


# Unit 7H: Parallel Lines Study Guide

Name: \_\_\_\_\_ Per: \_\_\_\_\_

SHOW YOUR WORK FOR FULL CREDIT. NO WORK, NO CREDIT. NO WORK IN PEN.

Assn	Learning Objective	A Day	B Day	Done
7SG	Parallel Lines Study Guide			
7.1	Angles: Measures and Constructions	Nov 20	Nov 26	
7.2	Construction of Parallel Lines	Nov 27	Nov 28	
7.3	If, then, and more parallel lines	Nov 29	Nov 30	
7R	Review of Unit 7	Dec 3	Dec 4	
	Unit 7 EMT	Dec 5	Dec 6	
	Term Final Review	Dec 7	Dec 10	
	Term Final	Dec 11	Dec 12	

Targets	Sample	Help	Not Bad	Master
Copy an angle	Using a compass and straightedge copy the following angle: 			
Construct Parallel Lines with Congruent Angles	Given a line segment and point, not on the line, construct a parallel line using a compass and straight edge. Explain how you know the lines are parallel.			
Understand congruent/supplementary angle relationships	Give an example of Alternate Interior Angles, Same Side Exterior and Corresponding Angles and state if congruent or supplementary.			
Proving angle relationships with equations	If the measure of angle $a = 4 + 2p$ and $b = 8p - 14$ , show that $a$ and $b$ are corresponding angles of parallel lines.			

## Vocabulary

Parallel: \_\_\_\_\_

Perpendicular: \_\_\_\_\_

Transversal: \_\_\_\_\_

Arc: \_\_\_\_\_

Compass: \_\_\_\_\_

Congruent: \_\_\_\_\_

Similar: \_\_\_\_\_

Complementary: \_\_\_\_\_

Supplementary: \_\_\_\_\_

## Conditional Statements (If-Then Statements)

If {hypothesis}, then {conclusion}.

Conditional statements are in *if-then* form. There are two parts to an *if-then* statement: a **hypothesis** and a **conclusion**. The part of the sentence that follows *if* is the hypothesis and the part of the sentence that follow *then* is the conclusion.

Determine which lines, if any, are parallel.

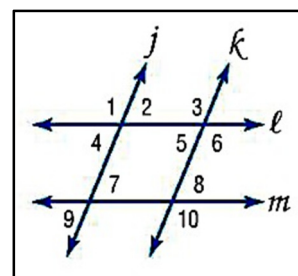
If  $m\angle 6 \cong m\angle 3$ , then \_\_\_\_\_

If  $m\angle 4 \cong m\angle 9$ , then \_\_\_\_\_

If  $m\angle 4 \cong m\angle 3$ , then \_\_\_\_\_

If  $\angle 5 \cong \angle 8$ , then \_\_\_\_\_

If  $\angle 4 + \angle 6 \cong 180^\circ$ , then \_\_\_\_\_

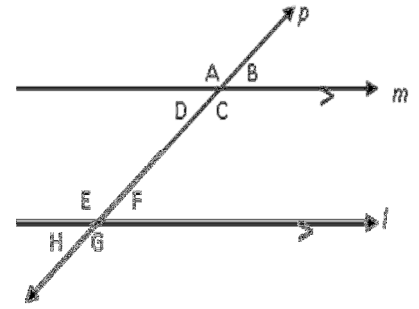


## Parallel Lines Cut by a Transversal

When parallel lines are cut by a line, the crossing line is called the \_\_\_\_\_. Below, **line  $l \parallel m$** .

**Fill in the angle** for the given relationship. **Circle** whether they are congruent or supplementary.

- Vertical Angles:  $\angle A$  & \_\_\_\_\_ Congruent/Supplementary  
 Corresponding Angles:  $\angle D$  & \_\_\_\_\_ Congruent/Supplementary  
 Same-Side Interior Angles:  $\angle C$  & \_\_\_\_\_ Congruent/Supplementary  
 Same-Side Exterior Angles:  $\angle H$  & \_\_\_\_\_ Congruent/Supplementary  
 Alternate Interior Angles:  $\angle D$  & \_\_\_\_\_ Congruent/Supplementary  
 Alternate Exterior Angles:  $\angle H$  & \_\_\_\_\_ Congruent/Supplementary  
 $\angle A$  and  $\angle G$  are \_\_\_\_\_ Angles  
 $\angle H$  and  $\angle D$  are \_\_\_\_\_ Angles  
 $\angle D$  and  $\angle E$  are \_\_\_\_\_ Angles



If  $\angle E$  and  $\angle F$  are a \_\_\_\_\_, and  $\angle F = (s - 2)^\circ$  and  $\angle E = (3s + 2)^\circ$ .

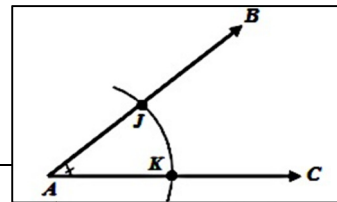
Solve for  $s$ . \_\_\_\_\_ What is the measure of  $\angle E$ ? \_\_\_\_\_ What is the measure of  $\angle F$ ? \_\_\_\_\_

(Since a linear pair equals  $180^\circ$ , solve for  $s$  by adding the two and setting them equal to 180.)

## Copy an Angle:

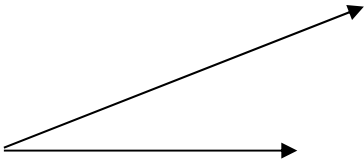
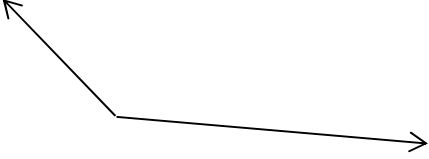
You can see a live animation of How to Copy Angle BAC at:

<http://www.mathopenref.com/constcopyangle.html>



Step 1: Make a point $P$ that will be the vertex of the new _____.	
Step 2: From $P$ , draw a ray $PQ$ . This will become one _____ of the new angle.	
Step 3: Place the compass on point $A$ and set it to any _____.	
Step 4: Draw an _____ across both sides of the angle—mark the points $J$ and $K$ as shown. $\overline{AJ}$ and $\overline{AK}$ are _____ of the same circle.	
Step 5: Without changing the width of the _____, place its point on $P$ and draw a congruent _____, creating point $M$ as shown right.	
Step 6: Measure the _____ from $K$ to $J$ .	
Step 7: Without changing the compass width, measure the same distance from point $M$ across the _____. (This makes three sides of congruent triangles.)	
Step 8: Draw a ray from $P$ through $L$ —exact length is not important since you are only copying one _____.	
Done: The angle is congruent to the given angle $\angle BAC$	

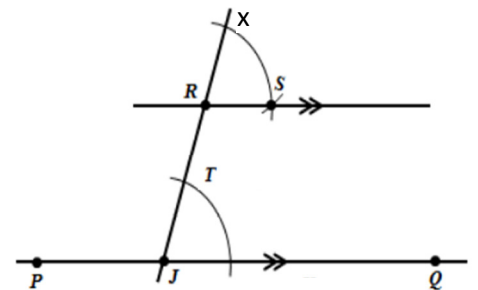
Copy the angles in the left column below in the column on the right. Show all construction marks.

<p>Angle A</p> 	<p>Copy Angle A</p>
<p>Angle B</p> 	<p>Copy Angle B</p>
<p>Angle A + Angle B</p>	<p>Mirror Image of Angle A</p>

**Constructing a Parallel Line Through a Point. (Parallel to line PQ, through point R)**

Live animation at <http://www.mathopenref.com/constparallel.html>

- Step 1: Draw a segment through point R that intersects the line PQ at any angle. Mark point J where it \_\_\_\_\_ the line PQ.
- Step 2: Set the width of the \_\_\_\_\_ to any length **between** point \_\_\_\_\_ and J. Draw an \_\_\_\_\_ across lines  $\overline{RJ}$  and  $\overline{PQ}$  at J.
- Step 3: Without changing the compass \_\_\_\_\_, draw a congruent \_\_\_\_\_ at point R in the same orientation as the arc in Step 2.
- Step 4: Measure the distance from X to S.
- Step 5: Copy that same distance from r to the lower arc intersection.



➤ Construct a line **parallel to the line** below that **passes through the given point**. Show All Markings.



How do you know that the lines are parallel?