GEOMETRY.

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Construct and examine the following triangles, and see if you can supply an answer to the question:

- (1) Sides 20, 30, 40, and 40, 60, 80 millimetres.
- (2) Sides 1, 11, 13, and 11, 21, 25 inches.

(3) Sides 24, 36, 40, and 42, 63, 70 millimetres.

Exercises.

1. The sides of two triangles are 20, 30, 40, and 40, 60, 80 millimetres, respectively. Construct them, and, using the bevel, show that they are equiangular.

2. The sides of two triangles are 20, 30, 40 and 30, 45, 60 millimetres, respectively. Construct them, and show that they are equiangular.

3. The bases of two triangles are 35 and 60 millimetres, and the angles adjacent to each base are 75° and 70° . Construct the triangles, and show that corresponding sides are as 35:60.

4. Construct two triangles of different sizes with angles 35° , 45° and 100° . On a line AB lay off lines equal to the sides of one triangle; and on another line AC lay off lines equal to the sides of the other triangle. Let the ends of corresponding lengths on AB, AC be joined. What position do these joining lines occupy with respect to each other? Apply test. What is the inference?

5. The angles of two triangles are 60° , 75° and 45° . Construct the triangles, and, after the manner suggested in question 4, test the proportionality of the sides.

6. The angles of two triangles are 110°, 30° and 40°, and the sides opposite angle of 30° in each are 40 and 55 millimetres. Construct the triangles, and, after the manner suggested in question 4, test the proportionality of the sides.

7. The angles at the vertices of two triangles are both 36°. The sides adjacent to the vertex of one triangle are $1\frac{3}{4}$ in. and 2 in., and adjacent to the vertex of the other $2\frac{5}{8}$ in. and 3 in. Construct the triangles. Show by measurement that angles opposite corresponding sides are equal, and that the remaining sides are in ratio $1:1\frac{1}{2}$.