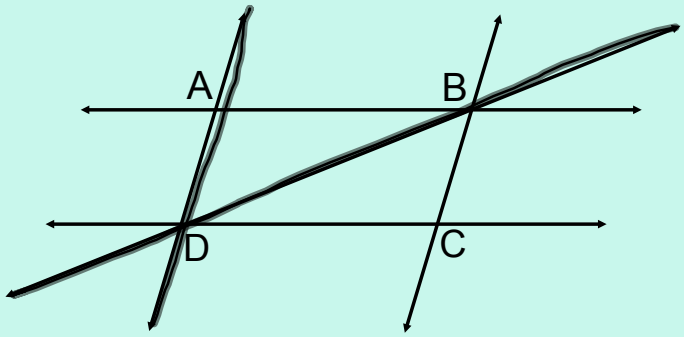
Bellwork
9/26/2011



1. Name a line that does not intersect $\overleftrightarrow{AD}$.

$\overleftrightarrow{BC}$

2. What is the intersection of $\overleftrightarrow{AD}$ and $\overleftrightarrow{DB}$?

Point D

Geometry
3.1 Identify Pairs of Lines and Angles
Standard(s): 3,8

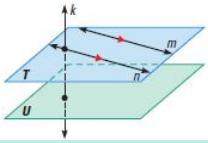
Vocabulary:

1. **Parallel Lines:** Two lines that do not intersect and are coplanar.

2. **Skew Lines:** Two lines that do not intersect and are <u>not</u> coplanar.

3. **Parallel Planes:** Two planes that do not intersect.

Two lines that do not intersect are either *parallel lines* or *skew lines*. Two lines are **parallel lines** if they do not intersect and are coplanar. Two lines are **skew lines** if they do not intersect and are not coplanar. Also, two planes that do not intersect are **parallel planes**.



Lines *m* and *n* are parallel lines ($m \parallel n$).
Lines *m* and *k* are skew lines.
Planes *T* and *U* are parallel planes ($T \parallel U$).
Lines *k* and *n* are intersecting lines, and there is a plane (not shown) containing them.

4. **Transversal:** A line that intersects two or more coplanar lines at different points.

5. **Corresponding Angles:** Two angles with the <u>same position</u> on the <u>same side</u> of the transversal.

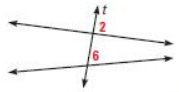
6. **Alternate <u>Interior</u> Angles:** Two angles that lie <u>between</u> the two lines on the <u>opposite sides</u> of the transversal.

7. **Alternate <u>Exterior</u> Angles:** Two angles that lie on the <u>outside</u> the two lines and on <u>opposite</u> sides of the transversal.

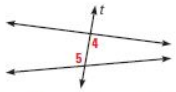
8. **Consecutive Interior Angles:** Two angles that lie <u>between</u> the two lines and on the <u>same side</u> of the transversal.

KEY CONCEPT *For Your Notebook*

Angles Formed by Transversals

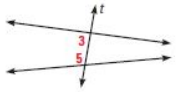


Two angles are **corresponding angles** if they have corresponding positions. For example, $\angle 2$ and $\angle 6$ are above the lines and to the right of the transversal *t*.



Two angles are **alternate interior angles** if they lie between the two lines and on opposite sides of the transversal.

Two angles are **alternate exterior angles** if they lie outside the two lines and on opposite sides of the transversal.

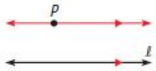


Two angles are **consecutive interior angles** if they lie between the two lines and on the same side of the transversal.

POSTULATES *For Your Notebook*

POSTULATE 13 Parallel Postulate

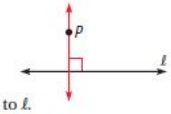
If there is a line and a point not on the line, then there is exactly one line through the point parallel to the given line.



There is exactly one line through *P* parallel to ℓ.

POSTULATE 14 Perpendicular Postulate

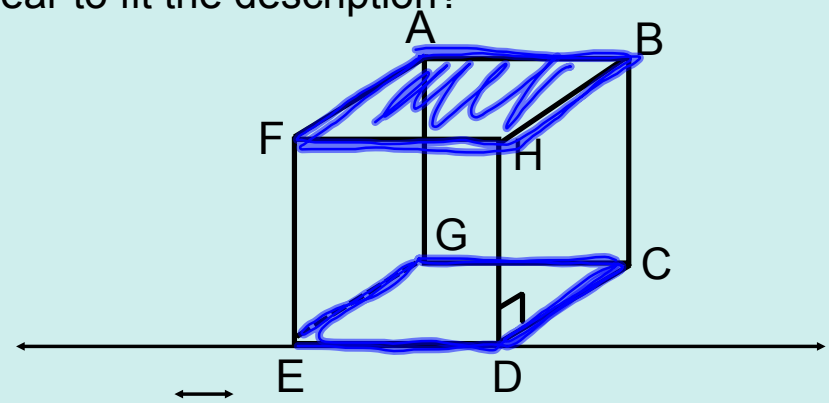
If there is a line and a point not on the line, then there is exactly one line through the point perpendicular to the given line.



There is exactly one line through *P* perpendicular to ℓ.

Identify Relationships in Space

Think of each segment in the figure as part of a line. Which line(s) or plane(s) appear to fit the description?



a. Line(s) parallel to $\overleftrightarrow{ED}$ and containing point C

$\overleftrightarrow{GC}$

b. Line(s) skew to $\overleftrightarrow{ED}$

$\overleftrightarrow{BC}$, $\overleftrightarrow{BH}$, $\overleftrightarrow{AG}$, $\overleftrightarrow{AF}$

c. Line(s) perpendicular to $\overleftrightarrow{ED}$

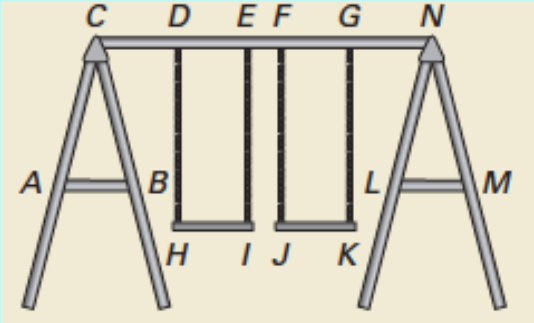
$\overleftrightarrow{FE}$, $\overleftrightarrow{HD}$

d. Plane(s) parallel to plane ABH

Plane GCD

Identify Parallel and Perpendicular Lines

The figure shows a swing set on a playground.



a. Name a pair of perpendicular lines.

DH & HI

b. Name a pair of parallel lines.

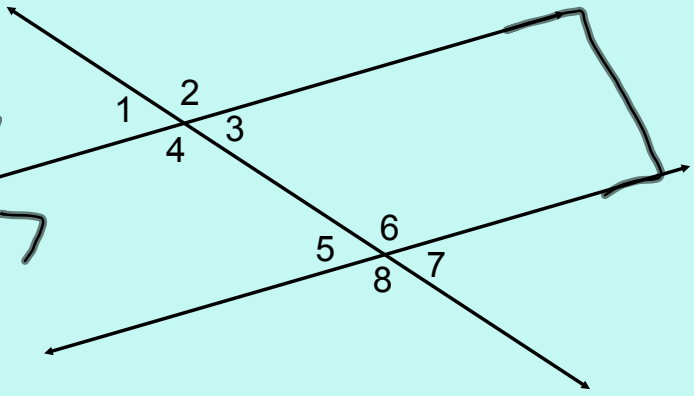
DH & EI

c. Is $\overleftrightarrow{DH}$ perpendicular to $\overleftrightarrow{LM}$? Explain.

No, they are skew lines.

Identify Angle Relationships

Identify all pairs of angles of the given type.



a. Corresponding

∠1 & ∠5 ∠2 & ∠6
∠4 & ∠8 ∠3 & ∠7

b. Alternate Interior

∠4 & ∠6
∠3 & ∠5

c. Alternate Exterior

∠1 & ∠7
∠2 & ∠8

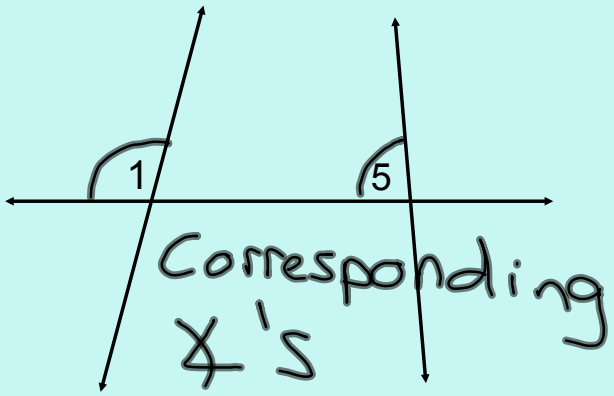
d. Consecutive Interior

∠4 & ∠5
∠3 & ∠6

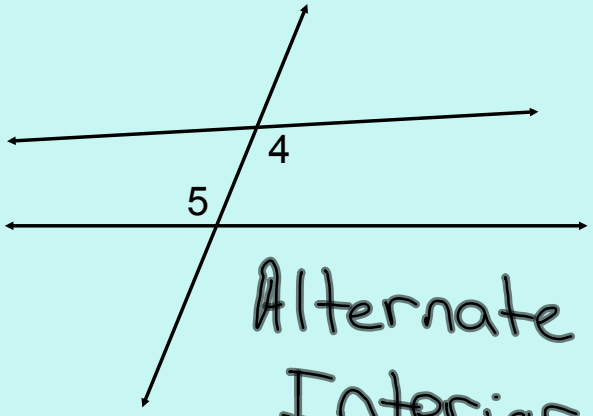
***Explain the difference between alternate interior angles and consecutive interior angles.**

Classify Angle Relationships

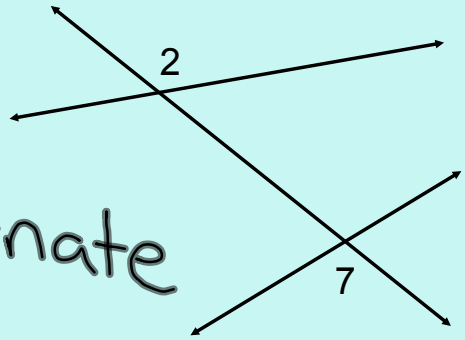
Classify the pair of numbered angles.



Corresponding ∠'s



Alternate Interior



Alternate Exterior

Homework Assignment

Worksheet 3.1B