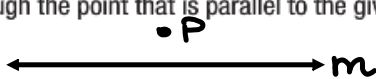


In section 3-5, we talked a bit about the Parallel Postulate:

**Postulate 3.5** Parallel Postulate

If given a line and a point not on the line, then there exists exactly one line through the point that is parallel to the given line.

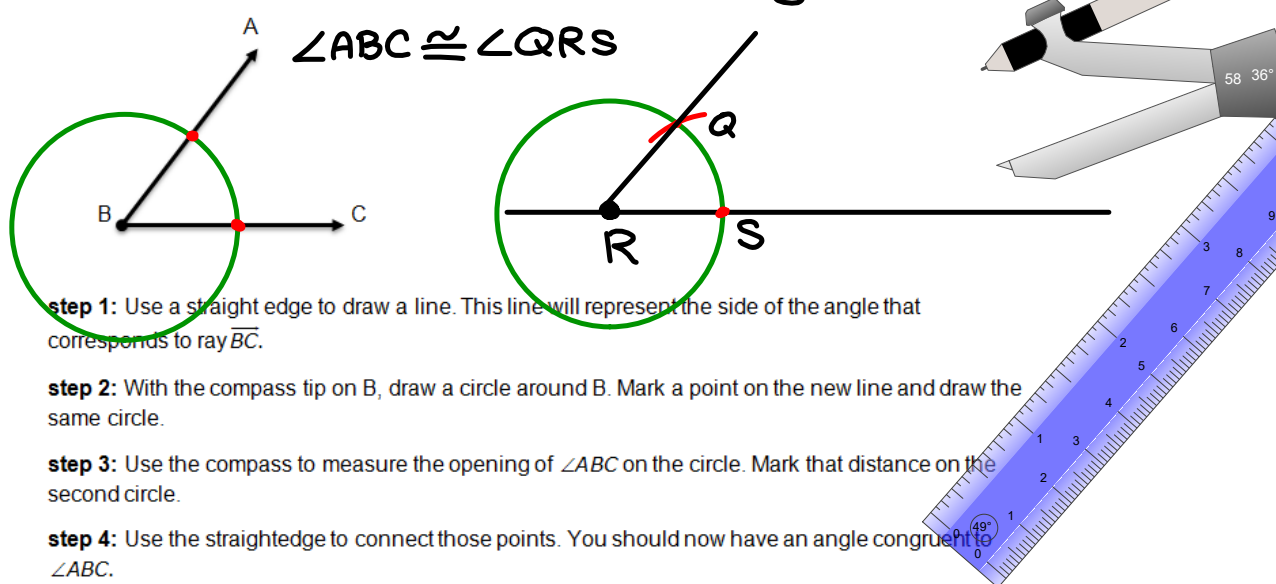
Given:



This postulate implies that if we are given a line and a point that is not on that line, then we may construct exactly one line through that point that is parallel to the given line. Learning how to do this is the purpose of today's lesson.

Before we talk about this new construction, we should review constructing congruent angles.

Example 1: Construct an angle congruent to  $\angle ABC$  below. (copy  $\angle ABC$ )



Now, **WHY** are we practicing constructing congruent angles? We are going to be constructing parallel lines through a point not on the line by constructing congruent CORRESPONDING ANGLES, because if two lines are cut by a transversal forming congruent corresponding angles, then the two lines are parallel (*Converse of Corresponding Angles Postulate*).

<https://www.mathopenref.com/constparallel.html>



The Converse of the Corresponding Angles Postulate can be used to construct parallel lines.

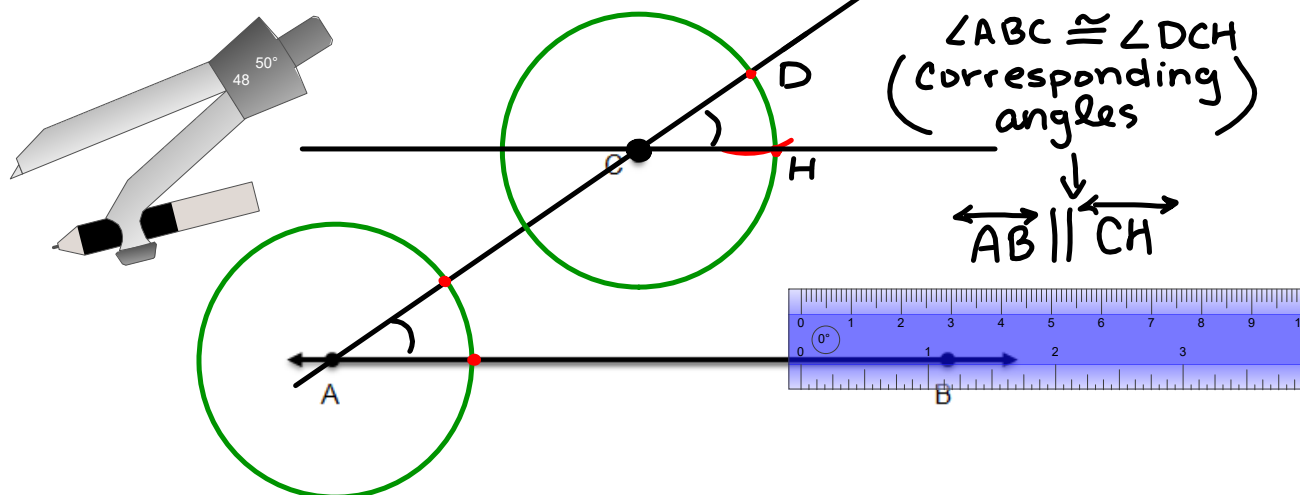
( $\overleftrightarrow{CA}$  is the transversal)

<b>Construction</b> Parallel Line Through a Point Not on the Line		
<p><b>Step 1</b> Use a straightedge to draw <math>\overleftrightarrow{AB}</math>. Draw a point <math>C</math> that is not on <math>\overleftrightarrow{AB}</math>. Draw <math>\overleftrightarrow{CA}</math>.</p>	<p><b>Step 2</b> Copy <math>\angle CAB</math> so that <math>C</math> is the vertex of the new angle. Label the intersection points <math>D</math> and <math>E</math>.</p>	<p><b>Step 3</b> Draw <math>CD</math>. Because <math>\angle ECD \cong \angle CAB</math> by construction and they are corresponding angles, <math>\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}</math>.</p>

Let's try this:

Example 2: Construct a line parallel to line AB through point C.

- ① draw transversal  $\overleftrightarrow{CA}$ .
- ② copy  $\angle CAB$  with vertex at C.



Example 3: Construct a line through A that is parallel to  $\overline{BC}$ .

- ① Extend transversal  $\overline{BA}$ .
- ② copy  $\angle B$  at vertex A.

$\overline{BC} \parallel \overline{AJ}$

