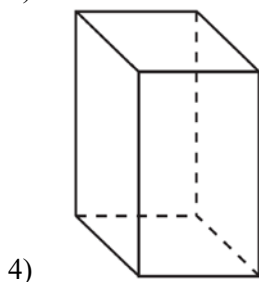
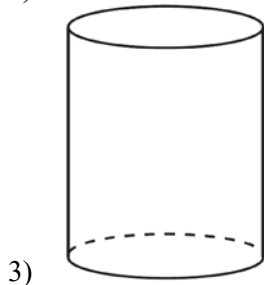
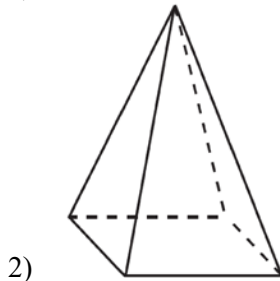
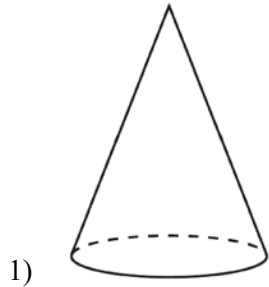


G.GMD.B.4: Rotations of Two-Dimensional Objects

- 1 A student has a rectangular postcard that he folds in half lengthwise. Next, he rotates it continuously about the folded edge. Which three-dimensional object below is generated by this rotation?

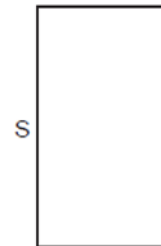


- 2 If the rectangle below is continuously rotated about side w , which solid figure is formed?



- 1) pyramid
- 2) rectangular prism
- 3) cone
- 4) cylinder

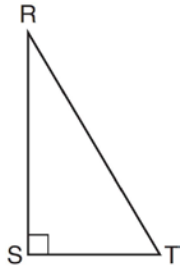
- 3 The rectangle drawn below is continuously rotated about side S .



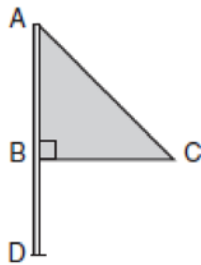
Which three-dimensional figure is formed by this rotation?

- 1) rectangular prism
- 2) square pyramid
- 3) cylinder
- 4) cone

- 4 Which object is formed when right triangle RST shown below is rotated around leg \overline{RS} ?

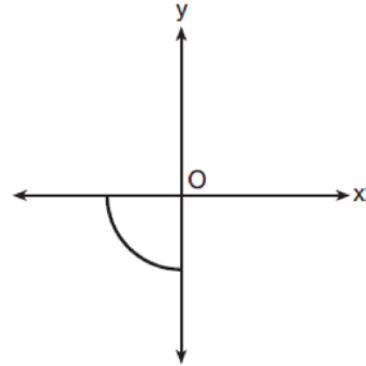


- 1) a pyramid with a square base
 - 2) an isosceles triangle
 - 3) a right triangle
 - 4) a cone
- 5 Triangle ABC represents a metal flag on pole AD , as shown in the accompanying diagram. On a windy day the triangle spins around the pole so fast that it looks like a three-dimensional shape.



Which shape would the spinning flag create?

- 6 Circle O is centered at the origin. In the diagram below, a quarter of circle O is graphed.



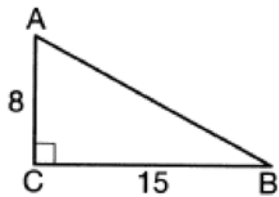
Which three-dimensional figure is generated when the quarter circle is continuously rotated about the y -axis?

- 1) cone
 - 2) sphere
 - 3) cylinder
 - 4) hemisphere
- 7 If a rectangle is continuously rotated around one of its sides, what is the three-dimensional figure formed?
- 1) rectangular prism
 - 2) cylinder
 - 3) sphere
 - 4) cone
- 8 If an equilateral triangle is continuously rotated around one of its medians, which 3-dimensional object is generated?
- 1) cone
 - 2) pyramid
 - 3) prism
 - 4) sphere

- 9 An equilateral triangle is continuously rotated around one of its altitudes. The three-dimensional object formed is a
- 1) cone
 - 2) sphere
 - 3) cylinder
 - 4) pyramid

- 10 A circle is continuously rotated about its diameter. Which three-dimensional object will be formed?
- 1) cone
 - 2) prism
 - 3) sphere
 - 4) cylinder

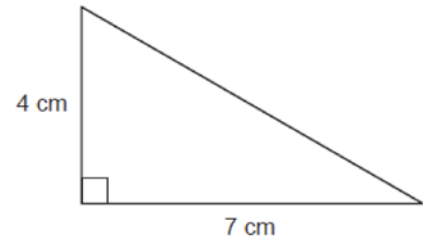
- 11 As shown in the diagram below, right triangle ABC has side lengths of 8 and 15.



If the triangle is continuously rotated about \overline{AC} , the resulting figure will be

- 1) a right cone with a radius of 15 and a height of 8
- 2) a right cone with a radius of 8 and a height of 15
- 3) a right cylinder with a radius of 15 and a height of 8
- 4) a right cylinder with a radius of 8 and a height of 15

- 12 The right triangle below is continuously rotated about the 4 cm side.



The solid formed is

- 1) a cone with a height of 4 cm and a radius of 7 cm
- 2) a cone with a height of 4 cm and a radius of 14 cm
- 3) a pyramid with a height of 4 cm and a base length of 7 cm
- 4) a pyramid with a height of 4 cm and a base length of 14 cm

- 13 An isosceles right triangle whose legs measure 6 is continuously rotated about one of its legs to form a three-dimensional object. The three-dimensional object is a

- 1) cylinder with a diameter of 6
- 2) cylinder with a diameter of 12
- 3) cone with a diameter of 6
- 4) cone with a diameter of 12

- 14 Square $MATH$ has a side length of 7 inches. Which three-dimensional object will be formed by continuously rotating square $MATH$ around side \overline{AT} ?

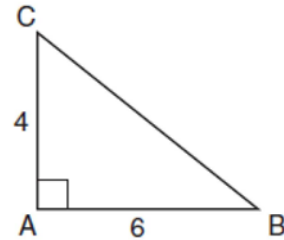
- 1) a right cone with a base diameter of 7 inches
- 2) a right cylinder with a diameter of 7 inches
- 3) a right cone with a base radius of 7 inches
- 4) a right cylinder with a radius of 7 inches

- 15 A rectangle with dimensions of 4 feet by 7 feet is continuously rotated about one of its 4-foot sides. The resulting three-dimensional object is a
- 1) cylinder with a height of 7 feet and a base radius of 4 feet.
 - 2) cylinder with a height of 4 feet and a base radius of 7 feet.
 - 3) cone with a height of 7 feet and a base radius of 7 feet.
 - 4) cone with a height of 4 feet and a base radius of 7 feet.

- 16 Which three-dimensional figure will result when a rectangle 6 inches long and 5 inches wide is continuously rotated about the longer side?
- 1) a rectangular prism with a length of 6 inches, width of 6 inches, and height of 5 inches
 - 2) a rectangular prism with a length of 6 inches, width of 5 inches, and height of 5 inches
 - 3) a cylinder with a radius of 5 inches and a height of 6 inches
 - 4) a cylinder with a radius of 6 inches and a height of 5 inches

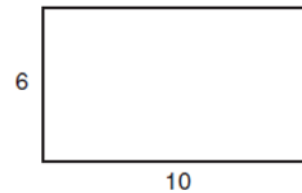
- 17 A square with a side length of 3 is continuously rotated about one of its sides. The resulting three-dimensional object is a
- 1) cube with a volume of 9.
 - 2) cube with a volume of 27.
 - 3) cylinder with a volume of 27π .
 - 4) cylinder with a volume of 54π .

- 18 In the diagram below, right triangle ABC has legs whose lengths are 4 and 6.



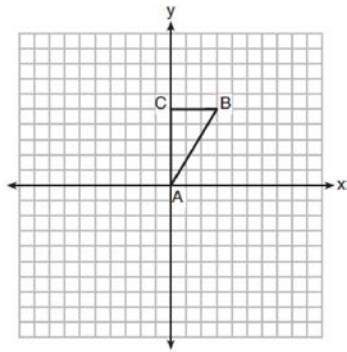
What is the volume of the three-dimensional object formed by continuously rotating the right triangle around AB ?

- 1) 32π
 - 2) 48π
 - 3) 96π
 - 4) 144π
- 19 A rectangle whose length and width are 10 and 6, respectively, is shown below. The rectangle is continuously rotated around a straight line to form an object whose volume is 150π .

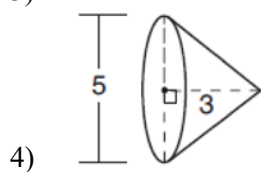
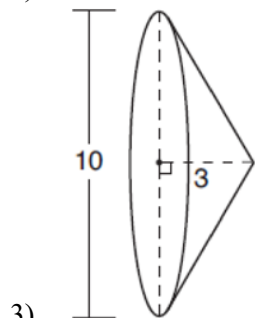
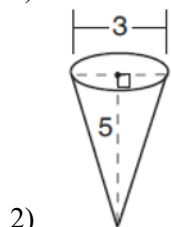
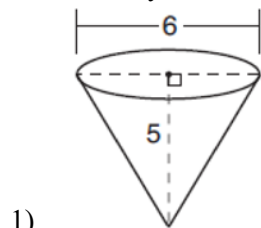


Which line could the rectangle be rotated around?

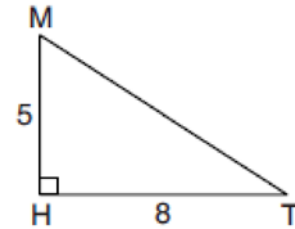
- 1) a long side
 - 2) a short side
 - 3) the vertical line of symmetry
 - 4) the horizontal line of symmetry
- 20 Triangle ABC , with vertices at $A(0,0)$, $B(3,5)$, and $C(0,5)$, is graphed on the set of axes shown below.



Which figure is formed when $\triangle ABC$ is rotated continuously about \overline{BC} ?



- 21 In right triangle MTH shown below, $m\angle H = 90^\circ$, $HT = 8$, and $HM = 5$.



Determine and state, to the *nearest tenth*, the volume of the three-dimensional solid formed by rotating $\triangle MTH$ continuously around \overline{MH} .

- 22 In isosceles triangle ABC shown below, $\overline{AB} \cong \overline{AC}$, and altitude \overline{AD} is drawn.



The length of \overline{AD} is 12 cm and the length of \overline{BC} is 10 cm. Determine and state, to the *nearest cubic centimeter*, the volume of the solid formed by continuously rotating $\triangle ABC$ about \overline{AD} .

G.GMD.B.4: Rotations of Two-Dimensional Objects

Answer Section

- 1 ANS: 3 REF: 061601geo
 2 ANS: 4 REF: 081503geo
 3 ANS: 3 REF: 082307geo
 4 ANS: 4 REF: 061501geo
 5 ANS: 4 REF: 010417a
 6 ANS: 4 REF: 011810geo
 7 ANS: 2 REF: 061903geo
 8 ANS: 1 REF: 081603geo
 9 ANS: 1 REF: 082501geo
 10 ANS: 3 REF: 012302geo
 11 ANS: 1 REF: 062208geo
 12 ANS: 1 REF: 012603geo
 13 ANS: 4 REF: 081803geo
 14 ANS: 4 REF: 081911geo
 15 ANS: 2 REF: 062415geo
 16 ANS: 3 REF: 011911geo
 17 ANS: 3

$$V = \pi(3)^2(3) = 27\pi$$

REF: 012507geo

- 18 ANS: 1

$$V = \frac{1}{3} \pi(4)^2(6) = 32\pi$$

REF: 061718geo

- 19 ANS: 3

$$v = \pi r^2 h \quad (1) \quad 6^2 \cdot 10 = 360$$

$$150\pi = \pi r^2 h \quad (2) \quad 10^2 \cdot 6 = 600$$

$$150 = r^2 h \quad (3) \quad 5^2 \cdot 6 = 150$$

$$(4) \quad 3^2 \cdot 10 = 900$$

REF: 081713geo

- 20 ANS: 3 REF: 061816geo

- 21 ANS:

$$\frac{1}{3} \pi \times 8^2 \times 5 \approx 335.1$$

REF: 082226geo

22 ANS:

$$\frac{1}{3} \pi \times 5^2 \times 12 = 100\pi \approx 314$$

REF: 012425geo