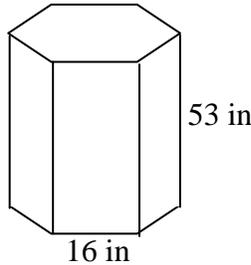


Prisms: Areas and Volume

Determining Surface Area and Volume of Prisms: Worksheet B

1. An aquarium is in the shape of a hexagonal prism. Each side of its base is 16 inches. The aquarium is 53 inches tall. What is the volume, in cubic inches, of the aquarium?



	/	/	/	
.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

2. A pool in the shape of a cube has a volume of 1,728 yds³. The pool's owner needs to paint the cover of his pool. If the cover of the pool fits exactly on the top of the pool, what is the area, in square yards, that the owner needs to paint?

	/	/	/	
.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

3. A cylindrical oil tank has a radius of 4 feet and holds 100 cubic feet of oil. What is the height, in feet, of the tank?

	/	/	/	
.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Prisms: Areas and Volume

Determining Surface Area and Volume of Prisms: Worksheet B (Cont.)

4. Dentyne Arena is in the shape of a regular hexagonal prism. The interior walls and ceiling are to be painted. The length of each side of the arena is 120 feet and the height of each wall is 80 feet. What is the area, in square feet, to be painted? Round your answer to the nearest 100 ft².

	/	/	/	
.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

5. A cylindrical glass is full of water and is to be poured into a rectangular pan. The base of the pan is 15 inches by 10 inches and the height of the pan is 3 inches. The height of the cylinder is 15 inches. What is the radius of the cylinder, in inches, so that the water fills the pan but does not spill over?

	/	/	/	
.
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

6. If the radius of a cylinder is doubled, what effect does the doubling have on the volume of the cylinder? Use mathematics to justify your answer.

Prisms: Areas and Volume

Worksheet B Answers:

$$1. \quad V = \frac{1}{2} aP \cdot h = \frac{1}{2} (8\sqrt{3}) (96) (53)$$

$$= 20,352\sqrt{3} \approx 35,251$$

$$2. \quad V = s^3 = 1,728 \text{ yd}^3$$

$$s = 12$$

Therefore, the area is 144

$$3. \quad V = Bh = 100 = \pi \cdot 4^2 \cdot h$$

$$h \approx 1.989 \approx 2$$

$$4. \quad SA = B + LA = \frac{1}{2} aP + 6lw$$

$$= \frac{1}{2} (60\sqrt{3}) (720) + 6 (120) (80)$$

$$= 21,600\sqrt{3} + 57,600 \approx 95,000$$

$$5. \quad V = lwh = (15) (10) (3) = 450 \text{ in}^3$$

$$V = \pi r^2 h = \pi r^2 (15) = 450$$

$$r^2 = 9.55$$

$$r = 3.1$$

6. When the radius of a cylinder is doubled, the volume is increased four times. A student can demonstrate this by using examples. The student begins with $V = \pi r^2 h$. If the radius is doubled, the new radius is $2r$. The new volume is $V = \pi (2r)^2 h = 4 \pi r^2 h$.