

Triangle

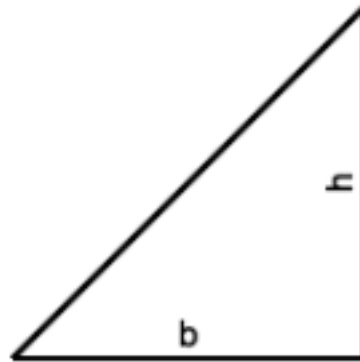
A triangle is any polygon with 3 sides.

Right Triangle

A right triangle has one angle equal to 90 degrees.

The area of a right triangle is equal to the one half the base times the height, in which the height is equal to two legs.

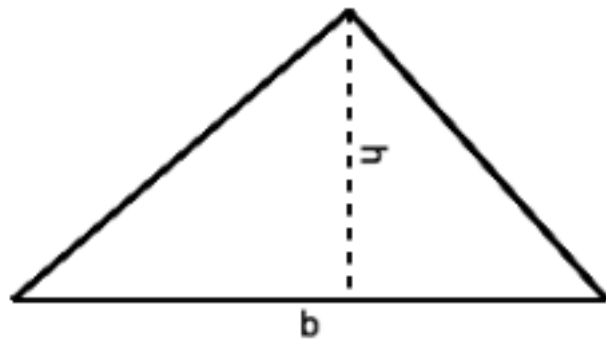
$$A = \frac{1}{2}bh$$

**Area of Any Triangle**

The area of any triangle is also one half the base times the height.

To find the area of a non-right triangle, draw a line from one vertex of the triangle that is perpendicular to the opposite side. This line is called an *altitude*. The “height” of the triangle is the length of the altitude, and the “base” is the length of the side it intersects.

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



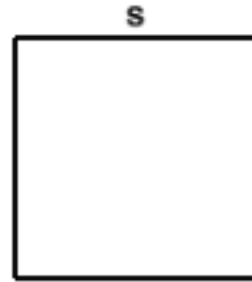
Quadrilateral

A quadrilateral is any polygon with 4 sides.

Square

A square is a quadrilateral in which all 4 sides and all 4 angles are equal (90 degrees).
The area of a square the length of any side squared.

$$A = s^2$$

**Rectangle**

A rectangle is a quadrilateral in which all 4 angles are equal to 90 degrees, but all four sides are not necessarily equal. The length of each side is equal to the length of the opposite side.

The area of a rectangle is the base times the height.

$$A = bh$$



Trapezoid

A trapezoid is any quadrilateral with two parallel sides.

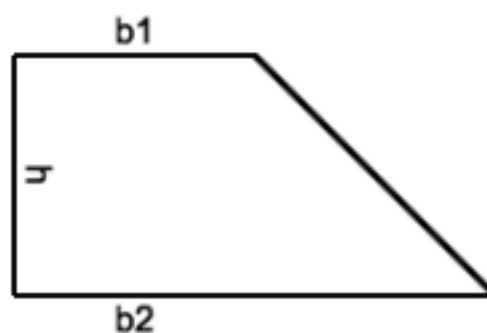
Right Trapezoid

A trapezoid is any quadrilateral with two parallel sides.

In a right trapezoid, one of the angles connecting these two parallel sides intersects both sides at a *right angle*.

The area of a right trapezoid is equal to the *average* of the two parallel sides, times the length of the side connecting them at right angles.

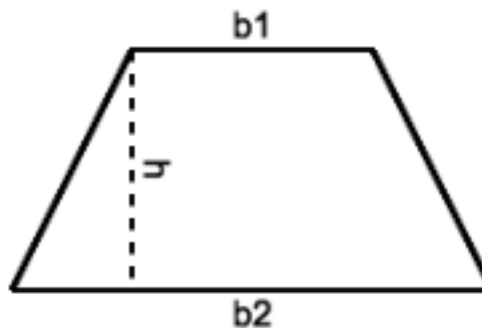
$$A = \left(\frac{b_1 + b_2}{2} \right) h$$

**Area of any Trapezoid**

As with triangles, the formula for the area for any trapezoid is a variation on the formula for the area of a right trapezoid.

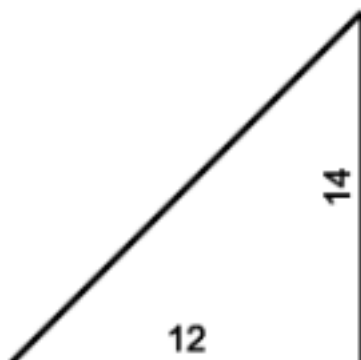
Draw a line that begins at one vertex, and intersects one parallel lines at a right angle. The area of the trapezoid is the average of the lengths of the two parallel sides, times the length of this connecting side.

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

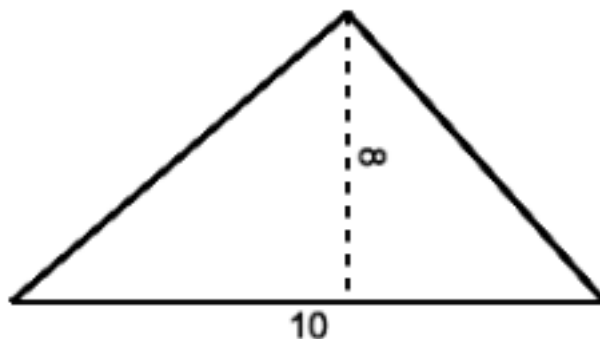


Find the area of each of the following shapes. Drawings are not to scale!

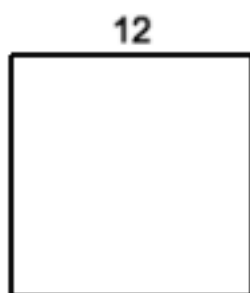
1.



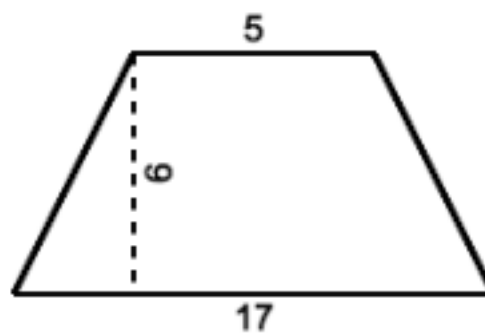
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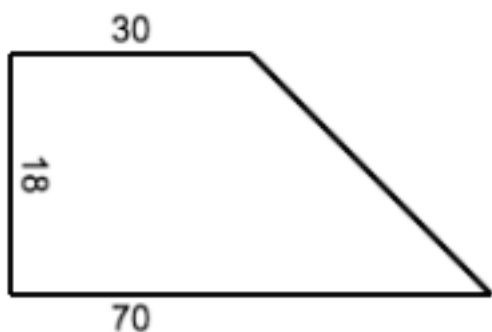
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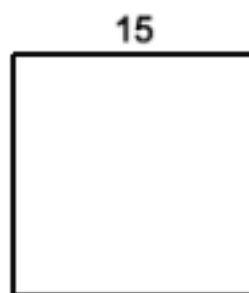
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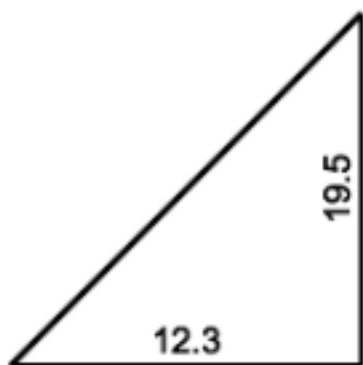
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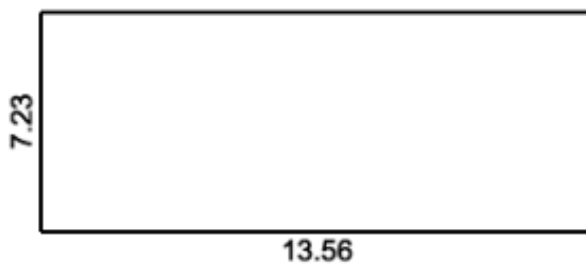
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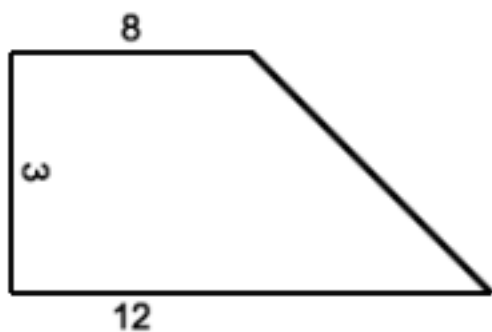
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8.



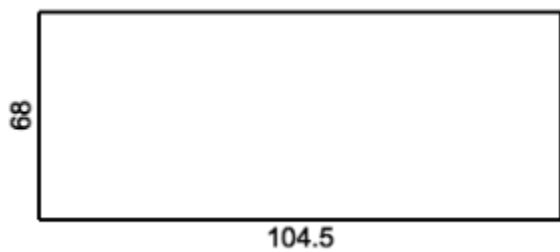
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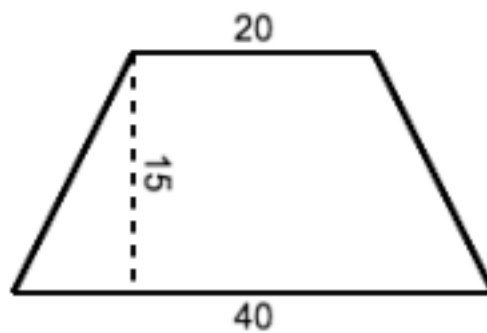
10.



11.



12.



Answers:

1. 84
2. 40
3. 144
4. 99
5. 900
6. 225
7. 239.85
8. 98.0
9. 30
10. 177.1
11. 7106 (or 7100, if rounded to 2 significant figures)
12. 450