

Key

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Per \_\_\_\_\_

Find the area of the given shape.

1)



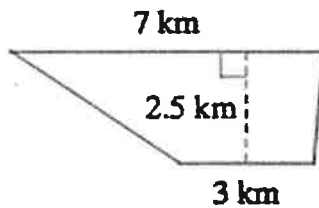
$$A = \frac{1}{2}bh$$

$$= \frac{1}{2}(9)(3)$$

$$= \frac{1}{2}(27)$$

$$A = 13.5 \text{ km}^2$$

2)



$$A = \frac{1}{2}(b_1 + b_2)h$$

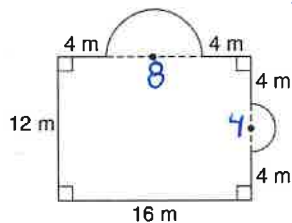
$$= \frac{1}{2}(7 + 3)(2.5)$$

$$= \frac{1}{2}(10)(2.5)$$

$$= (5)(2.5)$$

$$A = 12.5 \text{ km}^2$$

3)



$$A = \square + \frac{1}{2}O + \frac{1}{2}O$$

$$= (12 \cdot 16) + \frac{1}{2}(\pi 4^2) + \frac{1}{2}(\pi 2^2)$$

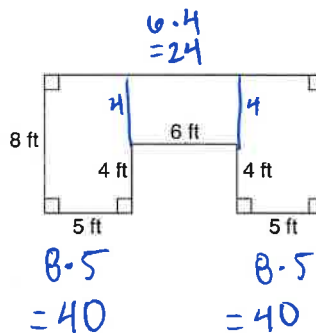
$$= 192 + \frac{1}{2}(16\pi) + \frac{1}{2}(4\pi)$$

$$= 192 + 8\pi + 2\pi$$

$$= 192 + 25.13 + 6.28$$

$$A \approx 223.41 \text{ m}^2$$

4)



$$6.4 = 2.4$$

$$8.5 = 40$$

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$$A = 104 \text{ ft}^2$$

5) A full circle sprinkler throws water over a region 13 meters in diameter. What is the area of the region watered?

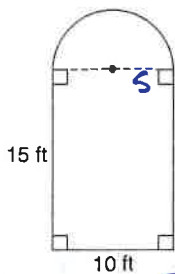
$$r = 6.5$$

$$A = \pi r^2$$

$$= \pi (6.5)^2$$

$$A \approx 132.7 \text{ m}^2$$

6) The figure shows the dimensions of a room. How much carpet is needed to cover the floor?



$$A = \square + \frac{1}{2}O$$

$$= (15 \cdot 10) + \frac{1}{2}(\pi 5^2)$$

$$= 150 + \frac{1}{2}(25\pi)$$

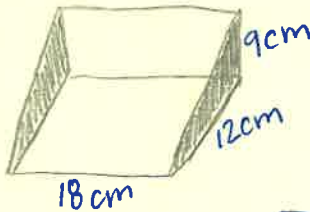
$$= 150 + 39.27$$

$$A \approx 189.27 \text{ ft}^2$$

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Find the volume.

7)



$$V = Bh$$

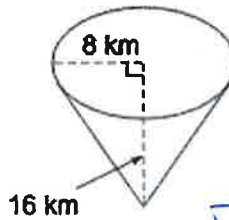
$$= (\frac{1}{2} \cdot 12 \cdot 9)(18)$$

$$= (6 \cdot 9)(18)$$

$$= (54)(18)$$

$$V = 972 \text{ cm}^3$$

8)



$$V = \frac{1}{3} \pi r^2 h$$

$$= \frac{1}{3} \pi (8)^2 (16)$$

$$= \frac{1}{3} \pi (64)(16)$$

$$V \approx 1072.3 \text{ km}^3$$

9) A cylindrical tank has a radius of 3 meters and a height of 4.5 meters. Find the volume of the tank.



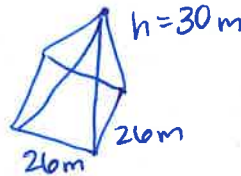
$$V = \pi r^2 h$$

$$= \pi (3)^2 (4.5)$$

$$= \pi (9)(4.5)$$

$$V \approx 127.2 \text{ m}^3$$

10) The Mayan Pyramids in Mexico is about 26m on each side of the base, and about 30,000mm high. What is the volume of the pyramid?



$$V = \frac{1}{3} Bh$$

$$= \frac{1}{3} (26 \cdot 26)(30)$$

$$V = \frac{20,280 \text{ m}^3}{3}$$

$$V = 6760 \text{ m}^3$$

11) A swimming pool is 8 yards long, 6 yards wide, and 1.5 yards deep. How much water can the pool hold?

$$V = 8 \cdot 6 \cdot 1.5$$

$$V = 72 \text{ yd}^3$$

12) Patty has a rectangular flower bed that is 13 feet long, 5 feet wide, and 1.5 feet deep. If one bag of soil covers 30 cubic feet, how many bags of soil does she need to buy? If each bag of soils costs \$8.20, what will her total cost be?

$$V = 5 \cdot 13 \cdot 1.5$$

$$V = 97.5 \text{ ft}^3$$

$$\frac{97.5 \text{ ft}^3}{30 \text{ ft}^3} = 3.25 \rightarrow 4 \text{ bags for } \$32.80$$

$$\rightarrow (4)(8.20) = 32.8$$

Convert to the indicated measures.

13) 20 in<sup>3</sup> to ft<sup>3</sup>

$$20 \text{ in}^3 \cdot \frac{1 \text{ ft}}{12 \text{ in}} \cdot \frac{1 \text{ ft}}{12 \text{ in}} \cdot \frac{1 \text{ ft}}{12 \text{ in}}$$

$$\frac{20}{1728} = 0.012 \text{ ft}^3$$

14) 4 km<sup>2</sup>/hr to m<sup>2</sup>/min

$$\frac{4 \text{ km}^2}{\text{hr}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1000 \text{ m}}{1 \text{ km}} \cdot \frac{1 \text{ hr}}{60 \text{ min}}$$

$$\frac{4,000,000}{60} = 66,666.7 \text{ m}^2/\text{min}$$

15) 120 gal/hr<sup>3</sup> to cups/min<sup>3</sup>

$$\frac{12 \text{ gal}}{\text{hr}^3} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{16 \text{ c}}{1 \text{ g}}$$

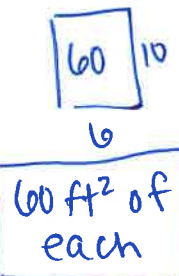
$$\frac{1920}{216000} = .009 \text{ c}/\text{min}^3$$

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**Solve the word problems.**

16) You want to make a blanket with two different fabrics on either side. If you want the blanket to be 6 ft wide and 10 feet long, how much of each type of fabric will you need? If the price of fabric is \$1.45 per square yard, what will your total cost be?



60 x 2 fabrics = 120 ft<sup>2</sup> total

$$120 \text{ ft}^2 \cdot \frac{1 \text{ yd}}{3 \text{ ft}} \cdot \frac{1 \text{ yd}}{3 \text{ ft}} = 13.3 \text{ yd}^2$$

60 ft<sup>2</sup> of each

$$60 \text{ ft}^2 \cdot \frac{1 \text{ yd}^2}{9 \text{ ft}^2} = 6.6 \text{ yd}^2 \quad (14 \text{ yd}^2) \times (1.45)$$

\* 7 yd<sup>2</sup> of each

**\$20.30**

17) A circular stained-glass window in a cathedral has a radius of 60 in. The window needs restoration, which costs \$450 per m<sup>2</sup>. What will be the total cost of restoring the window?

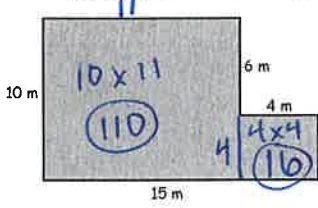
$$A = \pi r^2 = \pi (60)^2$$

$$A \approx 11309.7 \text{ in}^2 \cdot \frac{1 \text{ ft}^2}{144 \text{ in}^2} \cdot \frac{.3048 \text{ m}}{1 \text{ ft}} \cdot \frac{.3048 \text{ m}}{1 \text{ ft}}$$

$$\approx \frac{1050.7}{144} \approx 7.3 \text{ m}^2 \cdot 450$$

**\$3,285**

18) You are buying a piece of land. Assume the units are miles. If the price per acre is \$425, how much will you pay? (1 mi<sup>2</sup> = 640 acres)



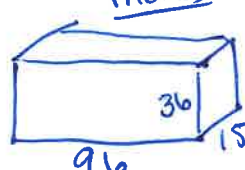
126 mi<sup>2</sup> ·  $\frac{640 \text{ ac}}{1 \text{ mi}^2}$

80,640 acres

x 425

**\$34,272,000**

19) A rectangular salt-water fish tank is 8 feet long, 3 feet tall, and 15 inches deep. If you want to fill the tank with water but leave 2 inches open at the top, how much water will it hold. If salt water costs \$4.60 per cubic meter, how much will it cost to fill the tank within 2 inches of the top?



leave 2 in open

$$V = 96 \cdot 15 \cdot 34$$

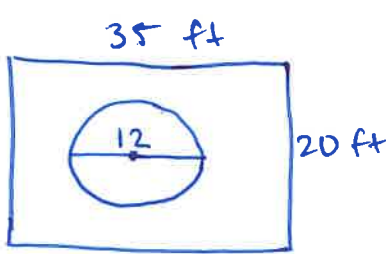
**V = 48960 in<sup>3</sup>**

$$48960 \text{ in}^3 \cdot \frac{(1) \text{ ft}^3}{(12)^3 \text{ in}^3} = \frac{48960}{1728} = 28.3 \text{ ft}^3$$

$$28.3 \text{ ft}^3 \cdot \frac{(.3048)^3 \text{ m}^3}{(1) \text{ ft}^3} = .801 \text{ m}^3 \cdot \$4.60$$

**\$3.68**

20) You're redoing your rectangular shaped backyard by adding a small, circular grass area to the middle and surrounding it with rock. The backyard is 35 ft long and 20 ft wide. The grassy area has a diameter of 4 yards. If grass costs \$10.20 per square meter and rock costs \$4.15 per square meter, how much will you pay in total to remodel your backyard?



**Grass:**

$$A = \pi r^2 = \pi (6)^2 = 36\pi$$

**A = 113.1 ft<sup>2</sup>**

$$113.1 \text{ ft}^2 \cdot \frac{.3048 \text{ m}}{1 \text{ ft}} \cdot \frac{.3048 \text{ m}}{1 \text{ ft}} \approx 10.5 \text{ m}^2 \cdot \$10.20 = \$107.20 \text{ for grass}$$

**Rock:**

$$A = (35 \cdot 20) - 113.1 = 700 - 113.1$$

**A = 586.9 ft<sup>2</sup>**

$$586.9 \text{ ft}^2 \cdot \frac{.3048 \text{ m}}{1 \text{ ft}} \cdot \frac{.3048 \text{ m}}{1 \text{ ft}} \approx 54.5 \text{ m}^2 \cdot \$4.15 = \$228.28 \text{ for rock}$$

**Total cost: \$340.45**

