Questions

1. Find the area of a parallelogram whose altitude is 15 meters and whose base is 10 meters.

2. The perimeter of a parallelogram is 46 inches. If the length of one side is 14 inches, what is the length of the side adjacent to it?

3. Find the area of a circular sign whose radius is 7 ft.

4. The diameter of the planet Mercury is approximately 3032 miles. Find the distance around its equator.

5. The area of a trapezoid is 900 square inches. The bases are 40 inches and 50 inches. Find the altitude.

6. Each of the equal angles in an isosceles triangle is 4 times as large as the third angle. What is the measure of each angle?

7. Robbie has room for a storage cabinet that is 18 inches wide by 24 inches deep. If he calculates that he needs 15 cubic feet of storage space, how tall must the cabinet be?

8. A cement walkway is poured (see diagram). It consists of two rectangles and a quarter circle with a radius of 1.5 yards. How many square yards will the walkway be? If a painter paints it for $2.50 per square yard, how much will the painting cost?
Solutions

Diagrams for the solutions.

1.

\[ A = (\text{altitude})(\text{base}) \]
\[ = 15\text{m} \cdot 10\text{m} \]
\[ = 150\text{m}^2 \]

2.

\[ P = \text{sum of the four sides} \]
\[ 2x + 2(14) = 46 \]
\[ 2x + 28 = 46 \]
\[ 2x + 28 - 28 = 46 - 28 \]
\[ 2x = 18 \]
\[ x = 9\text{inches} \]

3.

\[ A = \pi r^2 \]
\[ \sim (3.14)(7\text{ft})^2 \]
\[ \sim 153.86\text{ft}^2 \]
4. The diameter is 3032 miles, so radius is \( \frac{3032}{2} = 1516 \) miles.

\[
\text{Circumference} = 2\pi r \\
\sim 2(3.14)(1516 \text{ miles}) \\
\sim 9520.48 \text{ miles}
\]

5.

\[
A = \frac{1}{2}a(b_1 + b_2) \\
900\text{inches}^2 = \frac{1}{2}a(40 \text{ inches} + 50\text{inches}) \\
900\text{inches}^2 = a(45 \text{ inches}) \\
\frac{900\text{inches}^2}{45 \text{ inches}} = a \\
20 \text{ inches} = a
\]

6. Fact used: Sum of interior angles in triangle is 180 degrees.

\[
4x + 4x + x = 180 \\
9x = 180 \\
x = \frac{180}{9} = 20 \text{ degrees}
\]

7. Need to get units the same! There are 12 inches in a foot. So 18 inches = 1.5 feet, and 24 inches = 2 feet.

\[
V = lwh \\
15\text{ft}^3 = (1.5\text{ft})(2\text{ft})h \\
15\text{ft}^3 = (3\text{ft}^2)h \\
\frac{15\text{ft}^3}{3\text{ft}^2} = h \\
5\text{ft} = h
\]

8. Use \( r = 3.14 \).

\[
A = \text{rectangle} + \ 1/4 \text{ circle} + \text{ rectangle} \\
= (9.5\text{yd})(1.5\text{extydyd}) + \frac{1}{4}\pi(1.5\text{yd})^2 + (4.5\text{yd})(1.5\text{yd}) \\
= 22.77\text{yd}^2
\]

The cost to paint would be \( (22.77\text{yd}^2) \cdot \left( \$2.50 \cdot \frac{1}{\text{yd}^2} \right) = $56.92. \)