Exercises.

1. Construct two angles, the sides of one being 36, 48 and 50, and the sides of the other 54, 72, 75 millimetres. On the base of each construct a rectangle equal to it; and divide up the rectangles so as to show that the triangles are as $(36)^2$ to $(54)^2$.

2. Divide the triangles of the preceding question into smaller triangles, all equal to one another. Hence show that the original triangles are as $(48)^2$ to $(72)^2$.

3. Draw two straight lines which are to one another as these triangles.

4. Divide a line $3\frac{1}{2}$ in. in length into two segments, such that, when equilateral triangles are described on the segments, one triangle shall be four times the other.

Construct the equilateral triangles, and divide the greater into four triangles, each equal to the smaller.

5. Construct two triangles on bases of 45 and 75 millimetres, with angles adjacent to each base 70° and 50°. Divide the triangles into smaller ones, all equal to one another, showing that the areas of the triangles are as $(45)^2$ to $(75)^2$.

6. Draw a line AB of length 1 in., and produce it to C so that AB may be to BC as the areas of the two triangles in the preceding question.

7. Describe an irregular pentagon, and, after the manner of § 5, Ch. XX., construct another pentagon with linear dimensions half those of former. Divide each pentagon into three triangles by lines drawn from corresponding angles.

How are the sides and angles of corresponding triangles related? Test with bevel and dividers.

How many times is a triangle in the first pentagon greater than the corresponding triangle in the second?

How many times is one pentagon greater than the other?

8. ABC is any triangle, and in AB a point D is taken such that AD is one-quarter of AB. DE is drawn parallel to BC. What fractional part is ADE of the whole triangle? What ratio does ADE bear to the rest of ABC?