

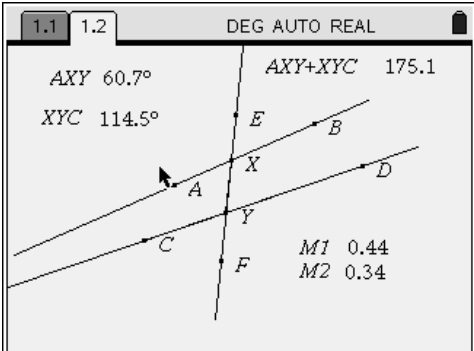
Teacher Notes

G.G.35 Determine if two lines cut by a transversal are parallel, based on the measure of given pairs of angles formed by the transversal and the lines.

Lesson Launcher Objectives:

- 1) Identifying interior angle pairs on the same side of the transversal.
- 2) Discovering when lines are parallel by investigating the measures of interior angle pairs on the same side of the transversal.

Procedure:

<p>The student opens the .tns document INTSS</p>  <p>1.1 1.2 DEG AUTO REAL</p> <p>$\angle AXY$ 60.7° $\angle AXY + \angle XYC$ 175.1</p> <p>$\angle XYC$ 114.5°</p> <p>$M1$ 0.44 $M2$ 0.34</p>	<p>As the student explores the figure by moving various points they will be able to conclude that if the interior angles on the same side of the transversal sum to 180 degrees then the lines are parallel.</p>
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Investigating $\angle AXY$ and $\angle XYC$:

1. True or False:

- A) $\angle AXY$ and $\angle XYC$ are exterior angles. false
 - B) $\angle AXY$ and $\angle XYC$ are interior angles. true
 - C) $\angle AXY$ and $\angle XYC$ are adjacent angles. false
 - D) $\angle AXY$ and $\angle XYC$ are on opposite sides of transversal \overline{EF} . false
 - E) $\angle AXY$ and $\angle XYC$ are on the same side of transversal \overline{EF} . true
2. $\angle AXY$ and $\angle XYC$ are B) interior angles on the same side of the transversal
- A) alternate exterior angles
 - B) interior angles on the same side of the transversal
 - C) corresponding angles
 - D) alternate interior angles

SELECT, GRAB AND MOVE **point C**

3. What changes? **The measures of the angles, the measures of the slopes, relationship of lines.**
4. What remains the same ? **varied answers: angles stay in same position. Still two lines and a transversal etc.**

SELECT GRAB AND DRAG **points D, E, F**

5. What changes? **The measures of the angles, the measures of the slopes, relationship of lines.**
6. What remains the same ? **varied answers: angles stay in same position. Still two lines and a transversal etc.**
7. From your observations what seems to be true about \overline{AB} and \overline{CD} when $m\angle AXY + m\angle XYC = 180^\circ$? **these lines are parallel**
8. From your observations what seems to be true about \overline{AB} and \overline{CD} when $M1 = M2$? **these lines are parallel**

Fill in the blank:

If two lines are cut by a transversal and the interior angles on the same side of the transversal are supplementary then the lines are **parallel**.

	<p>Discovering the converse: If two parallel lines are cut by a transversal then the interior angles on the same side of the transversal are supplementary.</p>
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Investigating $\angle AXY$ and $\angle XYC$:

1. True or False:

- F) $\angle AXY$ and $\angle XYC$ are exterior angles. false
- G) $\angle AXY$ and $\angle XYC$ are interior angles. true
- H) $\angle AXY$ and $\angle XYC$ are adjacent angles. false
- I) $\angle AXY$ and $\angle XYC$ are on opposite sides of transversal \overline{EF} . false
- J) $\angle AXY$ and $\angle XYC$ are on the same side of transversal \overline{EF} . true

2. $\angle AXY$ and $\angle XYC$ are B) interior angles on the same side of the transversal

- A) alternate exterior angles
- B) interior angles on the same side of the transversal
- C) corresponding angles
- D) alternate interior angles

SELECT, GRAB AND MOVE **point C**

9. What changes? The measures of the angles and the measures of the slopes

10. What remains the same ? the sum of $\angle AXY$ and $\angle XYC$, the lines remain parallel

SELECT GRAB AND DRAG **points D, E, F**

11. What changes? The measures of the angles and the measures of the slopes

12. What remains the same ? the sum of $\angle AXY$ and $\angle XYC$, the lines remain parallel

13. From your observations what seems to be true about \overline{AB} and \overline{CD} when

$m\angle AXY + m\angle XYC = 180^\circ$? they are parallel

14. From your observations what seems to be true about \overline{AB} and \overline{CD}

when $M1 = M2$? they are parallel

Fill in the blank:

If two parallel lines are cut by a transversal then the interior angles on the same side of the transversal are supplementary.