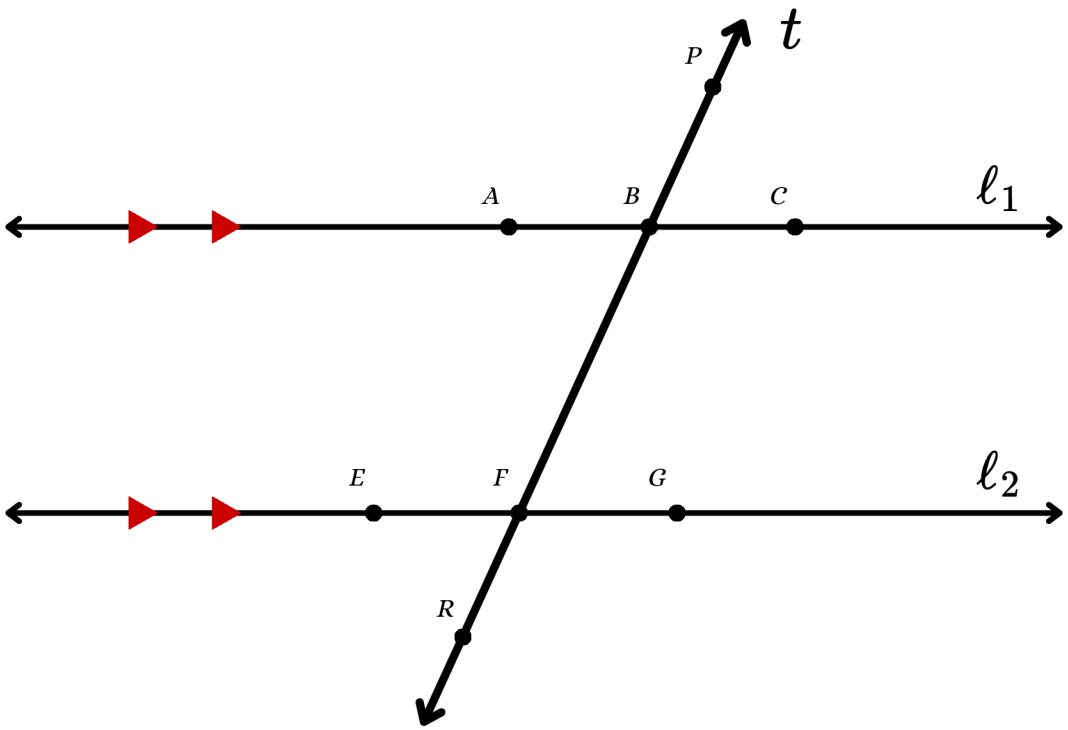
Angle Relationships

Parallel Lines and a Transversal



Vertical Angles

(Congruent)

$\angle ABP$ and $\angle CBF$
$\angle PBC$ and $\angle ABF$

$\angle EFB$ and $\angle GFR$
$\angle BFG$ and $\angle EFR$

Adjacent Angles

(Supplementary)

$\angle ABP$ and $\angle PBC$
$\angle PBC$ and $\angle CBF$
$\angle ABP$ and $\angle ABF$
$\angle ABF$ and $\angle CBF$

$\angle EFB$ and $\angle BFG$
$\angle BFG$ and $\angle GFR$
$\angle BFE$ and $\angle EFR$
$\angle EFR$ and $\angle GFR$

Same-Side Interior Angles

(Supplementary)

$\angle ABF$ and $\angle BFE$
$\angle CBF$ and $\angle BFG$

Alternate Interior Angles

(Congruent)

$\angle ABF$ and $\angle BFG$
$\angle CBF$ and $\angle BFE$

Alternate Exterior Angles

(Congruent)

$\angle ABP$ and $\angle GFR$
$\angle PBC$ and $\angle EFR$

Corresponding Angles

(Congruent)

$\angle ABP$ and $\angle EFB$
$\angle PBC$ and $\angle BFG$
$\angle ABF$ and $\angle EFR$
$\angle CBF$ and $\angle GFR$

Definitions: Angle Relationships

Angle Relationship	Definition	Formula/Rule
Supplementary Angles	Two angles whose sum is 180°.	Angle 1 + Angle 2 = 180°
Complementary Angles	Two angles whose sum is 90°.	Angle 1 + Angle 2 = 90°
Vertical Angles	Opposite angles formed by two intersecting lines; always congruent (equal).	Angle 1 = Angle 2
Adjacent Angles	Two angles that share a common side and vertex but do not overlap.	
Corresponding Angles	Angles that are in the same position on two parallel lines cut by a transversal; always congruent.	Angle 1 = Angle 2
Same-Side Interior Angles	Angles that are inside the parallel lines and on the same side of the transversal; always supplementary.	Angle 1 + Angle 2 = 180°
Alternate Interior Angles	Angles that are inside the parallel lines but on opposite sides of the transversal; always congruent.	Angle 1 = Angle 2
Alternate Exterior Angles	Angles that are outside the parallel lines but on opposite sides of the transversal; always congruent.	Angle 1 = Angle 2