What conclusion do you draw as to the total number of degrees in the three angles of each of these triangles?

Can you construct a triangle with sides of 30, 50 and 90 millimetres, or with sides of 2, 3 and 6 inches? Attempt the construction.

What relation must exist between the given lengths, that a triangle may be constructed with sides of such lengths?

Exercises.

Teachers are advised to have their classes work but a few of the exercises at the close of each chapter. The time of pupils should be chiefly occupied in verifying the geometric truths reached in the text.

1. At a given point in a straight line construct an angle of 60°, using only compasses and ruler.

2. Construct an isosceles triangle, and produce the base both ways. What do you note as to the magnitudes of the exterior angles so formed?

3. Construct a triangle with sides 30, 50, 70 millimetres. With the bevel or protractor determine which is the greatest angle and which the least.

4. The angle at the vertex of an isosceles triangle is 75°, and each of the equal sides is 2 inches. Construct the triangle.

5. At A in the line AB construct the angle BAD of 40°, and at B the angle ABC of 120°. Produce AD, BC to meet. Measure the size of the third angle of this triangle. Which is the greatest side and which the least?

6. On one side of BC describe an equilateral triangle ABC, and on the other side of BC describe an isosceles triangle DBC. Join AD. Take a number of points E, F, G, . . . in AD. What do you note as to the lengths of EB and EC; of FB and FC; of GB and GC, . . . ?

7. Make the same construction as in the preceding question, but with the isosceles triangle on the same side of BC as the equilateral. Produce AD both ways. What again do you note as to the distances of any point in AD, or AD produced, from B and C?