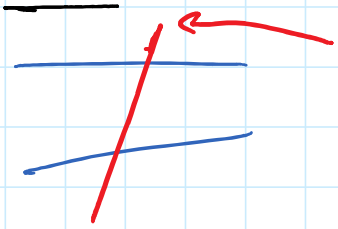
Angles and Triangles

September 26, 2016 7:59 AM

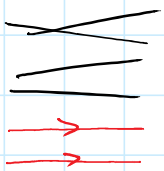
Know these terms

Transversal: A line that intersects two or more other lines at distinct points



This is a transversal
- Like a bridge that connects two or more other lines.

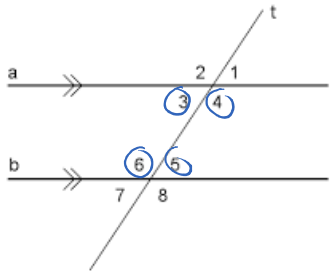
Parallel: Two lines are considered parallel if they never cross, regardless of length.



Not Parallel
Not Parallel
Parallel

Denote parallel lines with matching arrows.

Interior angles: Any angles formed by a transversal and two parallel lines that lie inside the parallel lines.

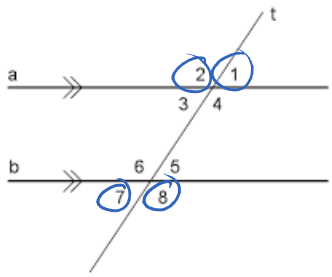


3, 4, 6, 5 are interior angles

∠3
∠4
∠5
∠6

} write angles like this in an equation

Exterior angles: Any angles formed by a transversal and two parallel lines that lie outside the parallel lines.

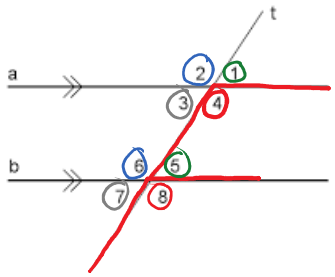


∠1, ∠2, ∠3, ∠4

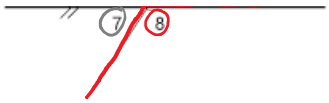
Are the exterior angles

Corresponding angles: One interior angle and the one exterior angle that are non-adjacent and on the same side of a transversal.

Corresponding angles for parallel lines are always equal.



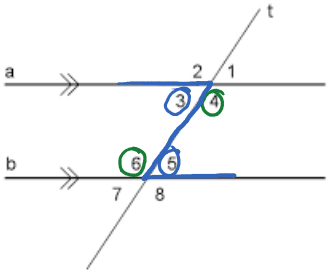
∠2 corresponds to ∠6
∠4 corresponds to ∠8
∠1 corresponds to ∠5
∠3 corresponds to ∠7



$\angle 3$ corresponds to $\angle 7$

Corresponding angles form a F

Alternate interior angles: Two non-adjacent interior angles on opposite sides of a transversal.



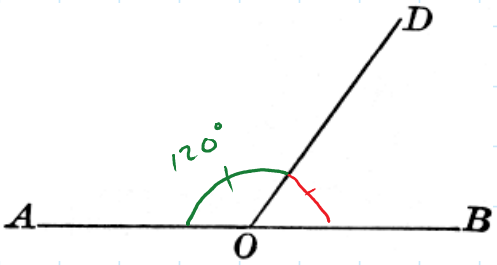
Are equal if the lines are parallel.

Z $\angle 3$ is Alternate interior to $\angle 5$

$\angle 4$ is Alternate interior to $\angle 6$

Alternate interior angles form "Z" or "$\lrcorner$"

Supplementary: Angles on a line add up to 180°.



$\angle AOD$ or $\angle DOA$

$\angle BOD$ or $\angle DOB$

Ex. $\angle AOD = 120°$

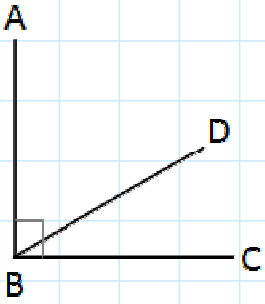
Then $\angle AOD + \angle BOD = 180°$ Supp.

$120° + \angle BOD = 180$

$-120 \quad -120$

$\angle BOD = 60°$

Complimentary: Angles that add up to 90°.



$\angle ABD + \angle DBC = 90°$ Comp.

Ex: $\angle ABD = 60°$

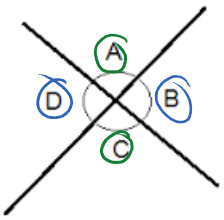
Then: $\angle ABD + \angle DBC = 90°$ Comp.

$60° + \angle DBC = 90°$

$-60 \quad -60$

$\angle DBC = 30°$

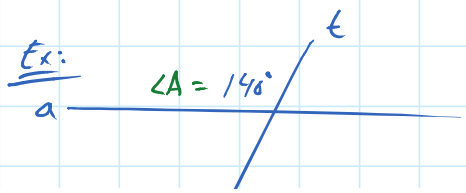
Opposite Angles: Angles formed by two lines that cross and are on opposite sides of the cross are equal.



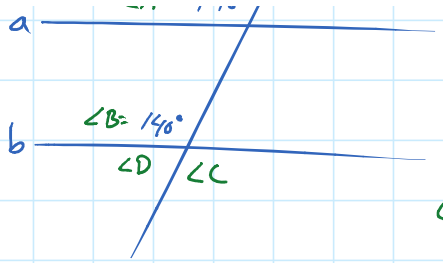
$\angle A$ is opposite to $\angle C$

$\angle D$ is opposite to $\angle D$

Ex:



Q: are lines "a" and "b" parallel? Why?



parallel? Why?

Line "a" is parallel to Line "b" – Corresponding angles are equal

Q: what is ∠D and ∠C and give your reason.

∠C ∠C = ∠B = 140° – opp.

∠D ∠D = 40° – Supp.

Math

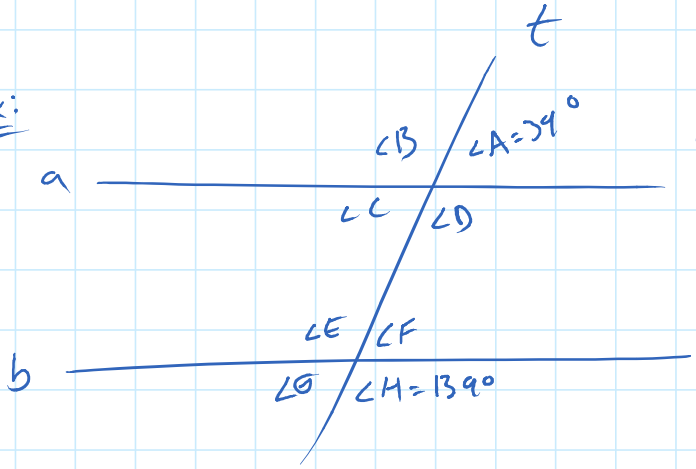
∠B + ∠D = 180 Supp.

140 + ∠D = 180

−140 −140

∠D = 40°

Ex:



Q: Are these lines parallel? Why?

∠F is Supp to ∠H

180° − 139° = ∠F

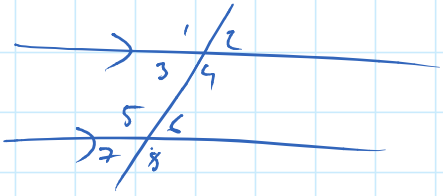
41° = ∠F

∠A Corresponds to ∠F

∠A ≠ ∠F

∴ Line "a" is not parallel to Line "b"

Practice Problems Pg. 72 Q: 1-6



★ Corresponding angles are equal for parallel lines

∠1 = ∠5 ∠2 = ∠6 ∠3 = ∠7 ∠4 = ∠8

★ Alternate interior angles are equal for parallel lines

∠3 = ∠6 ∠4 = ∠5

★ Supplementary angles add to 180°

$\angle 1 + \angle 2 = 180°$ $\angle 6 + \angle 8 = 180°$ etc.

* Complimentary angles add to 90°

$\angle a + \angle b = 90°$

* opposite angles are always equal.

$\angle 1 = \angle 4$ $\angle 2 = \angle 3$ $\angle 6 = \angle 7$ $\angle 5 = \angle 8$