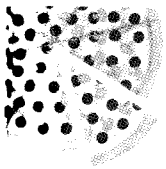


Lesson 9.8

Area Problems: The Sequel

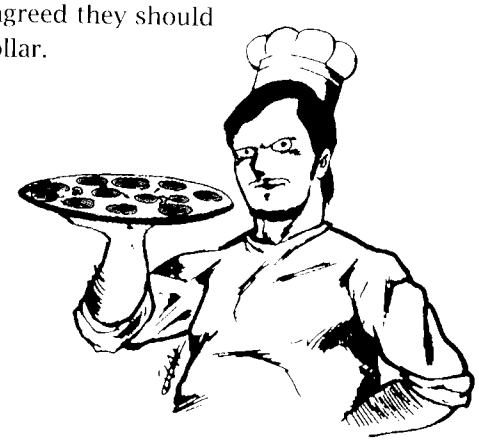
Exercise Set 9.8

1. What is the total surface area of a rectangular room 6 meters by 7 meters by 4 meters high? Ignore doorways and windows.
2. Ernesto plans to build a pen for his pet iguana. What is the area (to the nearest m^2) of the largest pen that Ernesto can make with 100 meters of fencing?
3. The amount of water that a pipe can carry is proportional to the area of the cross section of the pipe opening. How many two-inch diameter pipes are needed to carry the same amount of water as one six-inch diameter pipe?
4. The George Washington High School Math Club held its Fibonacci Birthday Party at Pedro's Pizzeria. The 16 members present all agreed they should order 4-item pizzas. Together they had \$84. Being very calculating, they agreed they should determine which purchase would give the most pizza per dollar.

Pedro's Pizzeria Price List

Type	*Size*	*3 items**	*4 items**
Small	10″	\$ 9.00	\$10.50
Medium	12″	11.25	13.00
Large	14″	14.00	16.00
Extra Large	16″	18.00	20.00

*Choose from salami, pepperoni, linguica, mushrooms, onions, bell pepper, and garlic.



Schulhoff Tam,
High school student

They came up with four purchase possibilities: 8 small pizzas, 6 medium pizzas, 5 large pizzas, or 4 extra large pizzas (sizes listed are diameters). Determine which possibility is the best deal (the most pizza per dollar). Will the best deal give the most pizza? What is the most pizza the club can get for its \$84? Try any combination of pizzas on the price list.

5. Patricia's Pizza Pavilion is providing pizza for Pittsburgh High School's polo team pizza party. The team orders two 12″-diameter pizzas at \$9.00 each and three 16″-diameter pizzas at \$14.00 each. Each 12″ pizza is cut into six congruent slices, and each 16″ pizza is cut into eight congruent slices. If Pepper Little eats one slice from the big 16″ pizza and two slices from the 12″ pizza, how much should she pay? If Peter Small eats two slices from the big 16″ pizza and one slice from the 12″ pizza, how much should he pay?

6. How many square inches of pizza did Pepper eat in Exercise 5? How many square inches of pizza did Peter eat? Which pizza gives the most pizza per dollar? Who got the better deal (the most pizza per dollar)?

7.* What is the probability that a slice of pepperoni randomly tossed onto the interior of a circular pizza will be closer to the center of the pizza than to the edge of the pizza?

8. If 8 oz of dough are needed to make a 12″-diameter pizza, how much dough is needed to make a 16″ pizza whose crust is of the same thickness?

Use Figures A–C for Exercises 9–11. Unless the dimensions indicate otherwise, assume each quadrilateral is a rectangle.

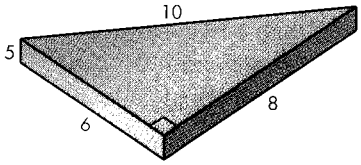


Figure A

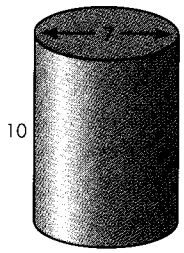


Figure B

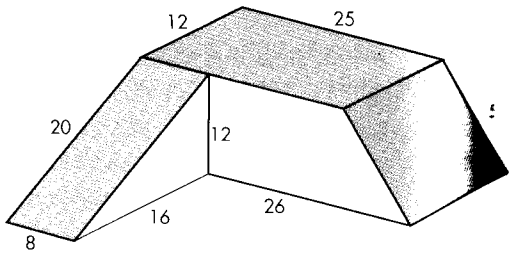


Figure C

9. Assume the measurements in Figure A are in centimeters. You are to produce 10,000 of these widgets, and each must be electroplated with a thin layer of high-conducting silver. Find the total silver cost if silver plating costs \$1 for each 200 square centimeters.

10. Assume the measurements in Figure B are in meters. Find the cost of painting the exterior of nine of these large cylindrical chemical storage containers with antirust sealant. The sealant costs \$32 per gallon. Each gallon covers 18 square meters. Do not paint the exterior bottoms.

11.* Assume the measurements in Figure C are in feet. The three shaded regions are to be covered with asphalt shingles, which cost \$35 per bundle. Each bundle contains enough shingles to cover 100 square feet. The remaining vertical surfaces (three are trapezoids and one is a right triangle) are to be covered with wood stain at \$15 per gallon. Each gallon covers 150 square feet. Find the total cost of this project.

12.* The large cylindrical barn shown at right has a cylindrical attic. The main building cylinder has radius 40 ft and height 35 ft. The attic cylinder has radius 4 ft and height 6 ft. Assume the main building roof has the same circumference as the main building cylinder. The attic roof could combine with the main building roof to form a single cone with slant height 50 ft. Wood shingles for the cylindrical sides of the barn and attic cost \$65 per bundle and tar shingles for the roof cost \$50 per bundle. Each type of bundle covers 100 square feet. How much would it cost for materials to reshingle the barn?