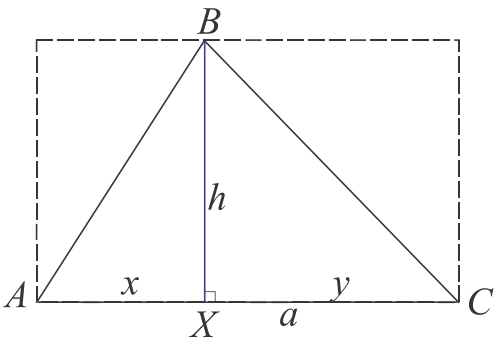
Math 4e. Classwork 21.

Area of a triangle.



$$S_{\Delta} = \frac{1}{2} h \times a$$

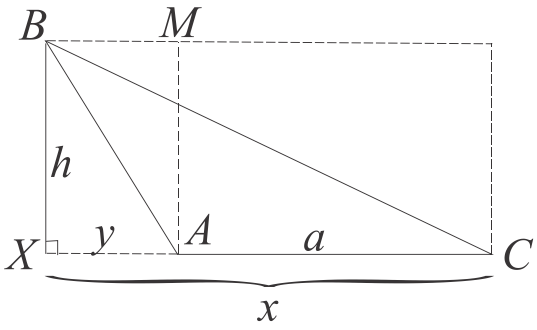
The area of a triangle is equal to half of the product of its altitude and the base, corresponding to this altitude.

For the acute triangle it is easy to see.

$$S_{sq} = h \times a = x \times h + y \times h$$

$$S_{\Delta ABX} = \frac{1}{2} h \times x, \qquad S_{\Delta XBC} = \frac{1}{2} h \times y, \qquad S_{\Delta ABC} = S_{\Delta ABX} + S_{\Delta XBC}$$

$$S_{\Delta ABC} = \frac{1}{2} h \times x + \frac{1}{2} h \times y = \frac{1}{2} h(x + y) = \frac{1}{2} h \times a$$

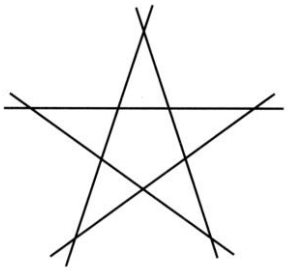


For an obtuse triangle it is not so obvious for the altitude drawn from the acute angle vertex.

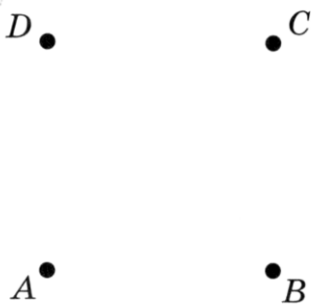
$$S_{\Delta XBC} = \frac{1}{2} h \times x, \qquad S_{\Delta XBA} = \frac{1}{2} h \times y$$

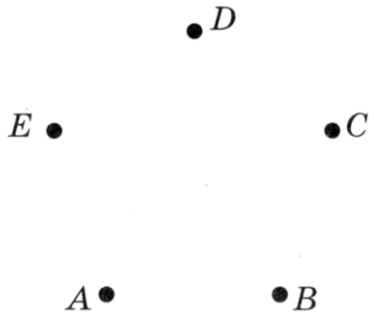
$$S_{\Delta ABC} = S_{\Delta XBC} - S_{\Delta XBA} = \frac{1}{2} h \times x - \frac{1}{2} h \times y = \frac{1}{2} h \times (x - y) = \frac{1}{2} h \times a$$

1. How many lines are on the picture?



2. How many lines can be drawn through 4 points? 5 points? N points? (Each line passes through two marked points)





3. How many points of intersection can 3 straight lines produce?

4. Draw 4 line so they have 4 pairwise intersections, 5 or 6.

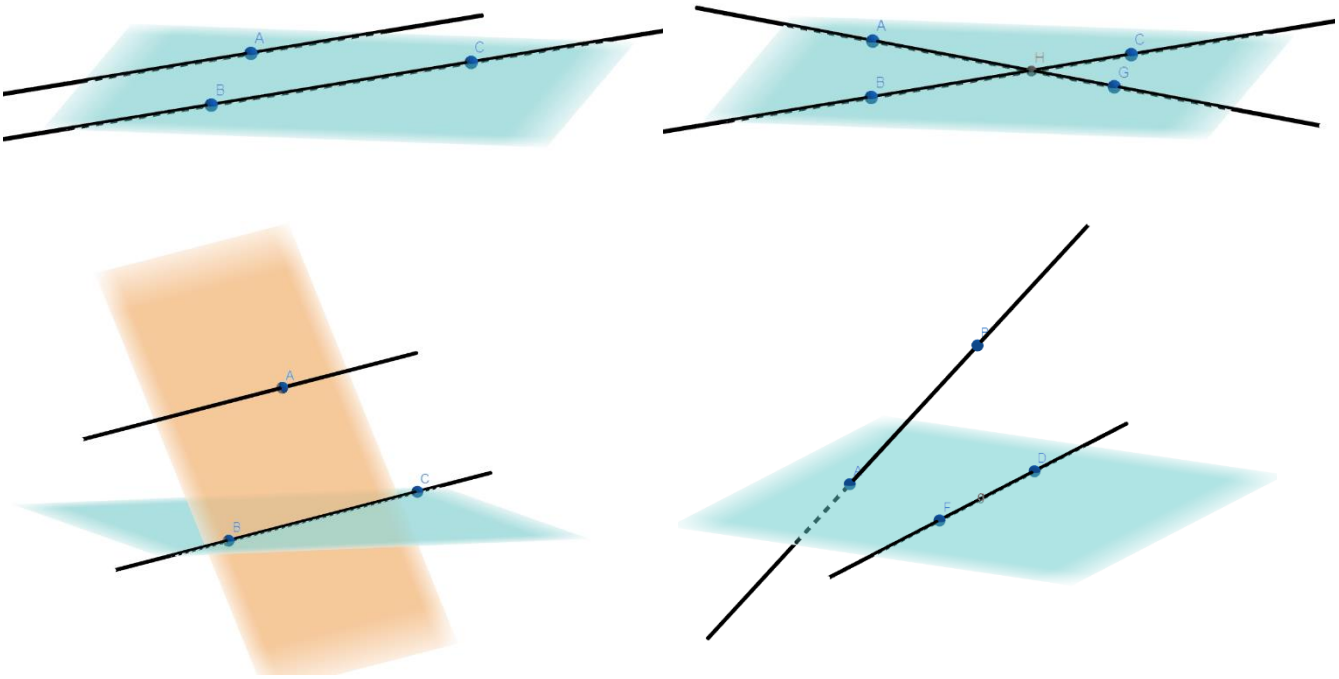
5. How many points of intersection can two non-parallel line produce?

   Three non-parallel lines? Four? Five? 10? 100?

6. Is it true that two straight lines are either parallel or intersect?

Lines in space that are not intersecting and not parallel are called skewed lines

If two line parallel or intersecting, a plane can de drown through these lines.



How many line you need to create a cube?