

10/7/19 - Warm Up Problem

Imagine the segments making up the edges of the figure below are lines. Would each pair of lines intersect?

1. \overleftrightarrow{AB} and \overleftrightarrow{DC}

No

2. \overleftrightarrow{AE} and \overleftrightarrow{FG}

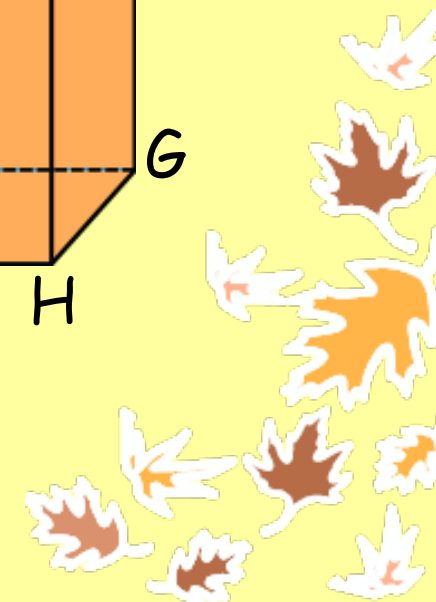
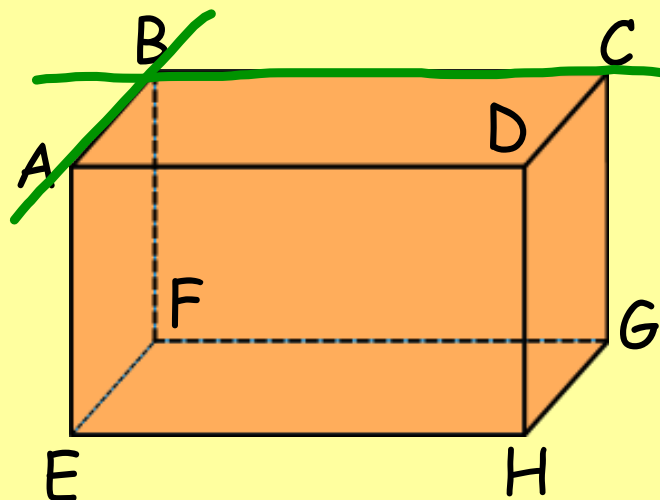
No

3. \overleftrightarrow{AD} and \overleftrightarrow{CG}

No

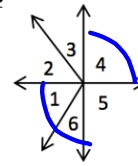
4. \overleftrightarrow{AB} and \overleftrightarrow{BC}

Yes



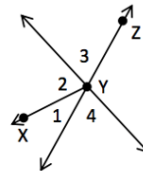
PROOFS USING ANGLE RELATIONSHIPS AND THEOREMS

6. **Given:** $\angle 4$ is a right angle
 $\angle 1 \cong \angle 2$
Prove: $\angle 2$ and $\angle 6$ are complementary



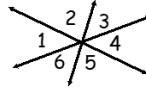
Statements	Justifications
1. $\angle 4$ is a <u>right angle</u>	Given
2. $\angle 1 \cong \angle 2$	Given
3. <u>$m\angle 4 = 90$</u>	Def. of Right Angle
4. $m\angle 1 = m\angle 2$	Def. of Congruent
5. $m\angle 1 + m\angle 6 = m\angle 4$	Vertical Angles Thm
6. <u>$m\angle 1 + m\angle 6 = 90$</u>	Substitution Prop.
7. <u>$m\angle 2 + m\angle 6 = 90$</u>	Substitution Prop.
8. $\angle 2$ and $\angle 6$ are <u>complementary</u>	Def. of complementary

7. **Given:** $\angle 2$ is a right angle
 $m\angle 4 = 60^\circ$
Prove: $m\angle XYZ = 150^\circ$



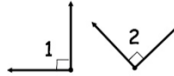
Statements	Justifications
1. $\angle 2$ is a right angle	
2. $m\angle 4 = 60$	
3. $m\angle 2 = 90$	
4. $m\angle 2 + m\angle 3 = m\angle XYZ$	
5. $m\angle 3 = m\angle 4$	
6. $m\angle 2 + m\angle 4 = m\angle XYZ$	
7. $90 + 60 = m\angle XYZ$	
8. $150 = m\angle XYZ$	
9. $m\angle XYZ = 150$	

8. Given: $\angle 1 \cong \angle 2$
 Prove: $\angle 5 \cong \angle 4$



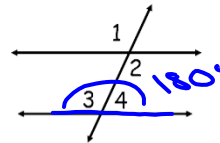
Statements	Justifications
1.	
2.	
3.	
4.	
5.	
6.	

9. Given: $\angle 1$ is a right angle
 $\angle 2$ is a right angle
 Prove: $\angle 1 \cong \angle 2$



Statements	Justifications
1.	
2.	
3.	
4.	
5.	
6.	

10. Given: $\angle 1 \cong \angle 3$
 Prove: $\angle 2$ and $\angle 4$ are supplementary



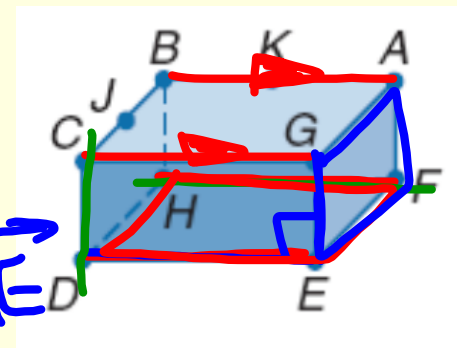
Statements	Justifications
1. $\angle 1 \cong \angle 3$	Given
2. $m\angle 1 = m\angle 3$	Def. of Congruent
3. $m\angle 1 = m\angle 2$	Vertical Angles Thm
4. $m\angle 3 + m\angle 4 = 180$	Linear Pair Post.
5. $m\angle 2 = m\angle 3$	Transitive Prop. of =
6. $m\angle 2 + m\angle 4 = 180$	Substitution Prop.
7. $\angle 2$ and $\angle 4$ are supp.	Def. of Supplementary

Section 3.1 - Lines and Angles

Goals: Identify lines as parallel, perpendicular, or skew
Identify angle pairs formed by a transversal

Parallel Lines: Coplanar lines that do not intersect

$\overleftrightarrow{CG} \parallel \overleftrightarrow{DE}$



Perpendicular Lines: Lines that intersect at a 90° angle

$\overleftrightarrow{DE} \perp \overleftrightarrow{GE}$

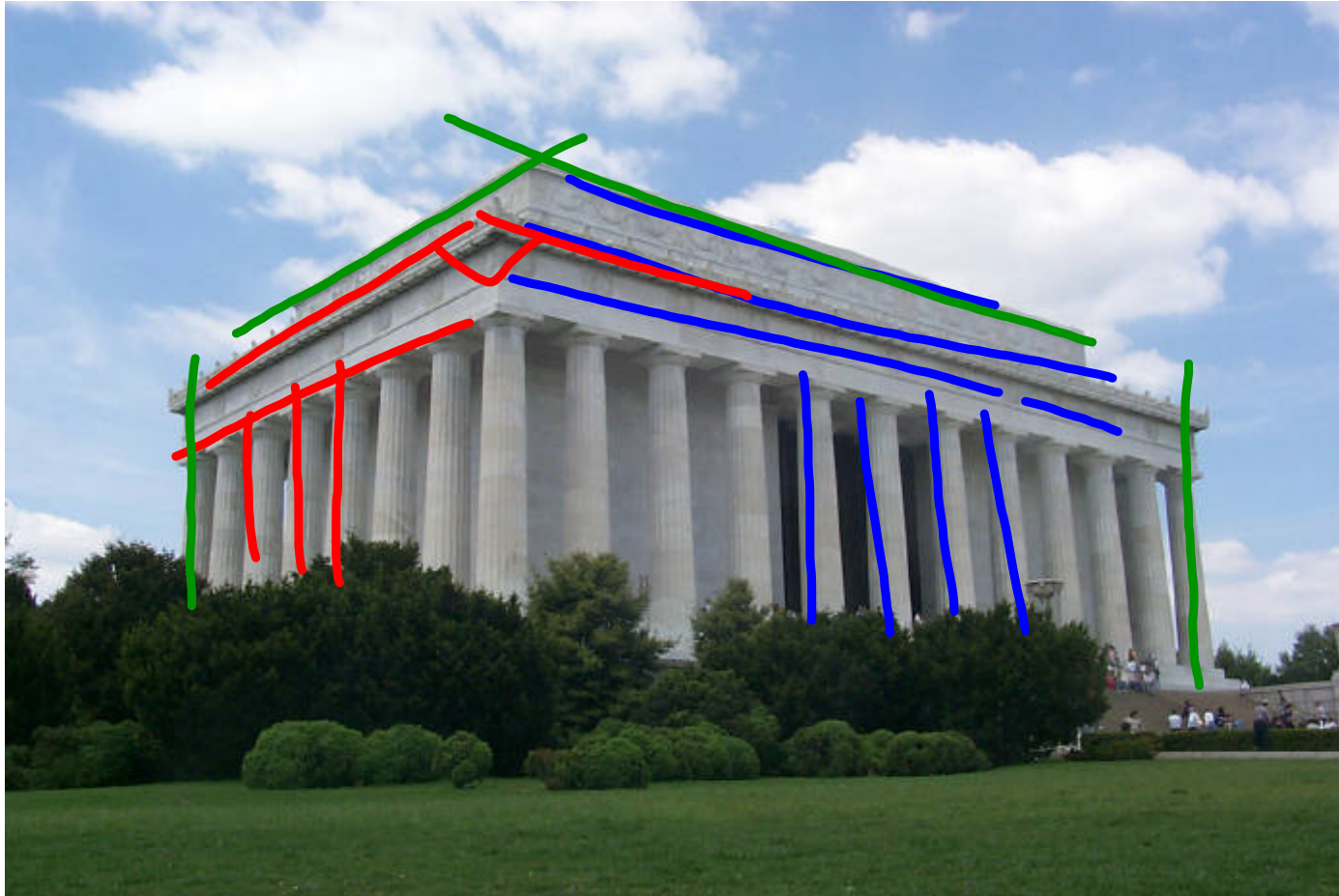
Skew Lines: Lines that do not intersect and are not coplanar

\overleftrightarrow{CD} skew to \overleftrightarrow{HF}

Parallel Planes: Two planes that do not intersect

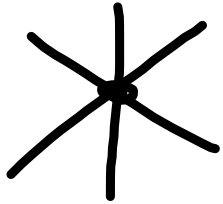
Plane BCG \parallel Plane DEF

Identify one set of each type of lines:
parallel, *perpendicular*, and *skew*

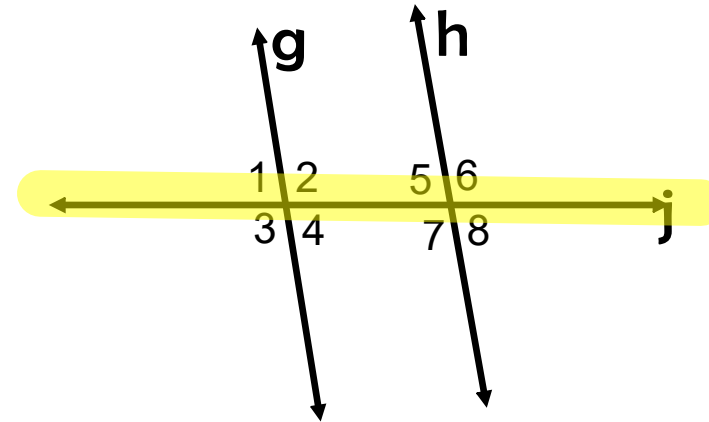
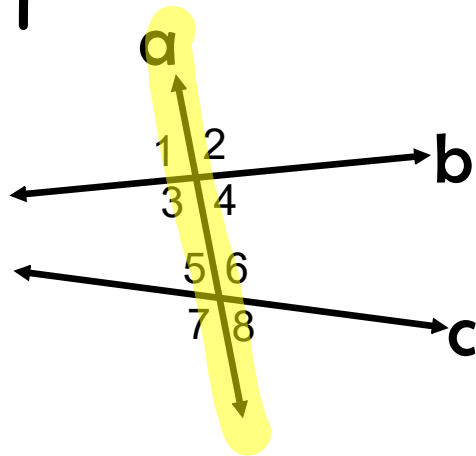


Angles and Transversals

Transversal: a line that intersects two or more other lines at different points



Which line is the transversal?



If 2 lines are intersected by a transversal, 8 different angles are formed.

Assignment:

Desmos Activity

- follow the directions and answer all the questions posed
- we will discuss tomorrow