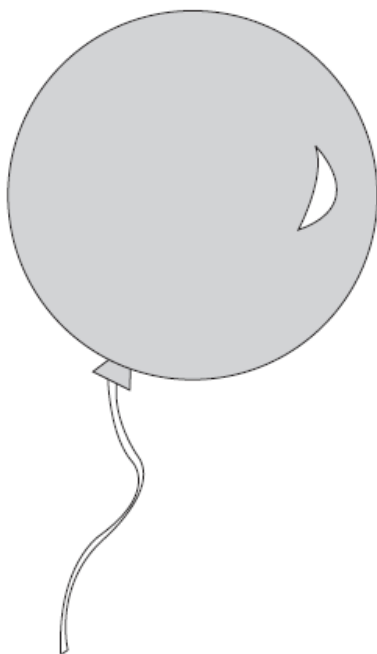
b

Number of songs	Total monthly cost (\$)
0	8.00
10	8.50
20	9.00
30	9.50



2

Air is pumped to fill a spherical balloon. Each time air is pumped,  $300 \text{ cm}^3$  of air enters the balloon.



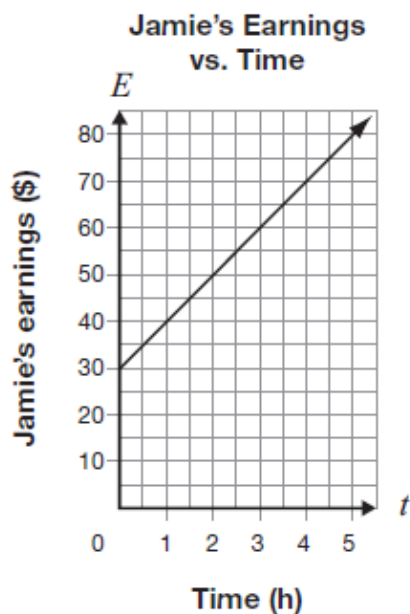
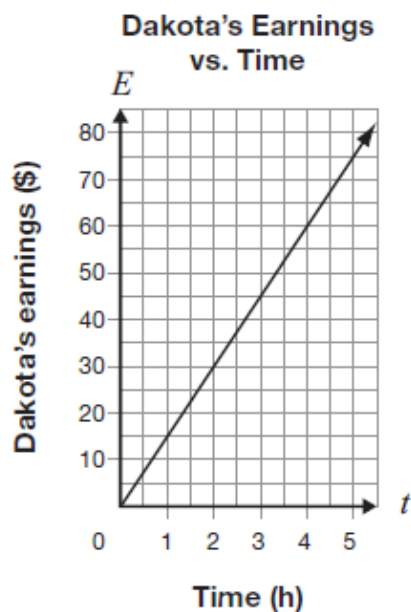
Which of the following is closest to the number of times air must be pumped to fill an empty spherical balloon to a radius of 10 cm?

- a 4
- b 14
- c 30
- d 42

3

Dakota and Jamie have part-time jobs.

The graphs below represent the relationship between earnings and the time each of them works.



Whose graph represents a partial variation, and what is the initial value of the relationship?

- a Dakota's, \$0
- b Dakota's, \$15
- c Jamie's, \$30
- d Jamie's, \$40

4

A store gives reward points for every dollar spent. The number of reward points varies directly with the total amount spent.

Sofia spends \$300 and receives 15 reward points.

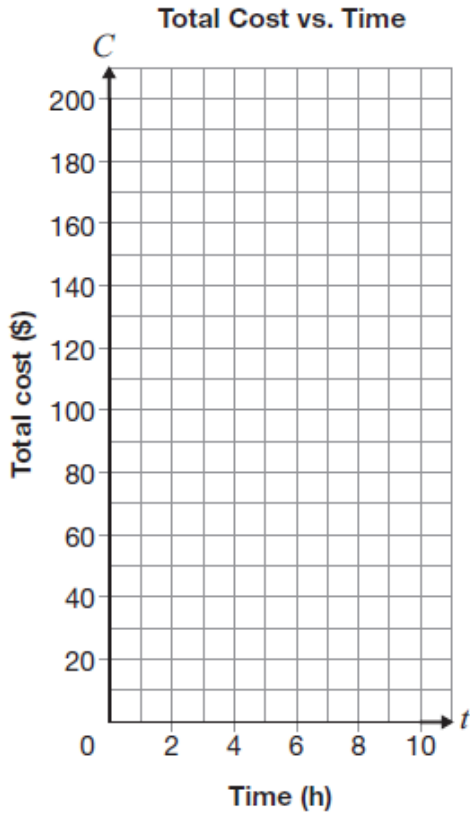
Juan spends \$900. He receives reward points at the same rate as Sofia.

How many **more** reward points will Juan receive than Sofia?

- 5 The total cost of horseback riding at a horse ranch is made up of a fixed fee and a cost per hour. The table below shows information about the total cost.

Time (h)	Total cost (\$)
2	50
4	80
7	125

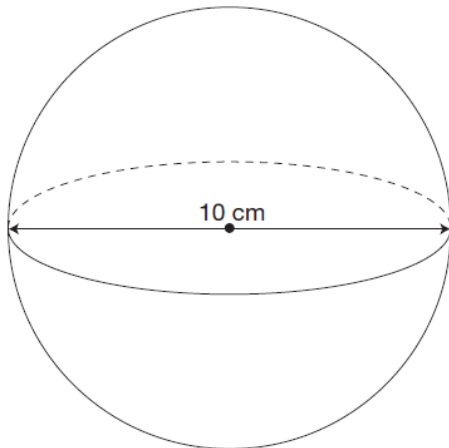
Graph the data in the table on the grid below.



Write an equation that relates the total cost of a ride,  $C$ , to the time spent riding,  $t$ .

$C =$  \_\_\_\_\_

- 6 The sphere pictured below has a diameter of 10 cm.

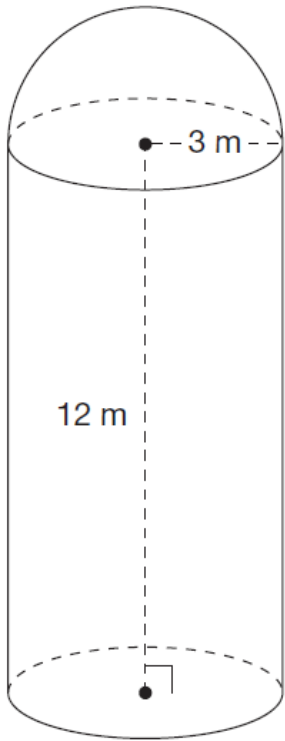


Which expression represents the volume of the sphere?

- a  $\frac{4\pi(5)(3)}{3}$
- b  $\frac{4\pi(5)^3}{3}$
- c  $\frac{4\pi(10)^3}{3}$
- d  $\frac{4\pi(10)(3)}{3}$

**7**

The figure pictured below is made of a cylinder and a hemisphere.



Determine the volume of the figure.

**8**

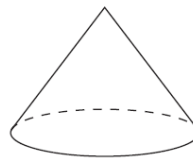
Data in the table below is from a linear relationship.

$n$	$C$
2	10
4	16
6	22
8	
10	
12	

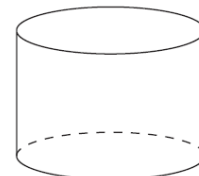
What is the value of  $C$  when  $n = 10$ ?

**9**

The cone and cylinder pictured below have the same height and radius.



$$V = 96 \text{ cm}^3$$

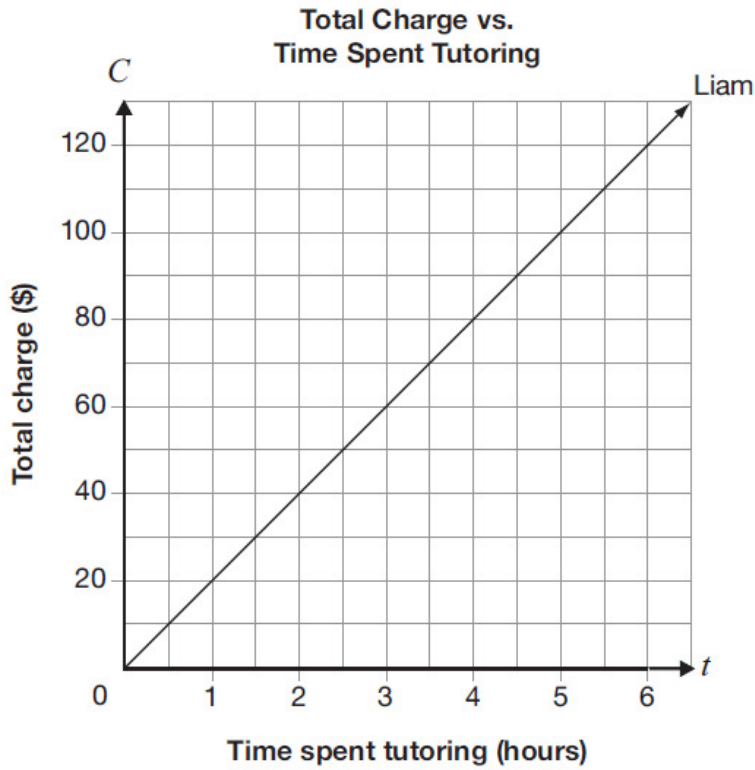


$$V = ?$$

The volume of the cone is  $96 \text{ cm}^3$ .

What is the volume of the cylinder?

- 10** Tianna and Liam both charge for tutoring. Information about Liam's total charge for tutoring is shown on the grid below.



Tianna's total charge is made up of a base fee of \$40, and \$10 per hour of tutoring.

They both start a tutoring session at the same time one day, and they both spend the same amount of time tutoring.

If Tianna's and Liam's charges were the same, how many hours did they each spend tutoring?

Justify your answer.

Tianna and Liam each spent \_\_\_\_\_ hours tutoring.

**11** A green hot air balloon is rising at a constant rate.

- After 2 minutes, it is at a height of 30 m.
- After 6 minutes, it is at a height of 75 m.

A blue hot air balloon is rising at twice the rate of the green balloon.

Determine the rate in metres per minute at which the blue balloon is rising.

Show your work. You may use the grid if you wish.

