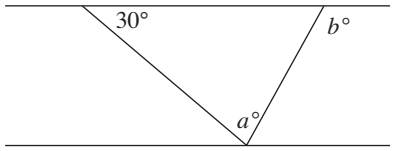
Drill 4

Try to use Plugging In on the following questions. Answers can be found in Part IV.

3



In the figure above, what is the value of *b*, in terms of *a* ?

A) $30 - a$

B) $30 + a$

C) $60 + a$

D) $80 - a$

7

Cone *A* and Cone *B* are both right circular cones with the same height. If the radius of Cone *A* is $\frac{3}{4}$ of the radius of Cone *B*, which of the following is the ratio of the volume of Cone *A* to the volume of Cone *B* ?

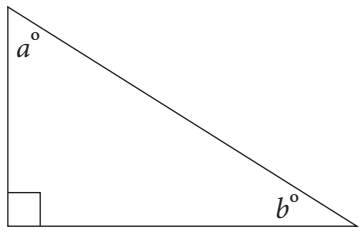
A) 27:64

B) 9:16

C) 3:4

D) 4:3

5



If $\sin a° = x$, then $\cos b° =$

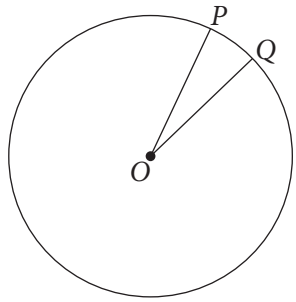
A) x

B) $1 - x$

C) $\frac{1}{x}$

D) $x - 1$

22



In the figure above, O is the center of the circle, the radius of the circle is x, and the length of minor arc PQ is $\frac{\pi x}{18}$. What is the area of sector POQ?

A) $\frac{\pi x^2}{36}$

B) $\frac{\pi x^2}{18}$

C) $\frac{\pi x^2}{9}$

D) $\frac{\pi x^2}{3}$

26

Three spherical balls with radius r are contained in a rectangular box. Two of the balls are each touching 5 sides of the rectangular box and the middle ball. The middle ball also touches four sides of the rectangular box. What is the volume of the space between the balls and the rectangular box?

(Note: The volume of a rectangular solid is given by the equation $V = lwh$. The volume of a sphere is given by the equation $V = \frac{4}{3}\pi r^3$.)

A) $r^3(3 - 4\pi)$

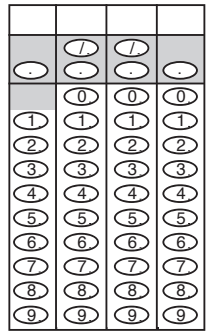
B) $4r^2(14 - \pi)$

C) $4r^3(6 - \pi)$

D) $12r^2(r - \pi)$

29

A rectangular box is half as long as it is wide and one-third as wide as it is tall. If the volume of the box is 96, then what is its surface area? (Note: The formula for the volume of a rectangular solid is $V = lwh$.)



IMAGINARY AND COMPLEX NUMBERS

So far you have been working with real numbers, which are any numbers that you can place on a number line. The PSAT may ask you to do mathematical operations with imaginary or complex numbers.

An **imaginary number**, very simply, is the square root of a negative number. Since there is no way to have a real number that is the square root of a negative number, mathematicians needed to come up with a way to represent this concept when writing equations. They use an italicized lowercase "I" to do that: $i = \sqrt{-1}$, and the PSAT will likely tell you that in any question involving imaginary numbers.