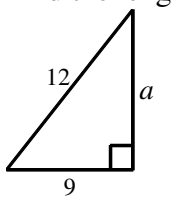
1. For each set of numbers, determine whether the numbers represent the lengths of the sides of an acute triangle, a right triangle, an obtuse triangle, or no triangle.
   a. $\sqrt{71},\ \sqrt{66},\ \sqrt{6}$ b. 13, 15, 27 c. 7.8, 10.4, 13

2. Find the length of the leg of this right triangle. Give an approximation to 3 decimal places.

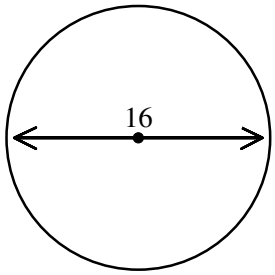


3. In a $30°$-$60°$-$90°$ triangle, the length of the side opposite the $30°$ angle is 4 mm. Find the length of the side opposite the $60°$ angle, and the length of the hypotenuse.

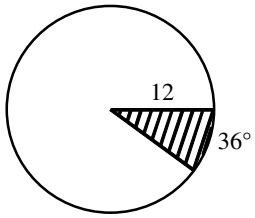
4. The area of an isosceles trapezoid is 302 in.^{2}. Its height is 11 in. and the length of its shorter base is 17 in. Find the length of its legs to the nearest tenth.

5. Find the area of an equilateral triangle with side 10.

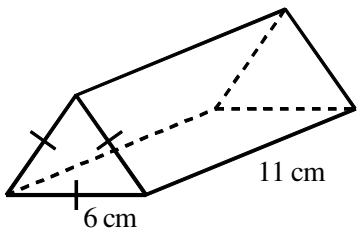
6. Find the area and circumference of the circle in terms of π.



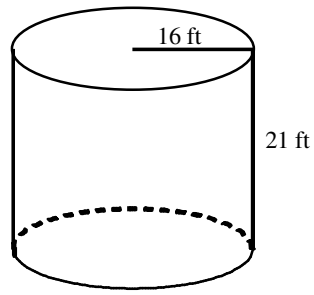
7. Find the area of the shaded region.



8. Find the volume of the figure, rounded to the nearest tenth.

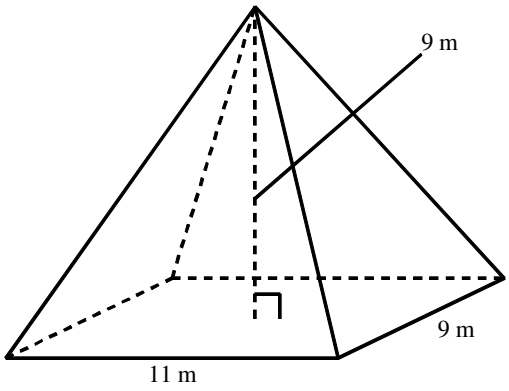


9. Find the volume of the cylinder. Use 3.14 for π.

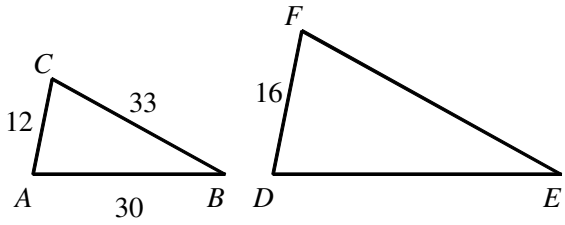


10. Calculate the volume of a cone with height 7 feet and radius 2 feet.

11. Calculate the volume of the pyramid.



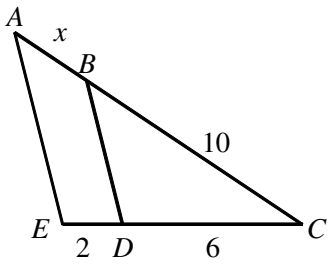
12. Find the perimeter of ΔDEF if $\Delta ABC \sim \Delta DEF$.



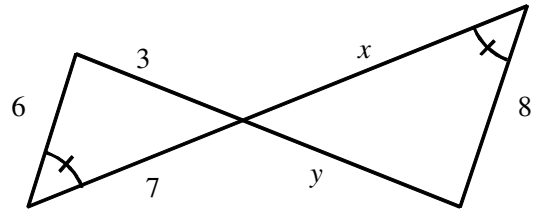
13. Solve for x: $\frac{x+5}{5} = \frac{1}{3}$ [A] $\frac{20}{3}$ [B] $-\frac{10}{3}$ [C] $-\frac{3}{10}$ [D] -30

14. In ΔBCD, $BC=5$, $CD=12$, and $m\angle C=32$. In ΔFGE, $GE=10$, $EF=24$, and $m\angle E=32$. State whether the triangles are similar, and if so, write a similarity statement.

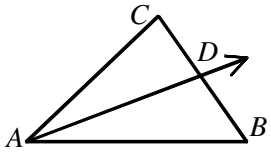
15. Given $\overline{AE} \parallel \overline{BD}$, solve for x.



16. Find the value of x and y.

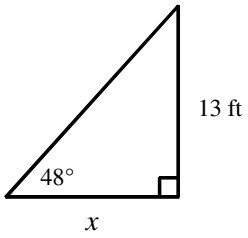


17. Find AC if $\overrightarrow{AD}$ bisects $\angle CAB$, $CD = 8$, $DB = 9$, and $AB = 18$.



18. The ratio of the volumes of two cubes is $8 : 27$. What is the ratio of their surface areas?

19. A tree 13 feet tall casts a shadow which forms an angle of $48°$ with the ground. How long is the shadow to the nearest hundredth?



20. To find the height of a pole, a surveyor moves 160 feet away from the base of the pole and then, with a transit 4 feet tall, measures the angle of elevation to the top of the pole to be $31°$. What is the height of the pole? Round answer to the nearest foot.

[A] 96 ft [B] 266 ft [C] 270 ft [D] 100 ft