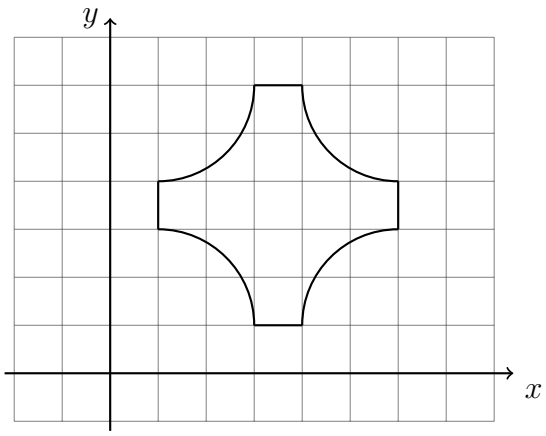
14 February 2020 Name:

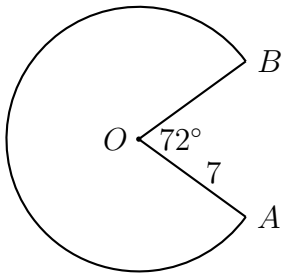
8.13 Do Now: Compound volumes

1. The design for a pendant calls for a square blank to have quarter-circle cutouts, as shown in the diagram. Find the area of the finished pendant. (1 square = 1 cm)



2. Circle O has a radius $AO = 7$, as shown below, and $m\angle AOB = 72°$.

   (a) Find the degree measure of the major arc $\overset{\frown}{AB}$.



   (b) Find the length of the major arc $\overset{\frown}{AB}$.

   (c) Find the area of the figure.

3. Which three-dimensional figure will result when a rectangle 6 inches long and 5 inches wide is continuously rotated about the longer side?

   (a) a rectangular prism with a length of 6 inches, width of 6 inches, and height of 5 inches

   (b) a rectangular prism with a length of 6 inches, width of 5 inches, and height of 5 inches

   (c) a cylinder with a radius of 5 inches and a height of 6 inches

   (d) a cylinder with a radius of 6 inches and a height of 5 inches

4. 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

   (a) cylinder with a diameter of 6

   (b) cylinder with a diameter of 12

   (c) cone with a diameter of 6

   (d) cone with a diameter of 12

5. A right cylinder is cut perpendicular to its base. The shape of the cross section is a

   (a) circle

   (b) cylinder

   (c) rectangle

   (d) triangular prism

6. A crate in the shape of a rectangular prism must have a volume of 30 cubic feet. It's length is 4 feet and width 3 feet. How tall must it be?

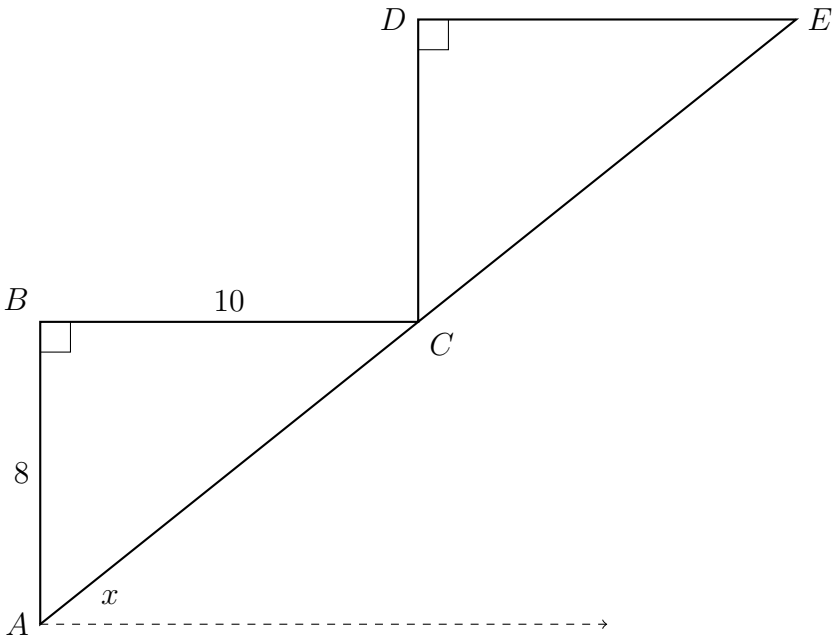
7. Randy's basketball is in the shape of a sphere with a maximum circumference of 29.5 inches. Determine and state the volume of the basketball, to the *nearest cubic inch*.

8. A monument is in the shape of a pyramid with a square base whose sides measure 24 inches and whose height measures 20 feet. What is the volume of the monument, to the *nearest cubic foot*?

9. A cylindrical pipe with radius $r = 6$ inches has a volume of 15.7 cubic feet. Find the length of the pipe, to the *nearest foot*.

10. A weather balloon in the shape of a sphere has a volume of 7250 cubic feet. Find the *diameter* of the balloon, to the *nearest foot*.

11. A staircase riser is cut as a series of congruent triangles with each step's "rise" equal to 8 inches, and the "run" of each step is 10 inches, as shown below in a diagram, *drawn to scale*. ($AB = 8$ and $BC = 10$) Find the diagonal length of the two-step riser, the distance AE, to the *nearest inch*.



What is the angle of inclination of the staircase, x?

12. A bakery sells hollow chocolate spheres. The larger diameter of each sphere is 4 cm. The thickness of the chocolate of each sphere is 0.5 cm. Determine and state, to the nearest tenth of a cubic centimeter, the amount of chocolate in each hollow sphere.