Modeling with Geometric Shapes Worksheet

Geometry · Common Core HSG-MG.A.1

> Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).

Practice

Builds the skill step by step.

1. Which solid is the best model for a tree trunk?
   A. a cylinder
   B. a cube
   C. a sphere
   D. a pyramid

2. Which solid is the best model for a basketball?
   A. a cone
   B. a sphere
   C. a cylinder
   D. a cube

3. Which solid is the best model for a traffic cone?
   A. a prism
   B. a cylinder
   C. a sphere
   D. a cone

4. A tree trunk is modeled as a cylinder. Its circumference is 3.14 m. Use 3.14 for π. What is its diameter?

5. A tree trunk is modeled as a cylinder with radius 0.5 m and height 12 m. What is its volume? Use 3.14 for π and round to the nearest tenth.

6. Which solid is the best model for a pizza box?

   A. a cylinder

   B. a cone

   C. a rectangular prism

   D. a sphere

7. A soup can is modeled as a cylinder with radius 4 cm and height 10 cm. The label covers the curved side. What is the label's area? Use 3.14 for π and round to the nearest tenth.

8. Which solid is a common simple model for a human torso?

   A. a sphere

   B. a cylinder

   C. a pyramid

   D. a cone

9. A ball modeled as a sphere has a diameter of 24 cm. What is its radius?

10. A garden is modeled as an 8 m by 5 m rectangle. How much fencing goes around it?

ALBERT

Name _____ Date _____

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On Level

Grade-level practice.

1. A pile of grain is modeled as a cone with radius 3 m and height 2 m. What is its volume? Use 3.14 for π and round to the nearest tenth.

2. Earth is modeled as a sphere with radius 4,000 miles. What is the distance around the equator? Use 3.14 for π.

3. A pond is modeled as a circle with diameter 20 m. What is its area? Use 3.14 for π.

4. A torso is modeled as a cylinder with a circumference of 94.2 cm. What is its radius? Use 3.14 for π.

5. A tent is modeled as a triangular prism. The front triangle has base 6 ft and height 4 ft, and the tent is 8 ft long. What is its volume?

6. Which combination best models a sharpened pencil?

   A. a cylinder with a cone on one end

   B. a single cylinder

   C. a sphere on a cone

   D. a rectangular prism

7. A water tower tank is modeled as a sphere with radius 5 m. How much water can it hold? Use 3.14 for π and round to the nearest tenth.

8. A log is modeled as a cylinder with diameter 0.4 m and length 3 m. What is its volume? Use 3.14 for π and round to the nearest hundredth.

9. A roll of paper towels is modeled as a cylinder with radius 6 cm and height 28 cm, with a cardboard tube of radius 2 cm in the middle. What is the volume of the paper? Use 3.14 for π and round to the nearest tenth.

10. Explain why a cylinder is a reasonable model for a tree trunk, and name one way the model is not exact.

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Challenge

Multi-step and word problems that stretch it.

1. A hot-air balloon is modeled as a sphere with diameter 18 m. What is its volume? Use 3.14 for π and round to the nearest tenth.

2. A torso is modeled as a cylinder with radius 14 cm and height 60 cm. What is its volume? Use 3.14 for π and round to the nearest tenth.

3. Which combination best models an ice cream cone with one scoop?

   A. a pyramid and a cube

   B. two cones

   C. a cylinder topped with a sphere

   D. a cone topped with a hemisphere

4. A pool is modeled as a rectangular prism 25 m long, 10 m wide and 2 m deep. Each cubic meter holds 1000 liters. How many liters does it hold?

5. A dome is modeled as a hemisphere with radius 10 m. Its curved surface is $2\pi r^2$. How much area needs paint? Use 3.14 for π.

6. A tire is modeled as a circle with diameter 0.6 m. How far does the car roll in 500 full turns? Use 3.14 for π.

7. A water bottle is modeled as a cylinder with radius 3.5 cm and height 20 cm. What is its volume? Use 3.14 for π and round to the nearest tenth.

8. Which shape is the WORST model for a soccer ball?

   A. a sphere with radius slightly smaller

   B. a sphere with radius slightly larger

   C. a cube

   D. a sphere

9. A torso is modeled as a cylinder with radius 15 cm and height 60 cm. What is the area of its curved side? Use 3.14 for π.

10. An arm is modeled as a cylinder. Its circumference is 31.4 cm and its length is 60 cm. What is its volume? Use 3.14 for π.