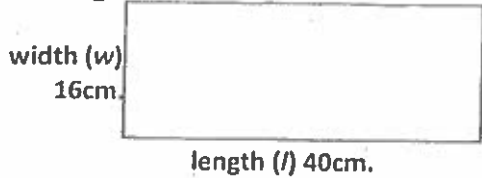
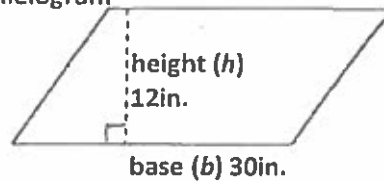


Area – Rectangles and Parallelograms

Rectangle



Parallelogram



The area of a rectangle equals the product of its length and its width.

The area of a parallelogram equals the product of its base and its height.

$$A = lw$$

$$A = bh$$

$$A = lw$$

$$A = bh$$

$$A = 40 \cdot 16$$

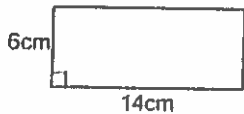
$$A = 30 \cdot 12$$

$$A = 640 \text{ cm}^2$$

$$A = 360 \text{ in}^2$$

Find the area of each figure shown or described below. Show all work.

1.

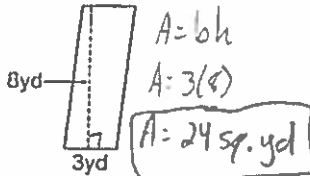


$$A = LW$$

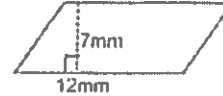
$$A = 14(6)$$

$$A = 84 \text{ sq. cm}$$

2.



3.



$$A = bh$$

$$A = 12(7)$$

$$A = 84 \text{ sq. mm}$$

4.



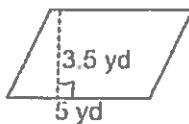
$$A = LW$$

$$A = 8(2\frac{1}{2})$$

$$A = 8(\frac{5}{2})$$

$$A = 20 \text{ sq. in}$$

5.

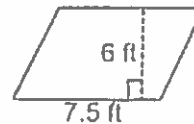


$$A = bh$$

$$A = 5(3.5)$$

$$A = 17.5 \text{ sq. yd}$$

6.



$$A = bh$$

$$A = 7.5(6)$$

$$A = 45 \text{ sq. ft}$$

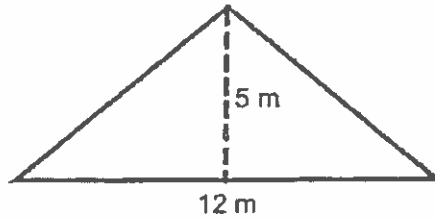
Area – Triangles and Trapezoids

A triangle is a polygon that has three sides. The area of a triangle is equal to one-half the product of its base and height.

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

Example: Find the area of the triangle shown at the right.

$$\begin{aligned} A &= \frac{1}{2}(bh) \\ &= \frac{1}{2} \cdot (12 \cdot 5) \\ &= \frac{1}{2}(60) \\ A &= 30 \end{aligned}$$



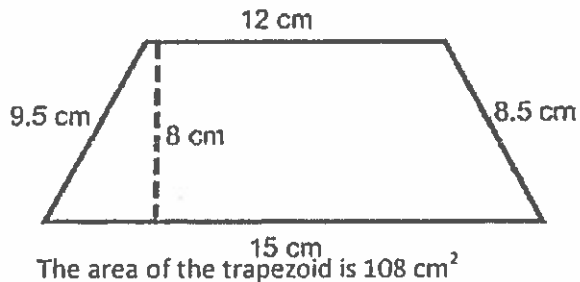
The area of the triangle is 30 cm^2

A trapezoid is a quadrilateral with exactly one pair of parallel sides. The area of a trapezoid is equal to one-half the product of its height times the sum of its bases.

$$A = \frac{1}{2}[h(a + b)]$$

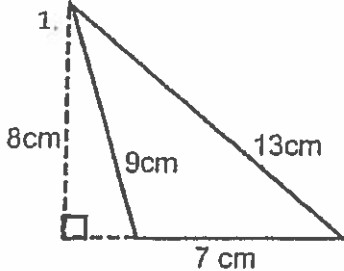
Example: Find the area of the trapezoid shown at the right.

$$\begin{aligned} A &= \frac{1}{2}[h(a + b)] \\ &= \frac{1}{2} \cdot [8(15 + 12)] \\ &= \frac{1}{2}[8(27)] \\ &= \frac{1}{2}(216) \\ A &= 108 \end{aligned}$$

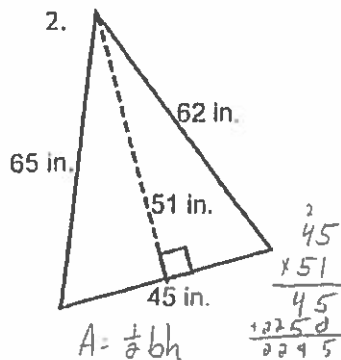


The area of the trapezoid is 108 cm^2

Find the area of each triangle. Show all work.



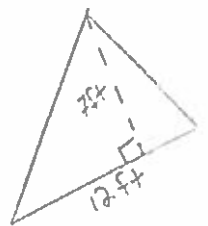
$$\begin{aligned} A &= \frac{1}{2}bh \\ A &= \frac{1}{2}(7)(8) \\ A &= \frac{1}{2}[56] \\ A &= 28 \text{ sq. cm.} \end{aligned}$$



$$\begin{aligned} A &= \frac{1}{2}bh \\ A &= \frac{1}{2}(45)(51) \\ A &= \frac{1}{2}(2295) \\ A &= 1147 \frac{1}{2} \text{ sq. in.} \end{aligned}$$

3. base: 12 ft.
height: 7ft

$$\begin{aligned} A &= \frac{1}{2}bh \\ A &= \frac{1}{2}(12)(7) \\ A &= \frac{1}{2}(84) \\ A &= 42 \text{ sq. ft.} \end{aligned}$$



4. base: 2.4 cm.
height: 10 cm.

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

$$A = \frac{1}{2}(2.4)(10)$$

$$A = \frac{1}{2}(24)$$

$$A = 12 \text{ sq. cm}$$

5. base: 2.8 m.
height: 1.2 m.

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

$$A = \frac{1}{2}(2.8)(1.2)$$

$$A = \frac{1}{2}(3.36)$$

$$A = (.5)(3.36)$$

$$A = 1.68 \text{ sq. m}$$

$$\begin{array}{r} 2.8 \text{ ①} \\ \times 1.2 \text{ ①} \\ \hline 56 \\ + 280 \\ \hline 3.36 \text{ ②} \\ \times .5 \text{ ①} \\ \hline 1.680 \text{ ③} \end{array}$$

6. base: $2\frac{1}{2}$ ft.
height: 6 ft.

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

$$A = \frac{1}{2}(2\frac{1}{2})(6)$$

$$A = \frac{1}{2}(\frac{5}{2})(\frac{6}{1})$$

$$A = \frac{30}{4}$$

$$A = \frac{15}{2}$$

$$A = 7\frac{1}{2} \text{ sq. ft}$$

Find the area of each trapezoid. Show all work,

7. bases: 6 m., 9 m.
height: 4 m.

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

$$A = \frac{1}{2}(4)(6 + 9)$$

$$A = \frac{1}{2}(4)(15)$$

$$A = 2(15)$$

$$A = 30 \text{ sq. m}$$

8. bases: 10 ft., 15 ft.
height: 20 ft.

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

$$A = \frac{1}{2}(20)(10 + 15)$$

$$A = \frac{1}{2}(20)(25)$$

$$A = 10(25)$$

$$A = 250 \text{ sq. ft}$$

9. bases: 7.7 cm., 10 cm.
height: 8 cm.

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

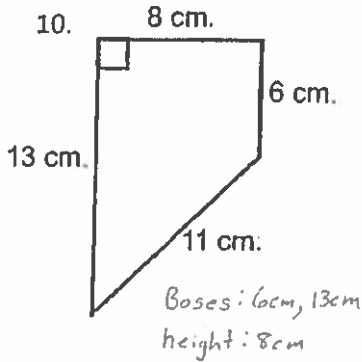
$$A = \frac{1}{2}(8)(7.7 + 10)$$

$$A = \frac{1}{2}(8)(17.7)$$

$$A = 4(17.7)$$

$$A = 70.8 \text{ sq. cm}$$

$$\begin{array}{r} 32 \\ 17.7 \text{ ①} \\ \times 4 \\ \hline 70.8 \text{ ①} \end{array}$$



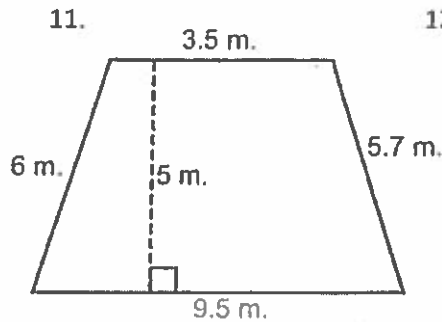
$$A = \frac{1}{2}h(b_1 + b_2)$$

$$A = \frac{1}{2}(8)(6 + 13)$$

$$A = \frac{1}{2}(8)(19)$$

$$A = 4(19)$$

$$A = 76 \text{ sq. cm}$$



Bases: 3.5 m, 9.5 m height: 5 m

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

$$A = \frac{1}{2}(5)(3.5 + 9.5)$$

$$A = \frac{1}{2}(5)(13)$$

$$A = \frac{65}{2}$$

$$A = 32\frac{1}{2} \text{ sq. m}$$

$$\begin{array}{r} 3.5 \\ + 9.5 \\ \hline 13.0 \end{array}$$

12. bases: 6 ft., 10 ft.
height: 3 ft.

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

$$A = \frac{1}{2}(3)(6 + 10)$$

$$A = \frac{1}{2}(3)(16)$$

$$A = \frac{1}{2}(48)$$

$$A = 24 \text{ sq. ft}$$