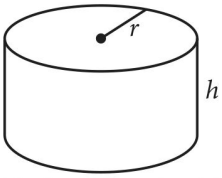
SAT Math

Area and Volume 3

Question # **ID**

3.1 a07ed090



The figure shown is a right circular cylinder with a radius of r and height of h. A second right circular cylinder (not shown) has a volume that is 392 times as large as the volume of the cylinder shown. Which of the following could represent the radius R, in terms of r, and the height H, in terms of h, of the second cylinder?

A. $R = 8r$ and $H = 7h$

B. $R = 8r$ and $H = 49h$

C. $R = 7r$ and $H = 8h$

D. $R = 49r$ and $H = 8h$

3.2 899c6042

A right circular cone has a height of 22 centimeters (cm) and a base with a diameter of 6 cm. The volume of this cone is $n\pi$ cm^3. What is the value of n?

3.3 b0dc920d

A manufacturer determined that right cylindrical containers with a height that is 4 inches longer than the radius offer the optimal number of containers to be displayed on a shelf. Which of the following expresses the volume, *V*, in cubic inches, of such containers, where *r* is the radius, in inches?

A. $V = 4\pi r^3$

B. $V = \pi(2r)^3$

C. $V = \pi r^2 + 4\pi r$

D. $V = \pi r^3 + 4\pi r^2$

3.4 5b2b8866

A rectangular poster has an area of 360 square inches. A copy of the poster is made in which the length and width of the original poster are each increased by 20%. What is the area of the copy, in square inches?

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3.5 9f934297

A right rectangular prism has a length of 28 centimeters (cm), a width of 15 cm, and a height of 16 cm. What is the surface area, in cm^2, of the right rectangular prism?

3.6 dc71597b

A right circular cone has a volume of $\frac{1}{3}\pi$ cubic feet and a height of 9 feet.

What is the radius, in feet, of the base of the cone?

A. $\frac{1}{3}$

B. $\frac{1}{\sqrt{3}}$

C. $\sqrt{3}$

D. 3

3.7 93de3f84

The volume of right circular cylinder A is 22 cubic centimeters. What is the volume, in cubic centimeters, of a right circular cylinder with twice the radius and half the height of cylinder A?

A. 11

B. 22

C. 44

D. 66

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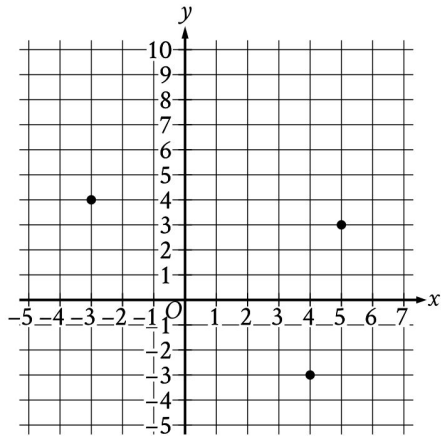
3.8 eb70d2d0



What is the area, in square units, of the triangle formed by connecting the three points shown?

3.9 f7e626b2

The dimensions of a right rectangular prism are 4 inches by 5 inches by 6 inches. What is the surface area, in square inches, of the prism?

A. 30

B. 74

C. 120

D. 148

3.10 459dd6c5

Triangles ABC and DEF are similar. Each side length of triangle ABC is 4 times the corresponding side length of triangle DEF. The area of triangle ABC is 270 square inches. What is the area, in square inches, of triangle DEF?

3.11 310c87fe

A cube has a surface area of 54 square meters. What is the volume, in cubic meters, of the cube?

A. 18

B. 27

C. 36

D. 81

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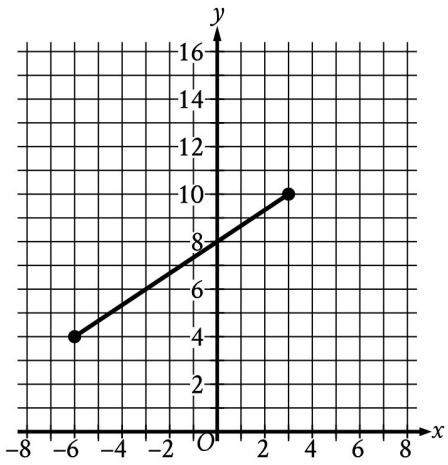
3.12 983412ea

A right square prism has a height of 14 units. The volume of the prism is $2{,}016$ cubic units. What is the length, in units, of an edge of the base?

3.13 099526fc



The line segment shown in the *xy*-plane represents one of the legs of a right triangle. The area of this triangle is $36\sqrt{13}$ square units. What is the length, in units, of the other leg of this triangle?

A. 12

B. 24

C. $3\sqrt{13}$

D. $18\sqrt{13}$

3.14 c984f1a5

A hemisphere is half of a sphere. If a hemisphere has a radius of 27 inches, which of the following is closest to the volume, in cubic inches, of this hemisphere?

A. $1{,}500$

B. $6{,}100$

C. $30{,}900$

D. $41{,}200$

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3.15 6708546e

Parallelogram $ABCD$ is similar to parallelogram $PQRS$. The length of each side of parallelogram $PQRS$ is 2 times the length of its corresponding side of parallelogram $ABCD$. The area of parallelogram $ABCD$ is 5 square centimeters. What is the area, in square centimeters, of parallelogram $PQRS$?

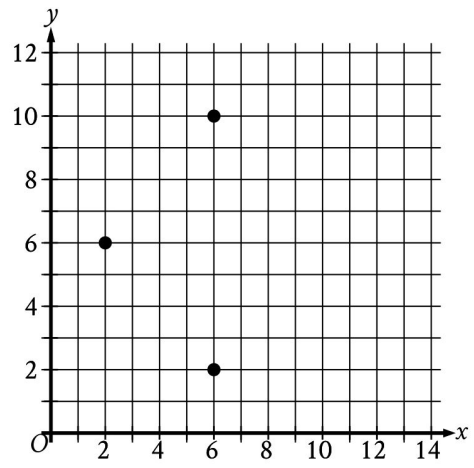
A. 7

B. 10

C. 20

D. 25

3.16 b2528e6b



The three points shown define a circle. The circumference of this circle is $k\pi$, where k is a constant. What is the value of k?

3.17 502d9690

Rectangle $ABCD$ is similar to rectangle $EFGH$. The area of rectangle $ABCD$ is 648 square inches, and the area of rectangle $EFGH$ is 72 square inches. The length of the longest side of rectangle $ABCD$ is 36 inches. What is the length, in inches, of the longest side of rectangle $EFGH$?

A. 4

B. 9

C. 12

D. 36

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3.18	deff8a2f

The circumference of the base of a right circular cylinder is 20π meters, and the height of the cylinder is 6 meters. What is the volume, in cubic meters, of the cylinder?

A. 60π

B. 120π

C. 600π

D. $2{,}400\pi$