1 What value of x makes the following equation true?
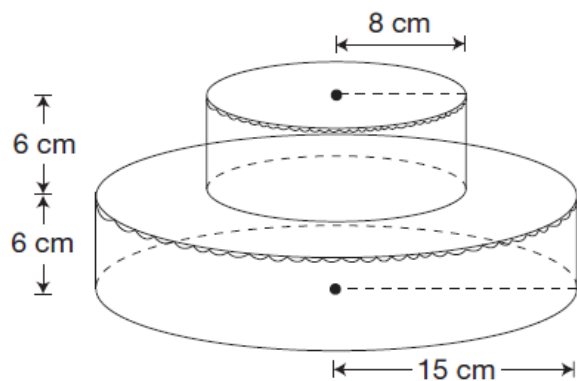
$$\sqrt{x} = 16$$

a   4

b   8

c   32

d   256

2 A cake is made of two cylindrical layers of ice cream stacked on top of each other as pictured below.

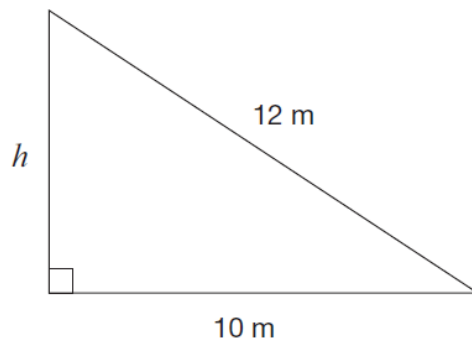The formula for the volume of **one** layer of this cake, V, is

$$V = \pi r^2 h,$$

where r is the radius of the layer and h is the height of the layer.

Which of the following is closest to the total volume of ice cream needed to make the **two** layers of this cake?

a   434 cm³

b   867 cm³

c   5448 cm³

d   17 114 cm³

3 The ramp pictured below is 12 m long and has a base of 10 m.

Which of the following is closest to the height, h, of the ramp?

a   2 m

b   7 m

c   16 m

d   22 m

4 The ratio of boys to girls in Mandy's mathematics class is 3 to 12.

This ratio is the same in Mandy's science class, in which there are 20 girls. How many boys are there in Mandy's science class?

5 Each week, a salesperson is paid a base salary of $250 plus $100 for each car sold.

Which of the following shows information that is all correct about the salesperson's total pay for a week?

a

Number of cars sold	Total pay ($)
1	250
4	650
5	750

c

Number of cars sold	Total pay ($)
1	350
4	1400
5	1750

b

Number of cars sold	Total pay ($)
1	250
4	1000
5	1250

d

Number of cars sold	Total pay ($)
1	350
4	650
5	750

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6 The relationship between the distance below the surface and time for two scuba divers is shown by the graphs below.

Diver A
Distance Below the Surface vs. Time

Distance below the surface (m)

Time (min)

Diver B
Distance Below the Surface vs. Time

Distance below the surface (m)

Time (min)
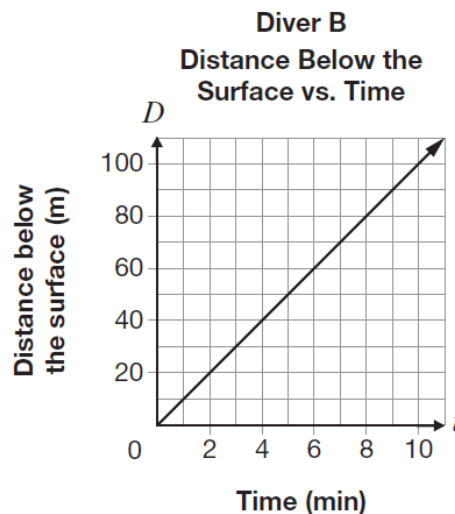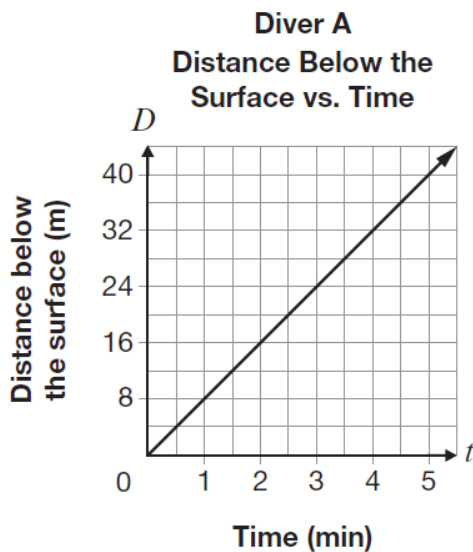
How much faster is diver B diving than diver A?

7 The Snack Company sells popcorn in 2 different-sized boxes. Each box is in the shape of a rectangular prism.

- Box A has dimensions 10 cm by 20 cm by 24 cm.

- Box B has dimensions 12 cm by 22 cm by 20 cm.

The price of the popcorn per cm^3 is the same for both boxes, and the price of each box is determined by the total volume of popcorn it can hold.

If Box A's price is $6.24, what is the price of Box B?

8 A formula for the relationship between a person's maximum heart rate, H, and the person's age, a, is shown below.

$$H = 217 - 0.85a$$

According to the formula, which of the following is closest to Jasmin's maximum heart rate if she is 14 years old?

a   203

b   205

c   229

d   239

9 Halyna starts with $50 in her bank account, and she spends $3 per day from it.

Compared to Halyna, Manny starts with $5 more in his account and spends $1 more each day.

Which of the following equations represents the amount of money remaining in Manny's account, A, at the end of each day, d?

a $A = 51d$

b $A = 59d$

c $A = 55 - 9d$

d $A = 55 - 4d$

10 The cost, C, in dollars, of a pizza with n toppings is represented by the equation $C = 2n + 5$.

Which of the following statements is true?

a   The base cost of the pizza is $2, and the cost per topping is $5.

b   The base cost of the pizza is $5, and the cost per topping is $2.

c   The base cost of the pizza is $7, and the cost per topping is $2.

d   The base cost of the pizza is $7, and the cost per topping is $5.

11 Last year's relationship between the total cost of producing yearbooks, C, and the number of yearbooks produced, n, is represented by the equation below.

$$C = 150 + 5n$$

This year, the initial cost is increased but the cost per yearbook is decreased.

Which graph could represent this year's relationship between total cost and the number of yearbooks?

a

Total Cost vs. Number of Yearbooks

Total cost ($)
Number of yearbooks

c

Total Cost vs. Number of Yearbooks

Total cost ($)
Number of yearbooks

b

Total Cost vs. Number of Yearbooks

Total cost ($)
Number of yearbooks

d

Total Cost vs. Number of Yearbooks

Total cost ($)
Number of yearbooks