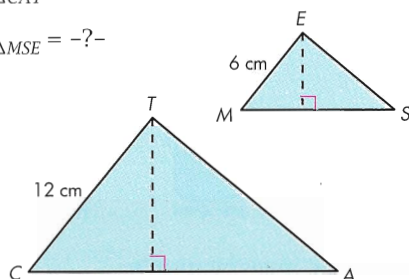


Exercise Set 12.6

1.* $\triangle CAT \sim \triangle MSE$

$$\text{Area}_{\triangle CAT} = 72 \text{ cm}^2$$

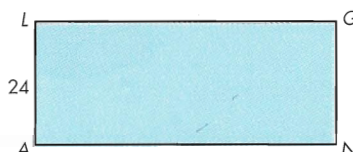
$$\text{Area}_{\triangle MSE} = -?-$$



2. rectangle $RECT \sim$ rectangle $ANGL$

$$\frac{\text{Area}_{RECT}}{\text{Area}_{ANGL}} = \frac{9}{16}$$

$$TR = -?-$$

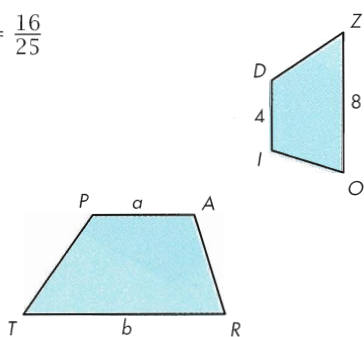


3.* $TRAP \sim ZOID$

$$\frac{\text{Area}_{ZOID}}{\text{Area}_{TRAP}} = \frac{16}{25}$$

$$a = -?-$$

$$b = -?-$$

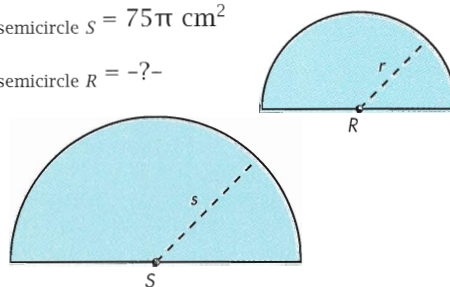


4. semicircle $R \sim$ semicircle S

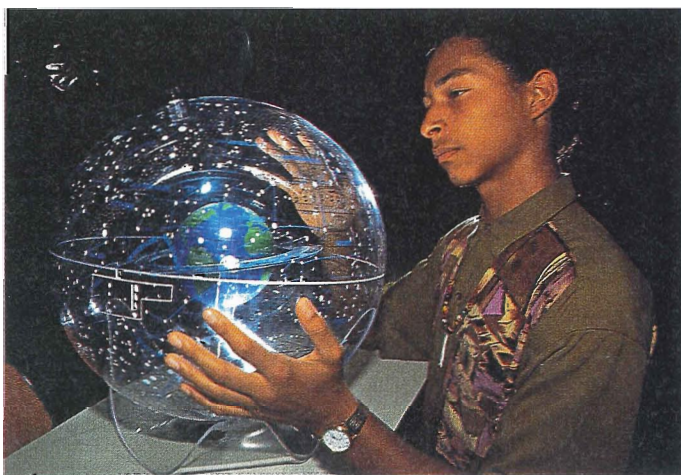
$$\frac{r}{s} = \frac{3}{5}$$

$$\text{Area}_{\text{semicircle } S} = 75\pi \text{ cm}^2$$

$$\text{Area}_{\text{semicircle } R} = -?-$$



- The lengths of corresponding diagonals of two similar kites are in the ratio of 1:7. What is the ratio of their areas?
- The ratio of the areas of two similar trapezoids is 1:9. What is the ratio of the lengths of their altitudes?
- * The lengths of the edges of two cubes are in the ratio of m/n . What is the ratio of their surface areas?
- The celestial sphere shown at right has a radius of 9 inches. The planet in the sphere's center has a radius of 3 inches. What is the ratio of the volume of the planet to the volume of the larger sphere? What is the ratio of the surface area of the planet to the surface area of the celestial sphere?
- Annie works in the advertising department of an interior-design magazine. A client has just requested that his 5-cm-by-12-cm ad be increased in size: "Double the length and double the width, then send me the bill." If the original ad cost \$1500, how much should Annie charge her client? Explain your reasoning to him.



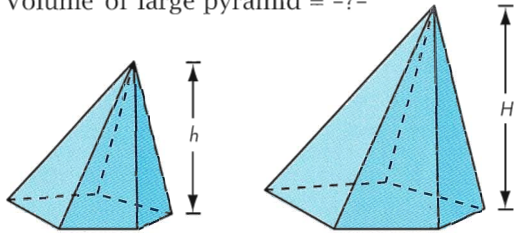
10. If 8 oz of dough are needed to make a 10-inch diameter pizza, how many ounces of dough are needed to make a 16-inch diameter pizza of the same thickness?

11. The pentagonal pyramids are similar.

$$\text{Volume of small pyramid} = 320 \text{ cm}^3$$

$$\frac{h}{H} = \frac{4}{7}$$

$$\text{Volume of large pyramid} = \text{--?--}$$



- 13.* The right trapezoidal prisms are similar.

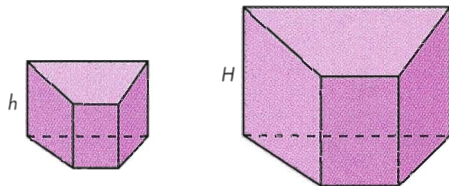
$$\text{Volume of small prism} = 324 \text{ cm}^3$$

$$\frac{\text{Area of base of small prism}}{\text{Area of base of large prism}} = \frac{9}{25}$$

$$\frac{h}{H} = \text{--?--}$$

$$\frac{\text{Volume of large prism}}{\text{Volume of small prism}} = \text{--?--}$$

$$\text{Volume of large prism} = \text{--?--}$$

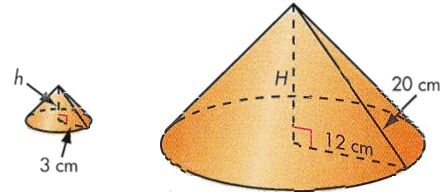


- 12.* The right cones are similar.

$$H = \text{--?--} \quad \text{Volume of large cone} = \text{--?--}$$

$$h = \text{--?--} \quad \text{Volume of small cone} = \text{--?--}$$

$$\frac{\text{Volume of large cone}}{\text{Volume of small cone}} = \text{--?--}$$



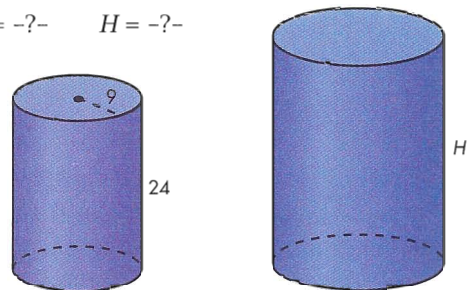
- 14.* The right cylinders are similar.

$$\text{Volume of large cylinder} = 4608\pi \text{ cu ft}$$

$$\text{Volume of small cylinder} = \text{--?--}$$

$$\frac{\text{Volume of large cylinder}}{\text{Volume of small cylinder}} = \text{--?--}$$

$$\left(\frac{H}{24}\right)^3 = \text{--?--} \quad H = \text{--?--}$$



- 15.* The lengths of corresponding edges of two similar triangular prisms are in the ratio of 5:3. What is the ratio of their volumes?

- 16.* The volumes of two similar pentagonal prisms are in the ratio of 8:125. What is the ratio of their heights?

- 17.* The ratio of the weights of two spherical steel balls is 8:27. What is the ratio of their diameters?

- 18.* ZAP Electronics has just installed an air-conditioning unit in the small warehouse section of their VCR plant. The energy needed to operate an air-conditioning unit is proportional to the volume or space that is being air-conditioned. The energy used to operate the air-conditioning system costs ZAP Electronics about \$125 per day. The company is considering installing a similar unit in its main storage warehouse. Each dimension of this warehouse is two and a half times as large as its corresponding dimension in the VCR warehouse. What would be a good estimate of the daily operating cost for the larger warehouse's air-conditioning system?

19. Make four copies of the trapezoid at right. Arrange them into a similar but larger trapezoid.

