ALBERT

Name _____ Date _____

Volume of Cylinders, Pyramids, Cones and Spheres Worksheet

Geometry · Common Core HSG-GMD.A.3

> Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.

Practice

Builds the skill step by step.

1. A cylinder has radius 3 and height 10. What is its volume? Use 3.14 for π and round to the nearest tenth.

2. A cone has radius 3 and height 4. What is its volume? Use 3.14 for π and round to the nearest tenth.

3. A sphere has radius 3. What is its volume? Use 3.14 for π and round to the nearest tenth.

4. A pyramid has a 6-by-6 square base and a height of 10. What is its volume?

5. A cylinder has radius 5 and height 2. Its volume is kπ cubic units. What is k?

6. A cone has radius 6 and height 5. Its volume is kπ cubic units. What is k?

7. A sphere has radius 6. Its volume is kπ cubic units. What is k?

8. A pyramid has a 4-by-9 rectangular base and a height of 5. What is its volume?

9. A cylinder has diameter 8 and height 10. Its volume is kπ cubic units. What is k?

10. A hemisphere has radius 3. Its volume is kπ cubic units. What is k?

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On Level

Grade-level practice.

1. A cylinder has a volume of 72π and a radius of 3. What is its height?

2. A cone has a volume of 96π and a radius of 6. What is its height?

3. A sphere has a volume of 36π. What is its radius?

4. A can has radius 4 cm and height 12 cm. How much does it hold? Use 3.14 for π and round to the nearest tenth.

5. An ice cream cone has radius 2 and height 9, with a hemisphere of ice cream (radius 2) on top. What is the total volume? Use 3.14 for π and round to the nearest tenth.

6. A square pyramid has a volume of 200 and a base side of 10. What is its height?

7. A sphere has diameter 10. Its volume is kπ cubic units. What is k?

8. A grain silo is a cylinder (radius 5 m, height 20 m) topped by a hemisphere (radius 5 m). What is its volume? Use 3.14 for π and round to the nearest tenth.

9. A cylinder and a cone each have radius 3 and height 6. What is their combined volume? It is kπ cubic units. What is k?

10. A cylindrical tank has radius 2 m and height 5 m. It is $\frac{3}{4}$ full of water. How much water is in it? Use 3.14 for π and round to the nearest tenth.

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Challenge

Multi-step and word problems that stretch it.

1. A sphere's radius is doubled. By what factor does its volume change?

2. A cylinder has a volume of 500 cubic units and a radius of 5. What is its height? Use 3.14 for π and round to the nearest tenth.

3. A cone has radius 3 and slant height 5. Its volume is kπ cubic units. What is k?

4. A sphere of radius 3 fits exactly inside a cylinder of radius 3 and height 6. How much space is left in the cylinder? It is kπ cubic units. What is k?

5. A square pyramid has a base side of 8 and a slant height of 5 (from the apex to the midpoint of a base edge). What is its volume?

6. A metal sphere of radius 6 is melted and recast into small cylinders with radius 2 and height 3. How many cylinders can be made?

7. A cone with radius 6 and height 12 has its top cut off by a plane parallel to the base, halfway up, leaving a frustum. What is the frustum's volume? It is kπ cubic units. What is k?

8. A pipe is 10 units long with outer radius 5 and inner radius 4. What is the volume of the material? It is kπ cubic units. What is k?

9. A cone-shaped cup (point down) has radius 4 and height 12. Water fills it to a depth of 6. What is the volume of the water? It is kπ cubic units. What is k?

10. Which holds the most: a cylinder (radius 3, height 4), a sphere (radius 3) or a cone (radius 3, height 12)?

    A. They all hold the same amount.

    B. the cylinder

    C. the sphere

    D. the cone