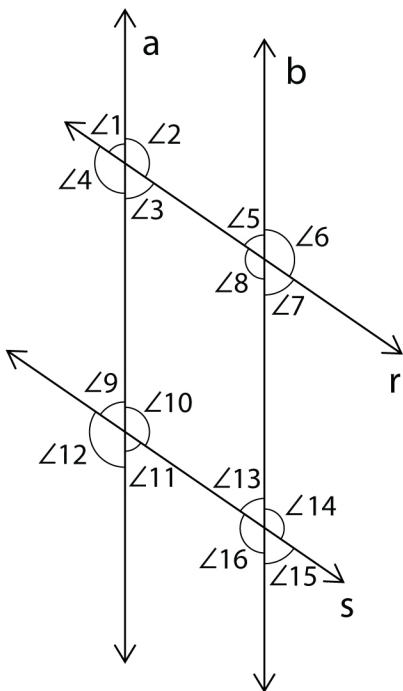


Proving Lines Parallel Worksheet

Read the following theorems carefully:

- 1 If two lines are cut by a transversal such that the corresponding angles are equal, then the lines are parallel.
- 2 If two lines are cut by a transversal such that the alternate interior angles are equal, then the lines are parallel.
- 3 If two lines are cut by a transversal such that the alternate exterior angles are equal, then the lines are parallel.
- 4 If two lines are cut by a transversal such that the co-interior angles are supplementary, then the lines are parallel.

Use the above chart and complete the table below.

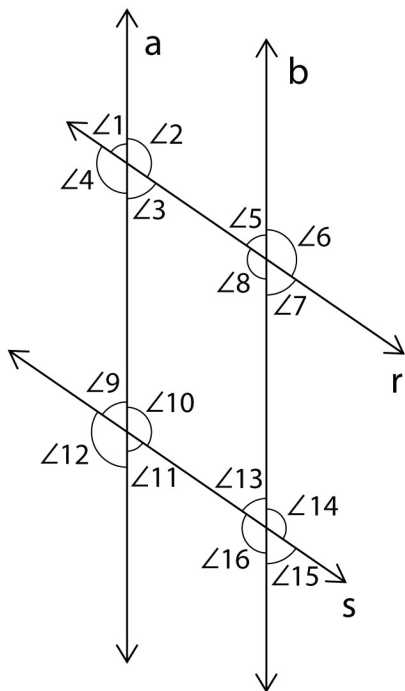


Relations between Angles	Name the Transversal and Parallel Lines (or write 'none')	Reason (write the appropriate theorem number)
$m\angle 7 + m\angle 14 = 180^\circ$	line b, r s	Theorem ④
$\angle 12 = \angle 14$		
$\angle 3 = \angle 11$		
$m\angle 8 + m\angle 10 = 180^\circ$		
$\angle 5 = \angle 15$		
$\angle 7 = \angle 10$		
$\angle 4 = \angle 10$		
$m\angle 3 + m\angle 8 = 180^\circ$		

Proving Lines Parallel Worksheet

Answers

- 1 If two lines are cut by a transversal such that the corresponding angles are equal, then the lines are parallel.
- 2 If two lines are cut by a transversal such that the alternate interior angles are equal, then the lines are parallel.
- 3 If two lines are cut by a transversal such that the alternate exterior angles are equal, then the lines are parallel.
- 4 If two lines are cut by a transversal such that the co-interior angles are supplementary, then the lines are parallel.



Relations between Angles	Name the Transversal and Parallel Lines (or write 'none')	Reason (write the appropriate theorem number)
$m\angle 7 + m\angle 14 = 180^\circ$	line b, $r \parallel s$	Theorem ④
$\angle 12 = \angle 14$	line s, $a \parallel b$	Theorem ③
$\angle 3 = \angle 11$	line a, $r \parallel s$	Theorem ①
$m\angle 8 + m\angle 10 = 180^\circ$	none	—
$\angle 5 = \angle 15$	line b, $r \parallel s$	Theorem ③
$\angle 7 = \angle 10$	none	—
$\angle 4 = \angle 10$	line a, $r \parallel s$	Theorem ②
$m\angle 3 + m\angle 8 = 180^\circ$	line r, $a \parallel b$	Theorem ④