

Geometry - Geometric Modeling Applications - Quiz

Common Core G-MG.A.1, G-MG.A.2, G-MG.A.3 · maths-pdf.fr/en/

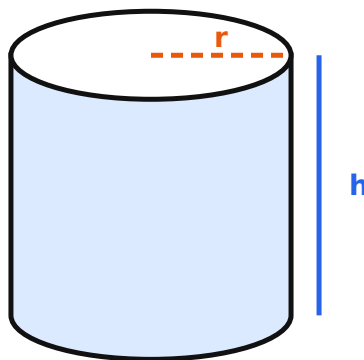
Name: _____ Class: _____ Date: ____/____/____

Test your understanding of geometric modeling with this 10-question multiple-choice quiz. Each question has one correct answer, and the explanation after it names the typical mistake behind the wrong choices. Take it after the lesson or before the test.

Geometry · Common Core State Standards: **G-MG.A.1, G-MG.A.2, G-MG.A.3**

Questions

Question 1



A soup can is modeled by a cylinder.

A can is modeled by a cylinder with radius 3 and height 10. What is its volume?

- A. 90 pi
- B. 30 pi
- C. 60 pi
- D. 300 pi

Question 2

A town has 12,000 people on 8 square miles. What is its population density?

- A. 96,000 people per square mile
- B. 0.0007 people per square mile

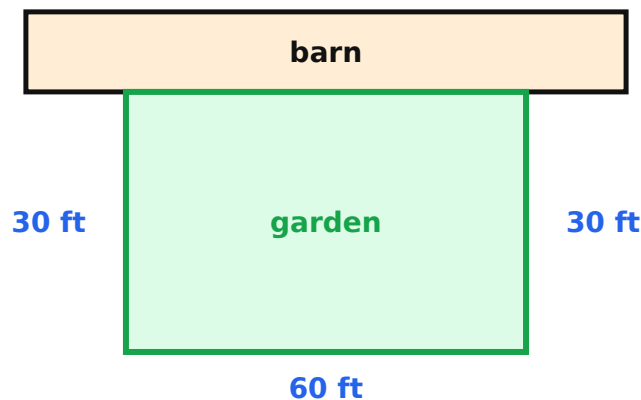
- C. 12,008 people per square mile
- D. 1,500 people per square mile

Question 3

A metal block has volume 50 cm^3 and density 8 g per cm^3 . What is its mass?

- A. 6.25 g
- B. 400 g
- C. 58 g
- D. 42 g

Question 4



Fence on three sides of a rectangular garden next to a barn.

Fencing is used on three sides next to a barn: $2w + l = 120$. If $w = 20$, what is l ?

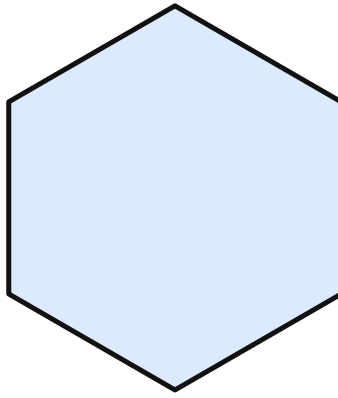
- A. 100
- B. 60
- C. 80
- D. 40

Question 5

Which shape best models a basketball?

- A. Cylinder
- B. Cone
- C. Sphere
- D. Prism

Question 6



A honeycomb cell is modeled by a regular hexagon.

Which regular polygon is a honeycomb cell?

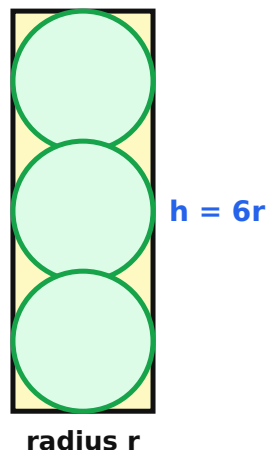
- A. Hexagon
- B. Pentagon
- C. Octagon
- D. Square

Question 7

One gallon of paint covers 350 square feet. How many gallons are needed for 700 square feet?

- A. 1
- B. 3
- C. 350
- D. 2

Question 8



The balls fill what fraction of the can's volume?

- A. $\frac{2}{3}$
- B. $\frac{1}{3}$
- C. $\frac{1}{2}$
- D. $\frac{3}{4}$

Question 9

A slab is 10 ft by 10 ft and 6 inches thick. What is the volume in cubic feet?

- A. 600
- B. 50
- C. 100
- D. 5

Question 10

A tank must hold at least 400 cubic feet. Which cylinder meets the requirement?

- A. Radius 4 ft, height 6 ft
- B. Radius 5 ft, height 6 ft
- C. Radius 3 ft, height 10 ft
- D. Radius 2 ft, height 20 ft

Answers

1. **A** - $V = \pi r^2 h = \pi \times 9 \times 10 = 90\pi$.
2. **D** - Density is people divided by area: $12,000 / 8 = 1,500$.
3. **B** - Mass = density x volume = $8 \times 50 = 400$ g.
4. **C** - $l = 120 - 2(20) = 80$.
5. **C** - A basketball is round in all directions, like a sphere.
6. **A** - Honeycomb cells are regular hexagons, which tile the plane without gaps.
7. **D** - $700 / 350 = 2$ gallons.
8. **A** - Balls $4\pi r^3$ cubed, can $6\pi r^3$ cubed, so $2/3$. The empty part is $1/3$.
9. **B** - Thickness is 0.5 ft, so $V = 10 \times 10 \times 0.5 = 50$. Forgetting to convert inches gives 600.
10. **B** - $V = \pi r^2 h$: $150\pi = 471$ meets it; the others give 301, 283 and 251.

Remember

- A model represents a real object with a simple shape, for example a can as a cylinder.
- Density = amount / area or volume (people per square mile, grams per cubic centimeter).
- Mass = density x volume.
- Design problems have constraints such as fixed fencing, minimum volume or a cost limit.
- State answers with units and check they are reasonable.