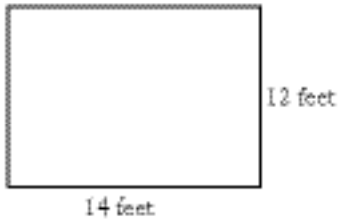


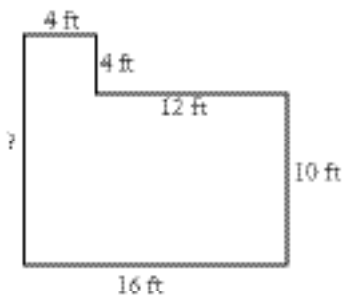
GEOMETRY PRACTICE

Now it's time to practice your skills. Answer the following 15 questions, and then review the answer explanations that follow.

1. Paul needs to carpet the rectangular room below. How many square feet of carpet are needed for wall-to-wall carpeting?

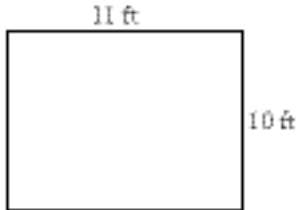


- a. 26 square feet
b. 168 square feet
c. 52 square feet
d. 40 square feet
2. A bag of concrete mix makes 15 cubic feet of concrete. How many bags of concrete mix need to be purchased to fill a walkway that is 50 cubic feet?
- a. 3
b. 4
c. 5
d. 6
3. A carpenter is using the diagram below to build a room. What is the length of the missing side?

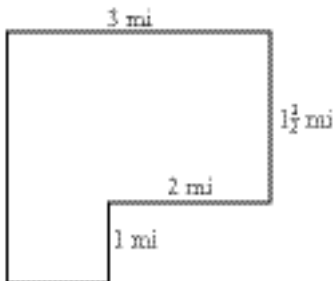


- a. 6 feet
b. 10 feet
c. 12 feet
d. 14 feet

4. A carpenter maintains a home office and uses it as a tax deduction. To determine the amount of his deduction he must calculate the area of the office. If the room that the carpenter uses as an office measures 10 feet by 11 feet, what is the area?

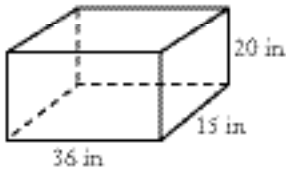


- 100 square feet
 - 42 square feet
 - 110 square feet
 - 84 square feet
5. The perimeter of a rectangular garden is 50 feet. Find the width of the garden if the length is 15 feet.
- 10 feet
 - 5 feet
 - 20 feet
 - 7 feet
6. A farmer has 24 feet of fencing. She wants to create the animal pen with the greatest possible area using exactly 24 feet of fencing. Which of the following dimensions would create the pen with the greatest area and use exactly 24 feet of fencing?
- 6 feet by 6 feet
 - 8 feet by 4 feet
 - 2 feet by 10 feet
 - 10 feet by 14 feet
7. A mailman walks the route below. How many miles does he walk?



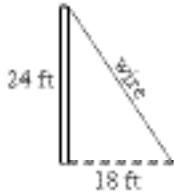
- $7\frac{1}{2}$ miles
- 10 miles
- 11 miles
- $11\frac{1}{2}$ miles

8. A slab of concrete is needed on the third floor of a building. The contractor must calculate the weight of the concrete to ensure that the building will be structurally sound. The concrete slab will be 10 feet by 12 feet and 2 feet thick. The concrete weighs 95 pounds per cubic foot. What is the weight of the concrete slab? ($Volume = length \times width \times height$)
- 240 pounds
 - 2,950 pounds
 - 10,600 pounds
 - 22,800 pounds
9. How much fencing is needed to enclose a circular garden with a diameter of 12 feet? (Use 3.14 for π , and round your answer to the next whole foot.)
- 38 feet
 - 36 feet
 - 453 feet
 - 114 feet
10. A rectangular box must be covered with tin sheeting. The box measures 36 inches by 15 inches by 20 inches. What is the total surface area to be covered?

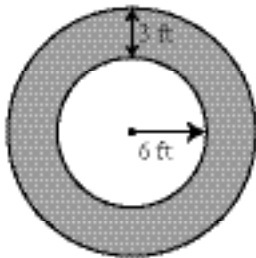


- 10,800 square inches
 - 3,120 square inches
 - 1,440 square inches
 - 71 square inches
11. How many cubic feet of concrete are needed to form a circular column seven feet high with a diameter of three feet? ($Volume = \pi r^2 h$; use 3.14 for π , and round your answer to the next cubic foot.)
- 200
 - 198
 - 21
 - 50

- 12.** A wire must be strung from the top of a 24-foot pole to a point 18 feet from the base of the pole. How long will the wire be?

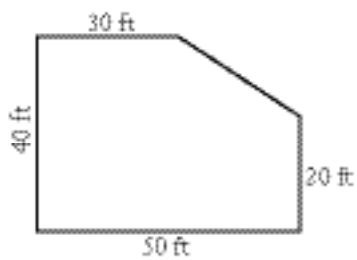


- a. 42 feet
 b. 60 feet
 c. 30 feet
 d. 25 feet
- 13.** A painter must paint a room that measures 12 feet by 15 feet. The ceiling of the room is 8 feet high. Each gallon of paint costs \$25.50 and covers 300 square feet of wall. How much will the paint cost him assuming that the painter will only paint one coat on each wall?
- a. \$105.50
 b. \$75.50
 c. \$65.00
 d. \$51.00
- 14.** A circular walkway is installed around a circular pool. The radius of the pool is six feet and the walkway is three feet wide at all points. Find the area of the walkway. (Use 3.14 for π , and round your answer to the next square foot.)



- a. 10 square feet
 b. 19 square feet
 c. 109 square feet
 d. 142 square feet

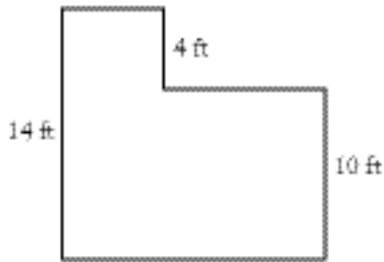
15. The floor plan of a clothing store is shown below. The rent for the store is \$3 per square foot. Determine the rent for the clothing store.



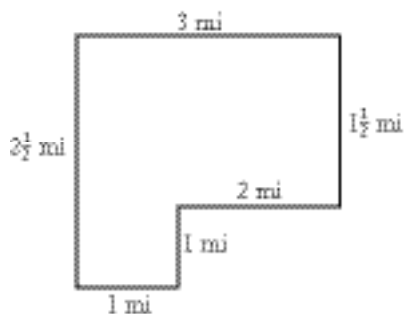
- a. \$1,800
- b. \$6,000
- c. \$5,400
- d. \$1,200

ANSWERS

1. **b.** Multiply the length, 14 feet, by the width, 12 feet, to find the area of the rectangle; $14 \times 12 = 168$ square feet.
2. **b.** Divide the size of the walkway, 50 cubic feet, by the amount that each bag makes, 15 cubic feet; $50 \div 15 = 3.3$. A little over 3 bags are needed to fill the walkway. Therefore, 4 bags need to be purchased.
3. **d.** The missing side is parallel to the sides that are four feet and ten feet. Those two sides together are the length of the missing side; $4 + 10 = 14$ feet.



4. **c.** Multiply the length by the width to find the area; $10 \times 11 = 110$ square feet.
5. **a.** The formula for the perimeter of a rectangle is $P = l + l + w + w$; $50 = 15 + 15 + w + w$. Since the two lengths add up to 30, the two widths must add up to 20 to make the perimeter of 50. Since the two widths are the same they must each be 10 feet.
6. **a.** Choice **d** can be eliminated because the dimensions do not make a perimeter of 24 feet ($10 + 10 + 14 + 14 = 48$). The other choices do make a perimeter of 24 feet. Determine which dimensions create the greatest area by multiplying the length by the width; $6 \times 6 = 36$, $8 \times 4 = 32$, and $2 \times 10 = 20$. Therefore, a 6-foot by 6-foot pen has the greatest area.
7. **c.** Find the missing side lengths (shown below) then add all the side lengths; $3 + 1\frac{1}{2} + 2 + 1 + 1 + 2\frac{1}{2} = 11$ miles.



8. **d.** Calculate the number of cubic feet of concrete by finding the volume of concrete; $10 \times 12 \times 2 = 240$ cubic feet. Find the weight of the concrete by multiplying the number of cubic feet by the weight per cubic foot; $240 \times 95 = 22,800$ pounds.
9. **a.** The formula for the circumference of a circle is $C = \pi d$. Therefore, the circumference of the circular garden is $(3.14)(12) = 37.68$ feet. The question asks for the answer to the next whole foot which is 38 feet.

- 10. b.** Find the area of each of the six sides. Two of the sides (front and back) are 36 feet by 20 feet and have an area of 720 square feet each. The top and bottom are 36 feet by 15 feet and have an area of 540 square feet each. The left and right sides are 15 feet by 20 feet and have an area of 300 square feet each. Find the total surface area by adding up the areas of all six sides; $720 + 720 + 540 + 540 + 300 + 300 = 3,120$ square feet.
- 11. d.** The column is a cylindrical shape. To find the volume of the cylinder, multiply the area of the base (a circle) by the height of the column. The area of the base is $(3.14)(1.5)^2 = 7.065$ square feet. Multiply this area by the height to find the volume; $7.065 \times 7 = 49.455$ cubic feet. The question asks for the answer to the next cubic foot, 50 cubic feet.
- 12. c.** The pole, wire, and ground form a right triangle. Therefore, the Pythagorean theorem can be used to find the missing side of the triangle. The Pythagorean theorem is $a^2 + b^2 = c^2$, where c is the longest side of the triangle, the hypotenuse. In this example, the hypotenuse is the wire. Substitute the values into the equation and solve for c .

$$24^2 + 18^2 = c^2$$

$$576 + 324 = c^2$$

$$900 = c^2$$

$$\sqrt{900} = \sqrt{c^2}$$

$$30 = c$$

The length of the wire is 30 feet.

- 13. d.** Find the area of the walls. Two walls are 15 feet by 8 feet and the other two walls are 12 feet by 8 feet; $15 \times 8 = 120$ square feet; $12 \times 8 = 96$ square feet. The total area of the walls in the room is $120 + 120 + 96 + 96 = 432$ square feet. Next, find the number of gallons of paint that must be purchased. Each gallon covers 300 square feet, so two gallons will be needed. Last, calculate the cost of those two gallons of paint; $2 \times \$25.50 = \51.00 .
- 14. d.** Find the area of the entire circle and subtract the area of the pool. The radius of the entire circle is nine feet because six feet plus three feet is nine feet. The area of the entire circle is $(9^2)(3.14) = 254.34$ square feet. The area of the pool is $(6^2)(3.14) = 113.04$ square feet. Subtract the area of the pool from the area of the entire circle to find the area of the walkway; $254.34 - 113.04 = 141.3$ square feet. The question asks for the answer to the next square foot, 142 square feet.
- 15. c.** Divide the floorplan into two rectangles and a triangle as shown below. Find the area of each shape, then add the areas together. The area of the rectangle on the left is $30 \times 40 = 1,200$ square feet. The area of the rectangle on the right is $20 \times 20 = 400$ square feet. The area of the triangle is $\frac{1}{2} \times 20 \times 20 = 200$ square feet. To find the area of the entire figure, add the three areas together $1,200 + 400 + 200 = 1,800$ square feet. The rent is \$3 per square foot. Therefore the total rent is $1,800 \times \$3 = \$5,400$.

