Date:

# **Unit 3: Parallel Lines with a Transversal NOTES**

# **Day 1 – Parallel Lines and Planes**

**Objectives:** SWBAT identify relationships between lines



### Write the relationship between lines AB and CD.



### Examples

- 1. Find all planes parallel to plane SKLM
- **2.** Find all segments that intersect with  $\overline{MT}$
- **3.** Find all segments parallel to  $\overline{MT}$
- **4.** Find all segments skew to  $\overline{MT}$
- 5. Find all planes parallel to MTRL
- 6. Here is a street map of streets close to Reno High.
  - a) Identify a street that intersects with California Ave.
  - b) Name three streets that are parallel.
  - c) Can any streets be skew? Explain.
  - d) Name a business or park that could be considered a plane.





# **Day 2 – Parallel Lines and Transversals**

**Objectives:** SWBAT identify relationships between lines and identify angles formed by transversals.



B

- **3.** Find all the Alternate Exterior Angles.
- **4.** Find all the Consecutive Interior Angles.

### State the relationship between angle A and B.



**C.** Given the following map, describe the corner street angles of John's house, Georgia's House, and Philip's house.



# Day 3 – Parallel Lines and Transversals – Solving using Angle Relationships

**Objectives:** SWBAT prove and use results about parallel lines and transversals.

**CORRESPONDING ANGLES~** 

**ALTERNATE EXTERIOR ANGLES~** 

**ALTERNATE INTERIOR ANGLES~** 

**CONSECUTIVE INTERIOR ANGLES** 

**Supplementary Angles:** 

**Vertical Angles:** 

**Perpendicular Transversal Theorem** 



### **EXAMPLES:**

1. Given  $m \angle 2 = 65^{\circ}$ , find each measure, and tell which postulate you used.







a.

**3.** Given that  $\overline{DG}||\overline{JK}$ , find the measure of  $\angle GEL$ 



4. Find x  $(3x + 5)^{\circ}$   $(4x - 29)^{\circ}$ 



**5.** Find the value of *z* 



**6.** Find  $m \angle A$  and  $m \angle B$ 



**7.** Seventh Avenue runs perpendicular to both 1<sup>st</sup> and 2<sup>nd</sup> streets. However, Maple Avenue makes a 130 degree angle with 2<sup>nd</sup> street. What is the measure of angle 1?



Angles that are Congruent	Angles that are Supplementary

# Day 4 – Proving Lines are Parallel

**Objectives:** SWBAT prove that two lines are parallel

M

w

**PROVING PARALLEL LINES USING CONVERSES** 

**CORRESPONDING ANGLES CONVERSE POSTULATE** 

ALTERNATE EXTERIOR ANGLES THEOREM CONVERSE

**CONSECUTIVE INTERIOR ANGLES THEOREM CONVERSE** 

ALTERNATE INTERIOR ANGLES THEOREM CONVERSE

In each example, determine if the lines are parallel or not. Explain why or why not.





It is possible to prove that lines j and k are parallel given that  $\angle A \cong \angle B$ . If possible, state the theorem or postulate that justifies the answer.



b.

### 8. Find the value of x that will make the two lines parallel.









**Transitive Parallel Lines Theorem** 



# **Perpendicular – Parallel Theorem**



### **EXAMPLES:**

c.

State the postulate used to conclude a | | b. **Given:**  $\angle 1 \cong \angle 2$  **Given:**  $a \in A$ 

