CBSE Class 10 Maths Notes Chapter 11: These are the class 10 maths notes for the topic "Constructions." The revision of concepts for the CBSE Class 10 Board Exams is aided by these notes.

This article will go into detail on how to construct the line segment division, how to construct tringles using the scale factor, and how to construct tangents to a circle with two separate scenarios. Read the article below to find out more.
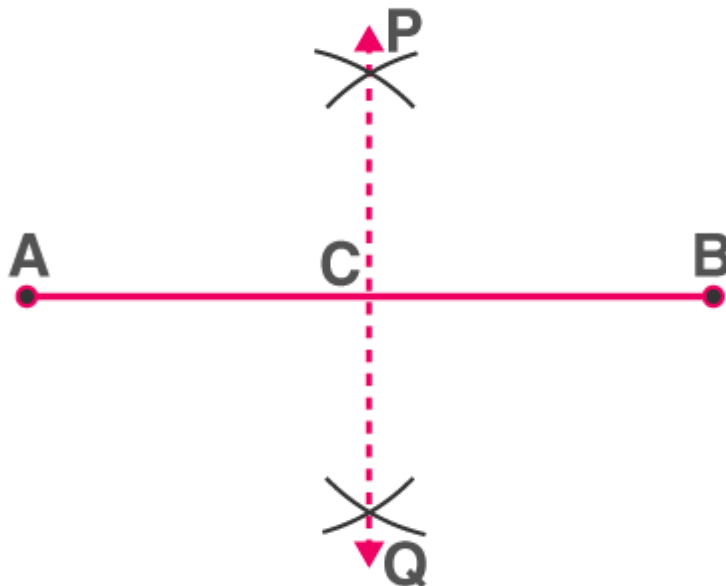
CBSE Class 10 Maths Notes Chapter 11

Dividing a Line Segment

Bisecting a Line Segment

Step 1: Draw arcs that are centred at both ends of the line segment and cross on either side, using a radius greater than half the length of the line segment.

Step 2: Connect the intersecting points. The line segment connecting the places of junction divides the line segment in half.

2) Given a line segment AB, divide it in the ratio **m:n**, where both m and n are positive integers.
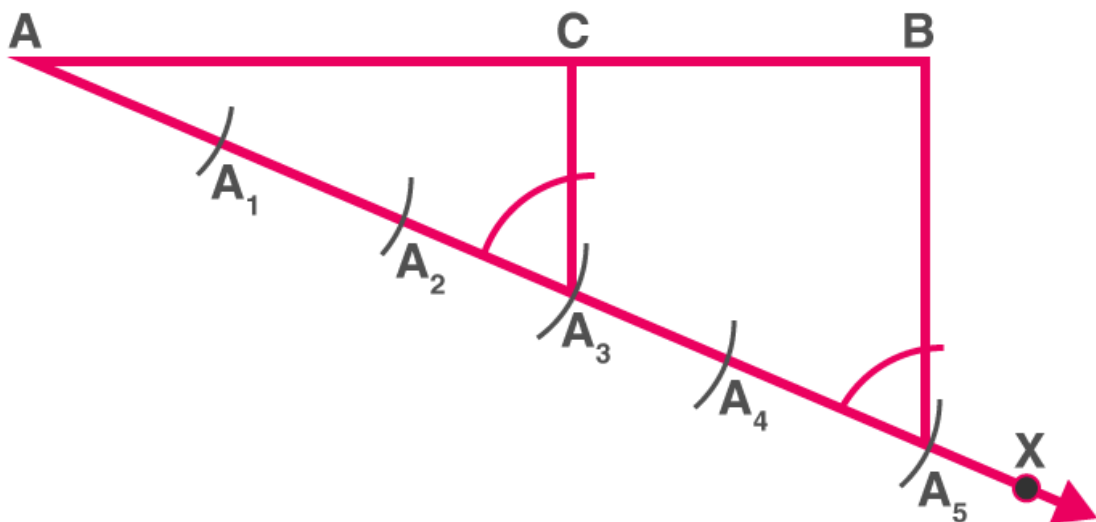
Suppose we want to divide AB in the ratio 3:2 (m=3, n=2)

Step 1: Draw any ray AX, making an acute angle with line segment AB.

Step 2: Locate 5 (= m + n) points A1,A2,A3,A4andA5 on AX such that AA1=A1A2=A2A3=A3A4=A4A5

Step 3: Join BA5. (A(m+n)=A5)

Step 4: Through point, A3(m=3), draw a line parallel to BA5 (by making an angle equal to $\angle AA5B$) at A3 intersecting AB at point C.
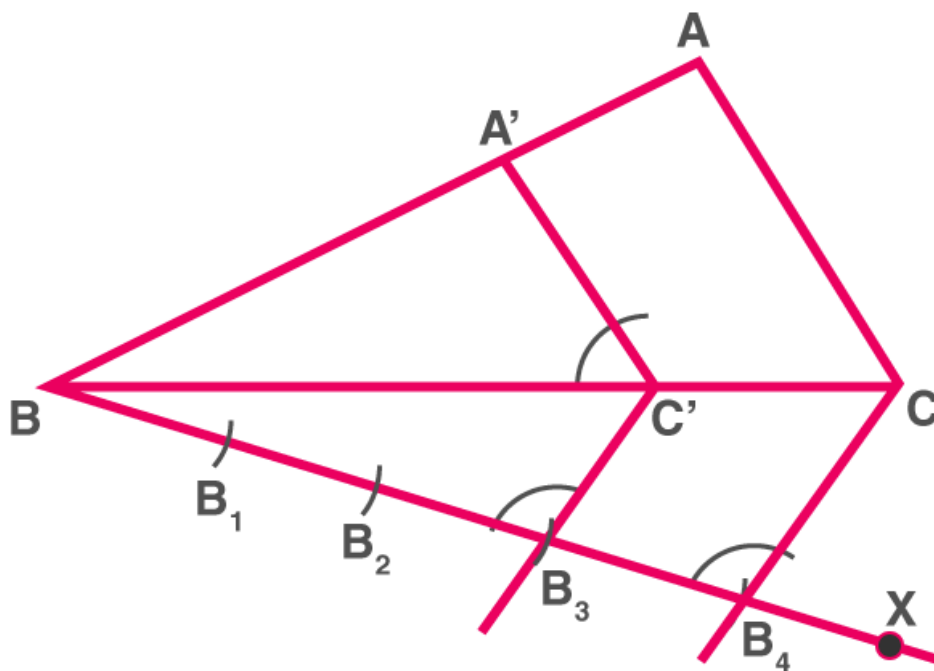
Then, AC: CB = 3: 2.

Constructing Similar Triangles

Constructing a Similar Triangle with a Scale Factor

Suppose we want to construct a triangle whose sides are 3/4 times the corresponding sides of a given triangle.

$BB_3/BB_4 = 3/4$

Steps of Construction:

Step 1: Draw any ray BX making an acute angle with side BC (on the side opposite to the vertex A).

Step 2: Mark 4 consecutive distances(since the denominator of the required ratio is 4) on BX as shown.

Step 3: Join B4C, as shown in the figure.

Step 4: Draw a line through B3 parallel to B4C to intersect BC at C'.

Step 5: Draw a line through C' parallel to AC to intersect AB at A'. ΔA'BC′ is the required triangle.

The same procedure can be followed when the scale factor > 1.

When building a triangle that resembles a given triangle using a particular scale factor, there are two scenarios. They are as follows:

Case 1: The scale factor is less than 1 and the triangle that needs to be built is less than the triangle that is provided.

Case 2: The scale factor is bigger than 1 and the triangle that needs to be built is larger than the triangle that is provided.
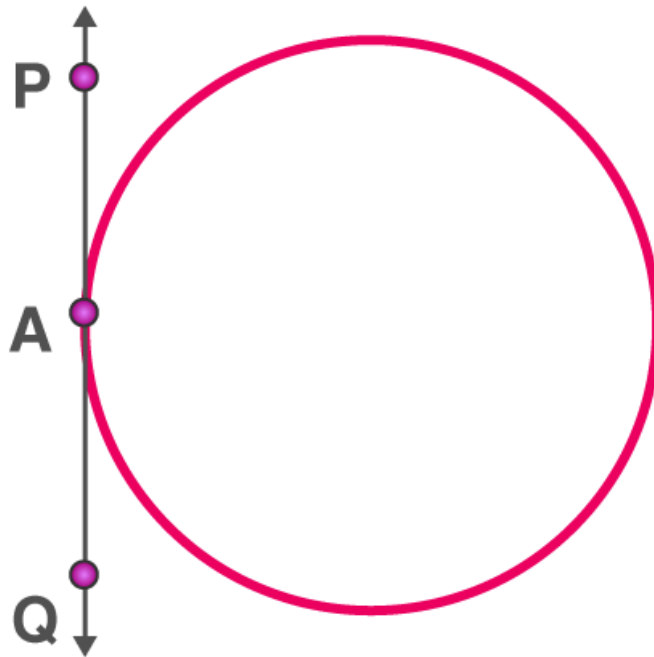
In this case, the scale factor refers to the ratio between the sides of the given triangle and the sides that need to be produced for the triangle.

Drawing Tangents to a Circle
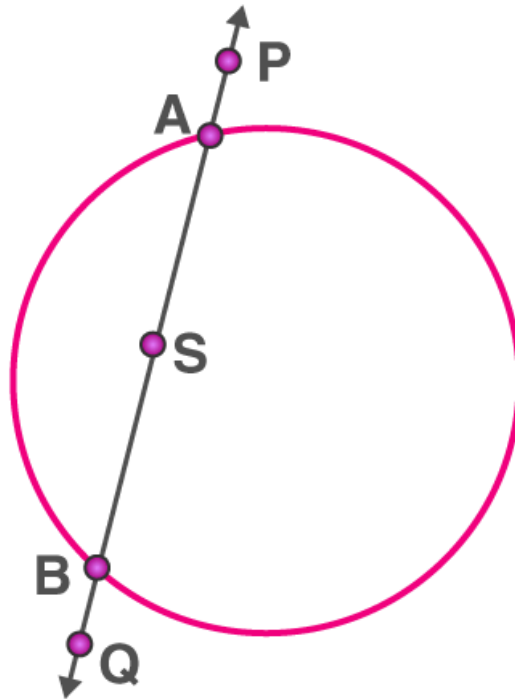
Tangents: Definition

A **tangent** to a circle is a line which **touches the circle at exactly one point**.

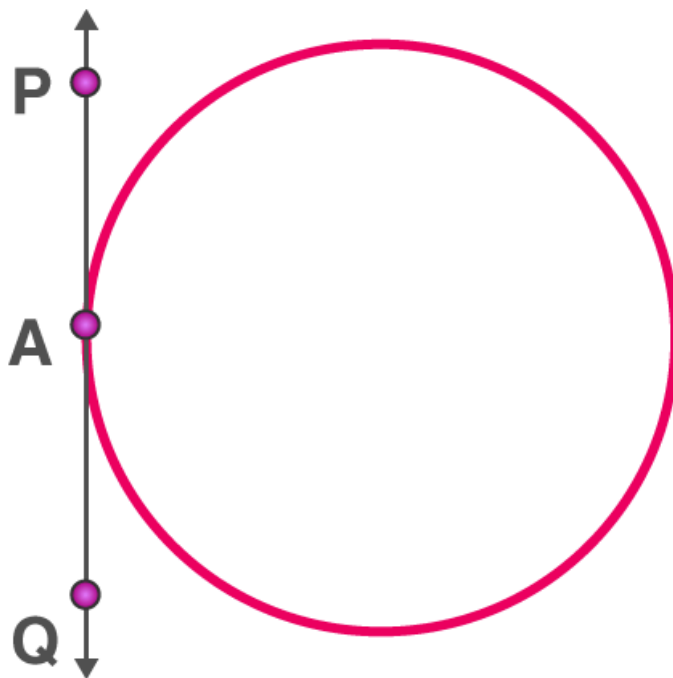For every point on the circle, there is a unique tangent passing through it.

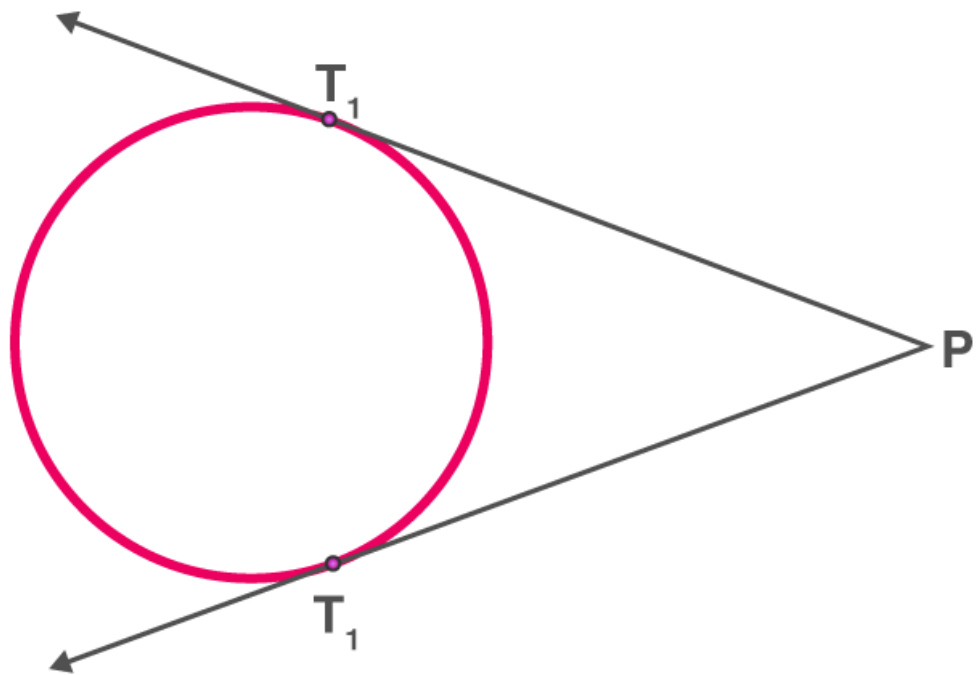## Number of tangents to a circle from a given point

i) If the point is in an **interior region of the circle**, any line through that point will be a secant. So, in this case, there is no tangent to the circle.
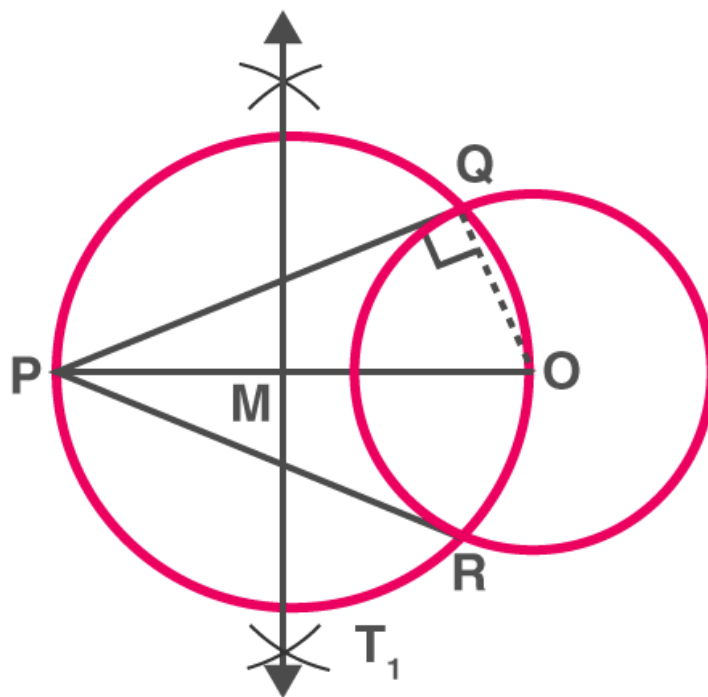
ii) When the point lies on the circle, there is accurately only one tangent to a circle.

iii) When the point lies outside of the circle, there are **exactly two tangents** to a circle.

Drawing tangents to a circle from a point outside the circle

To build the tangents from a location outside of a circle.

Let O be the centre of the circle, and P be the exterior point from which the tangents are to be drawn.

Step 1: Connect and divide the PO. Let M be PO's midpoint.

Step 2: Mark the circle's centre (M) and radius (MO or MP). At locations Q and R, let it cross the specified circle.

Step 3: Include PR and PQ

Step 4: The necessary tangents to the circle are PR and QQ.

Benefits of CBSE Class 10 Maths Notes Chapter 11

To obtain a more straightforward understanding of the ideas and principles involved in the creation of geometric forms, these notes for Class 10 Maths Constructions are perfect.

Students will be able to concentrate on the key ideas and understand them more quickly. These notes will also serve as a guide for them as they practise and become proficient in geometric construction techniques.