

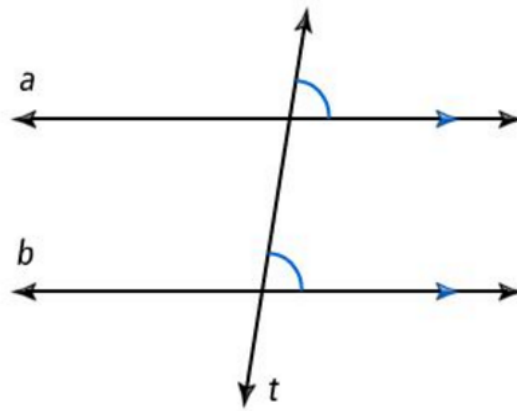
7-2 Reasoning and Parallel Lines

Key Concept:

Corresponding Angles and Parallel Lines-

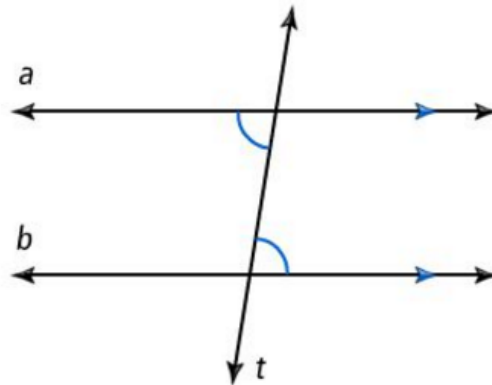
If the **corresponding angles** formed by two lines and a transversal are congruent, then the lines are parallel

****Transversal-** a line that intersect two or more lines at different points



Alternate Interior Angles and Parallel Lines-

If the **alternate interior angles** formed by two lines and a transversal are congruent, then the lines are parallel.

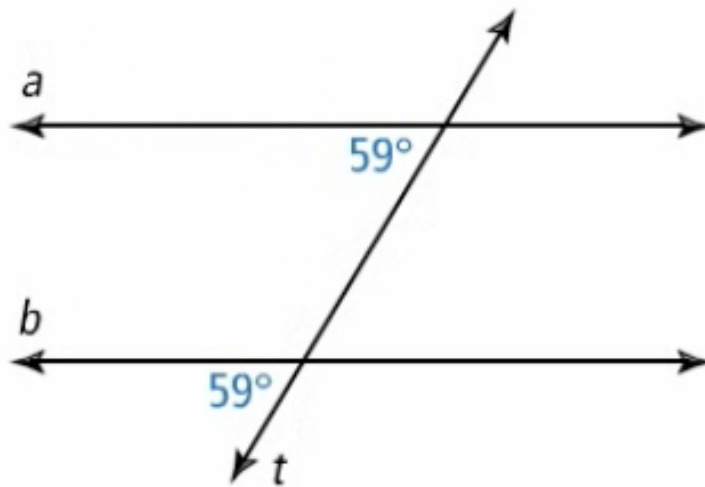


Part One: Parallel Lines

Example:

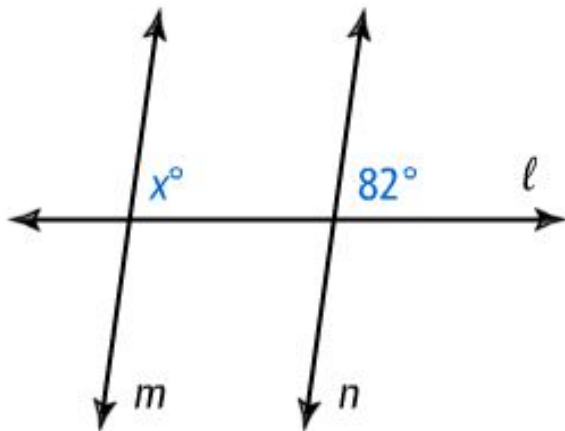
The symbol \parallel means "is parallel to." If line m is parallel to line n , you write $m \parallel n$.

Can you conclude that $a \parallel b$? Justify your reasoning.



Your Turn:

For which value of x is line m parallel to line n ?



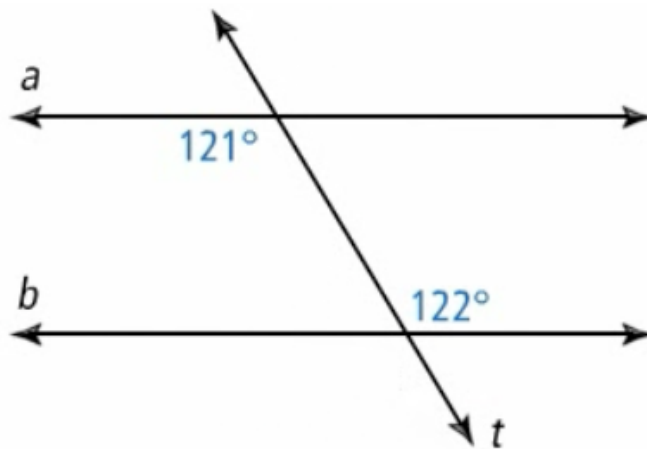
- A. 8
- B. 82
- C. 98
- D. 108

Part Two: Deductive Reasoning

The reasoning that you use to decide whether two lines are parallel based on knowing whether corresponding angles or alternate interior angles are congruent is called deductive reasoning. **Deductive reasoning** is a process of reasoning logically from given facts to a conclusion.

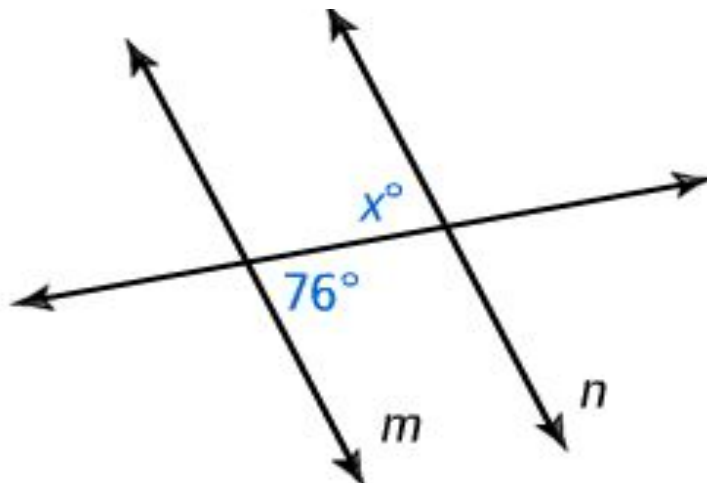
Example:

Can you conclude that a is parallel to b . Justify your reasoning.



Your Turn:

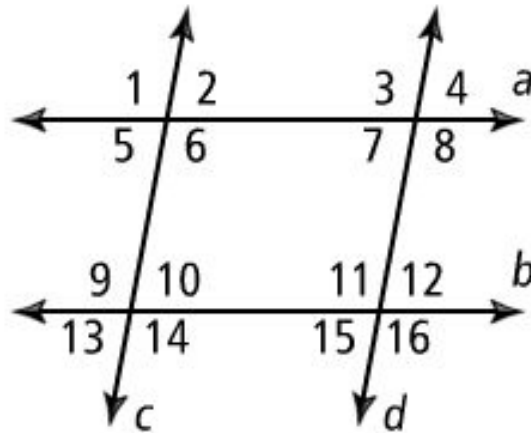
For which value of x is line m parallel to line n ?



Part Three: Congruence Statements

Example:

Which congruence statements justify $a \parallel b$ or $c \parallel d$?



$$\angle 9 \cong \angle 11$$

$$\angle 2 \cong \angle 10$$

$$\angle 3 \cong \angle 6$$

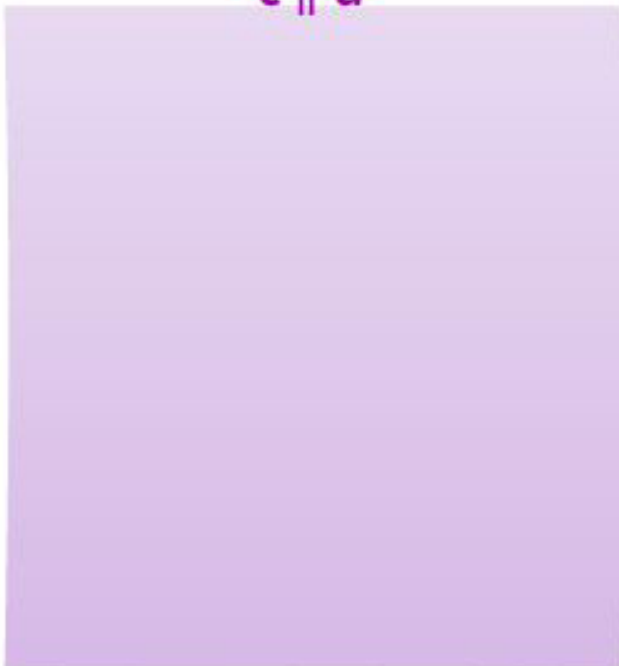
$$\angle 10 \cong \angle 15$$

$c \parallel d$

$$\angle 7 \cong \angle 12$$

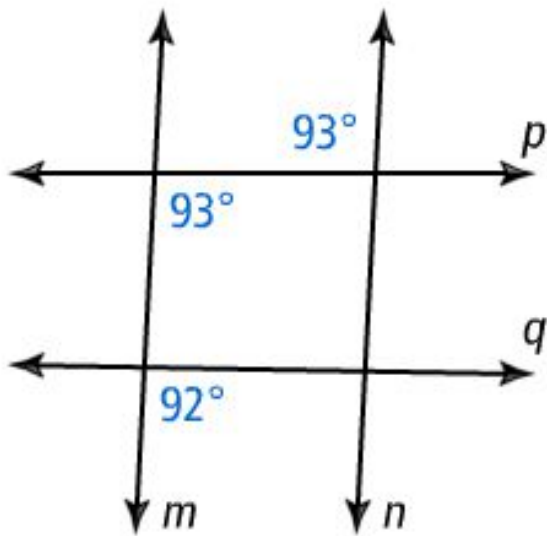
$$\angle 4 \cong \angle 12$$

$a \parallel b$



Your Turn:

Which lines, if any, are parallel?



- A. $m \parallel n$
- B. $p \parallel q$
- C. $m \parallel n$ and $p \parallel q$
- D. no parallel lines