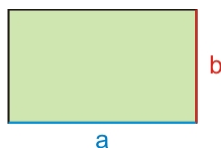


Review: Area of Polygons 1

1. Area of rectangle

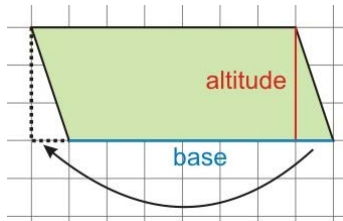


$$A = ab$$

The area is *side* \times *side*. We can denote the side lengths with a and b or with other letters.

- Remember to use square units for the area! If you measure the sides in millimeters, the area will be in square millimeters.

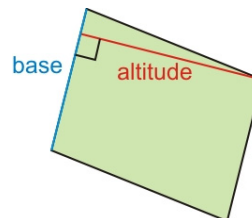
2. Area of parallelogram



$$A = bh$$

Any parallelogram can be transformed into a rectangle (see illustration) with the same area. That is why the area is *base* \times *altitude*. The letter b stands for base, and h for height/altitude.

Here, b is 3 units, h is 7 units, and the area = 21 square units.



The altitude is always perpendicular to the base, and is drawn from between the base and the opposite side.

Any side of the parallelogram can be chosen to be the base.

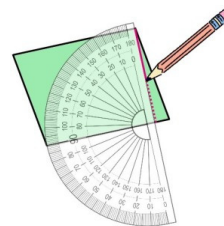
- The area of Reynolds' rectangular plot is 750 m^2 . If one side is 30 m, what is the other side?

- The area of a rectangular stamp is 6.6 cm^2 . If one side is 22 mm, what is the other side?

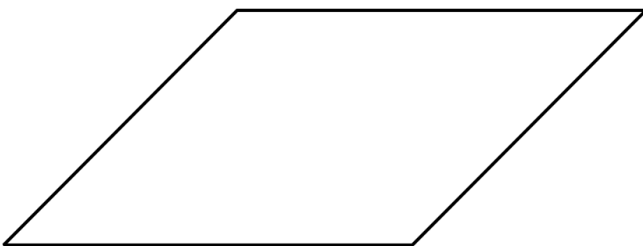
- Measure what you need, and calculate the area of the parallelograms in square centimeters, rounding to the nearest square centimeter.



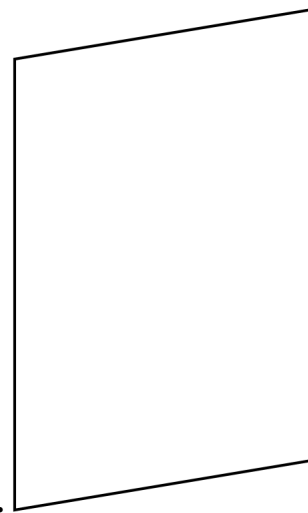
Use a protractor to draw the altitude so it is perpendicular to the base.

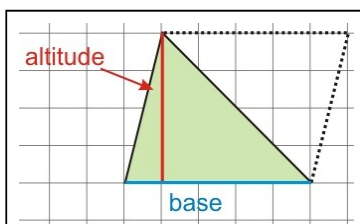


a.



b.





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

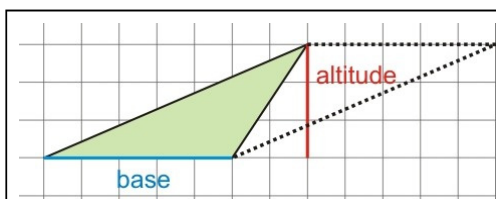
b is 5 units, h is 4 units,
 $A = 10$ square units

3. Area of triangle

Any triangle is exactly half of a certain parallelogram. The triangle and parallelogram share the same base and the same altitude. Therefore, the area of a triangle is half of the area of the corresponding parallelogram.

The altitude of the triangle is perpendicular to the base, and is drawn from the vertex that is opposite of the base.

The letter b stands for base, and h stands for height/altitude.



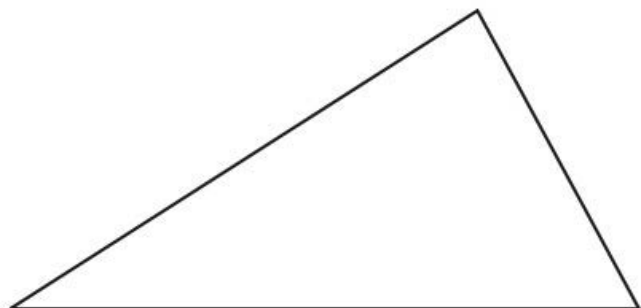
b is 5 units, h is 3 units,
 $A = 7.5$ square units

Sometimes the altitude of a triangle falls outside the triangle itself. It still needs to be drawn from the vertex, and perpendicular to the base.

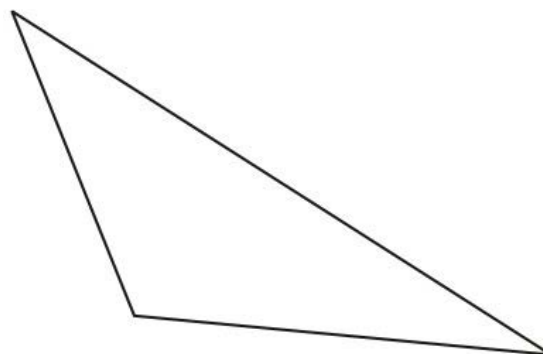
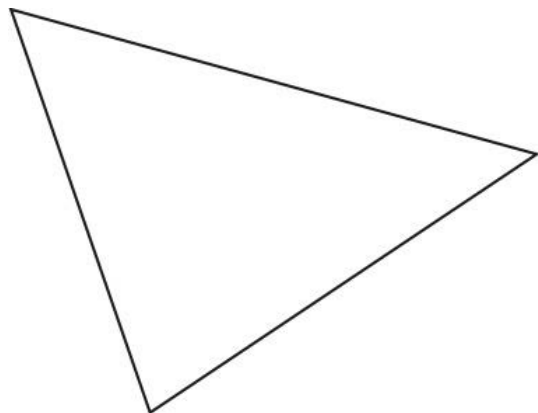
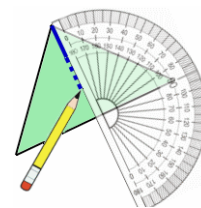
Again, you can choose which side of the triangle is the base. So, all triangles have three different altitude & base pairs.

For *right triangles*, it is often easiest to use the two sides that are perpendicular to each other as the base and the altitude.

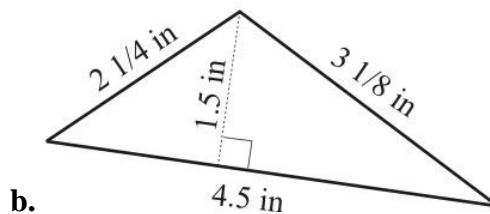
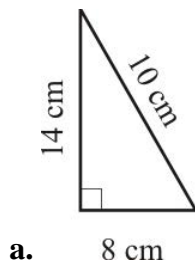
4. Draw an altitude to the triangles. Measure what you need, and calculate the area in square centimeters. Round to the nearest square centimeter.



Use a protractor to draw the altitude so it is perpendicular to the base.



5. Find the area of the triangles.



6. The sports team pennant is in the shape of an isosceles triangle, with a base of 14 in. and a height of 3 ft 2 in. Find its area in square inches.

7. Draw an isosceles triangle with a 40° top angle and two 5 cm sides. Then find its area.

8. Draw on the grid below:

- a. a right triangle with the area of 10 square units;
 - b. an obtuse triangle with the area of 15 square units.
- Hint:* Think what the lengths of the base and altitude should be.

