

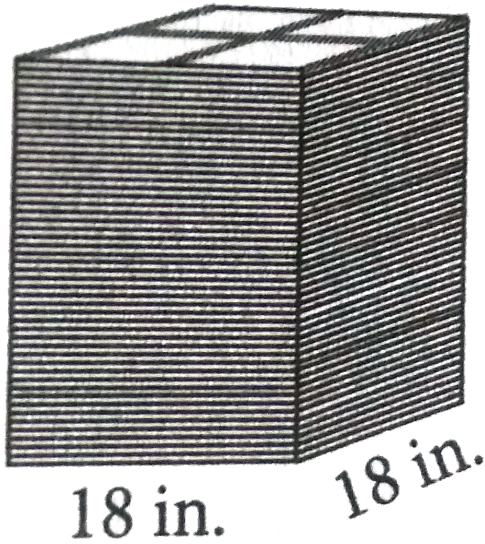


# MATHS

## BOOKS - KAPLAN INC MATHS (ENGLISH)

### 3- SHAPES

**Multiple Choice Question**



1.

18 in.

18 in.

A flooring company stores its marble tiles in vertical stacks as shown above. Each tile measures  $18'' \times 18'' \times \frac{1}{2}''$ . How many cubic feet of tile are there in one stack of 48 of these tiles?

A. 4.5

B. 54

C. 162

D. 648

**Answer: A**



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2. If a right cylinder with a radius of 2 cm has a volume of  $100\pi\text{cm}^3$ , what is the height, in centimeters, of the cylinder?

A. 20

B. 25

C. 40

D. 50

**Answer: B**



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**3.** A cube and a rectangular solid are equal in volume. If the lengths of the edges of the

rectangular solid are 4, 8, and 16, what is the length of an edge of the cube?

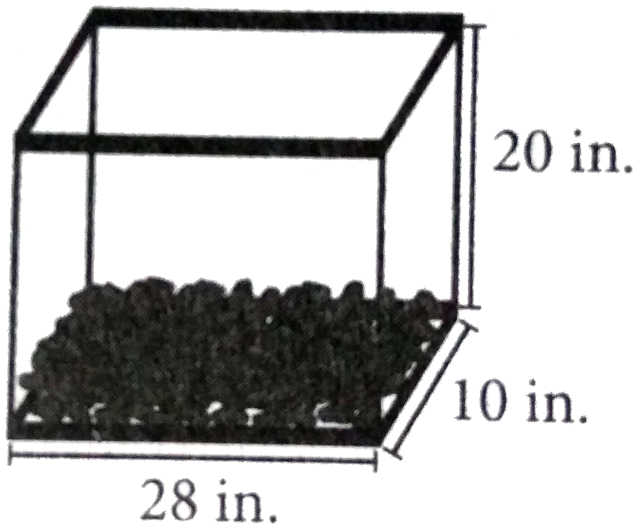


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4. What is the maximum number of boxes with dimensions 2 inches by 3 inches by 4 inches that could fit in a cube-shaped container that has a volume of 1 cubic foot?



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5.

The bottom of the fish tank shown in filled with rocks. The tank is then with water at a height of 18 inches. When the rocks are removed, the height of the water drops to 16.5 inches. How many cubic inches of water do the rocks displace?

A. 280

B. 420

C. 560

D. 980

**Answer: B**



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**6.** What is the radius of the largest sphere that can be placed inside a cube that has a volume of 64 cubic units?

A. 2

B.  $2\sqrt{2}$

C. 4

D. 8

**Answer: A**



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7. A cylinder has a volume of  $72\pi$  cubic inches and a height of 8 inches. If the height is



increased by 4 inches, what will be the new volume of the cylinder in cubic inches?

A.  $76\pi$

B.  $108\pi$

C.  $328\pi$

D.  $576\pi$

**Answer: B**



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8. Milk is poured from a full rectangular container with dimensions 4 inches by 9 inches by 10 inches into cylindrical container with a diameter of 6 inches. Assuming all the milk is transferred without spillage, how many inches high will the milk reach in the cylindrical container?

A.  $\frac{40}{\pi}$

B.  $\frac{60}{\pi}$

C. 24

D. 30

**Answer: A**



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9. A solid, cone-shaped lead crystal paper weight has a height of 5 centimeters and a base diameter that is 20% larger than the height. If the density of lead crystal is  $3.1\text{g}/\text{cm}^3$ , what is the approximate mass of

the paperweight? Round your answer to the nearest gram.



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**10.**

A jeweler makes beads for a bracelet by melting silver into spherical molds. Each mold has a diameter of 1 centimeters. After the silver hardens, the jeweler drills a small

cylindrical hole through the center of the bead for the chain as shown. The drill bit has a diameter of 4 millimeters. If the jeweler strings a total of 15 beads on an elastic band, what is the approximate volume of silver, in cubic centimeters, on the bracelet? (Note: There are 10 millimeters in 1 centimeter.)

Note: The volume is approximate because the top and bottom of the cylindrical piece that is drilled out is slightly curved.

A.  $\frac{19}{150}\pi$

B.  $\frac{1}{6}\pi$

C.  $\frac{19}{10}\pi$

D.  $\frac{5}{2}\pi$

**Answer: C**



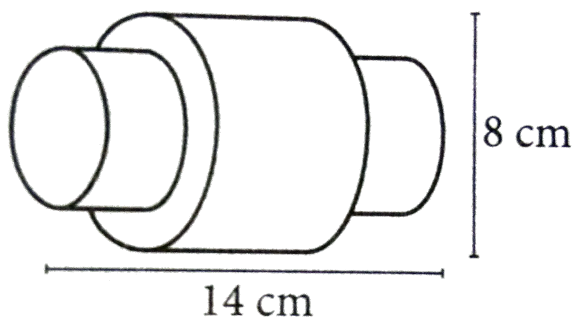
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**11.** A rectangular block with a volume of 250 cubic inches is sliced into two cubes of equal volumes. How much greater, in square inches, is the combined surface area of the two cubes

than the surface area of the original rectangular block?



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12.

A locking pin is often made using a cylinder-cylinder pair in which a narrow cylinder fits tightly inside a wider cylinder. The inner



cylinder protrudes from the outer cylinder, usually by equal amounts on both ends. In the diagram above, the radius of the inner cylinder is half the radius of the outer cylinder by 4 centimeters on each end. What is the volume of the locking pin ? Round your answer to the nearest cubic centimeter.



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