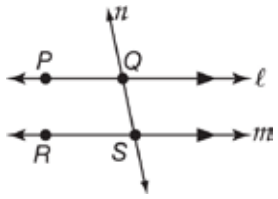
NAME _____ DATE _____ PERIOD _____

LT 1.1 Study Guide and Intervention

Parallel Lines and Transversals

Relationships Between Lines and Planes When two lines lie in the same plane and do not intersect, they are **parallel**. Lines that do not intersect and are not coplanar are **skew lines**. In the figure, ℓ is parallel to m, or $\ell \parallel m$. You can also write $\overline{PQ} \parallel \overline{RS}$. Similarly, if two planes do not intersect, they are **parallel planes**.



Example: Refer to the figure at the right to identify each of the following.

a. all planes parallel to plane *ABD*

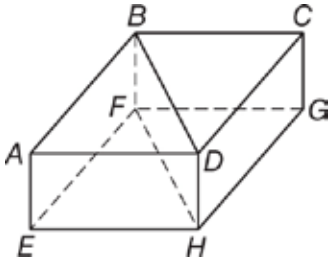
plane *EFH*

b. all segments parallel to $\overline{CG}$

$\overline{BF}$, $\overline{DH}$, and $\overline{AE}$

c. all segments skew to $\overline{EH}$

$\overline{BF}$, $\overline{CG}$, $\overline{BD}$, $\overline{CD}$, and $\overline{AB}$



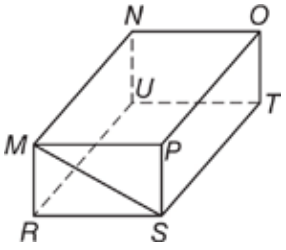
Exercises

Refer to the figure at the right to identify each of the following.

1. all planes that intersect plane *OPT*

2. all segments parallel to $\overline{NU}$

3. all segments that intersect $\overline{MP}$



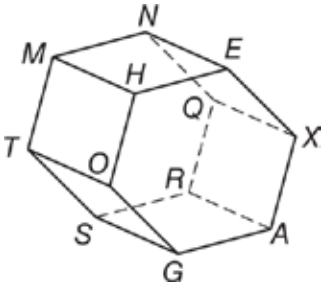
Refer to the figure at the right to identify each of the following.

4. all segments parallel to $\overline{QX}$

5. all planes that intersect plane *MHE*

6. all segments parallel to $\overline{QR}$

7. all segments skew to $\overline{AG}$



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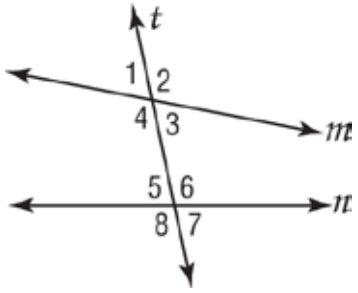
LT 1.1 Study Guide and Intervention *(continued)*

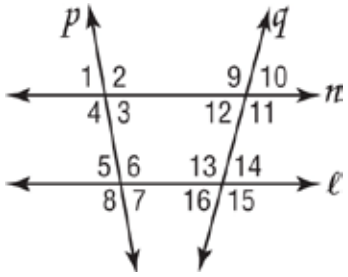
Parallel Lines and Transversals

Angle Relationships A line that intersects two or more other lines at two different points in a plane is called a **transversal**. In the figure below, line *t* is a transversal. Two lines and a transversal form eight angles. Some pairs of the angles have special names. The following chart lists the pairs of angles and their names.

Angle Pairs	Name
∠3, ∠4, ∠5, and ∠6	interior angles
∠3 and ∠5; ∠4 and ∠6	alternate interior angles
∠3 and ∠6; ∠4 and ∠5	consecutive interior angles
∠1, ∠2, ∠7, and ∠8	exterior angles
∠1 and ∠7; ∠2 and ∠8;	alternate exterior angles
∠1 and ∠5; ∠2 and ∠6; ∠3 and ∠7; ∠4 and ∠8	corresponding angles



Example: Classify the relationship between each pair of angles as *alternate interior, alternate exterior, corresponding,* or *consecutive interior* angles.



a. ∠10 and ∠16

alternate exterior angles

b. ∠4 and ∠12

corresponding angles

c. ∠12 and ∠13

consecutive interior angles

d. ∠3 and ∠9

alternate interior angles

Exercises

Use the figure in the Example for Exercises 1-12.

Identify the transversal connecting each pair of angles.

1. ∠9 and ∠13

2. ∠5 and ∠14

3. ∠4 and ∠6

Classify the relationship between each pair of angles as *alternate interior, alternate exterior, corresponding,* or *consecutive interior* angles.

4. ∠1 and ∠5

5. ∠6 and ∠14

6. ∠2 and ∠8

7. ∠3 and ∠11

8. ∠12 and ∠3

9. ∠4 and ∠6

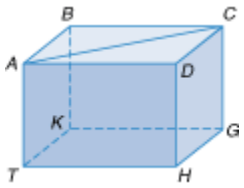
10. ∠6 and ∠16

11. ∠11 and ∠14

12. ∠10 and ∠16

LT 1.1 Study Guide #1

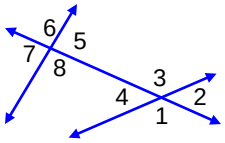
Real-World Example 1: Identify Parallel and Skew Relationships
Identify each of the following using the building block.
a. all planes that are parallel to plane *ABC*



b. all segments that are skew to $\overline{TK}$

c. all segments that are parallel to $\overline{KG}$

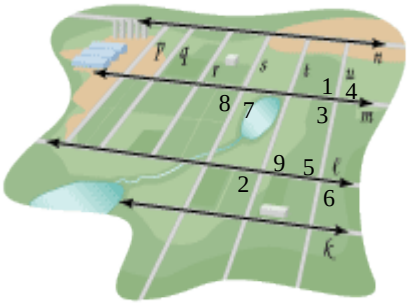
Example 2: Classify Angle Pair Relationships
Refer to the figure below. Classify the relationship between each pair of angles as *alternate interior, alternate exterior, corresponding,* or *consecutive interior* angles. Justify your answers.



a. Ð4 and Ð5	b. Ð5 and Ð2
c. Ð3 and Ð5	**d. Ð2 and Ð7**

Example 3: Identify Transversals and Classify Angle Pairs
Texas is the leading producer of livestock in the United States. A diagram of a feedlot on a farm is shown below. Identify the transversal connecting each pair of angles in the photo. Then classify the relationship between each pair of angles. Justify your answers.

a. Ð1 and Ð5



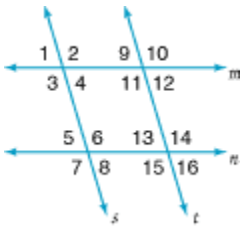
b. Ð4 and Ð8

c. Ð3 and Ð5

Self-Check Quizzes

LT 1.1: Parallel Lines and Transversals

1. Refer to the figure below. Which statement is false?



a) *m* is a transversal for *s* and *t*.

b) $\angle 7$ and $\angle 14$ are alternate exterior angles.

c) $\angle 4$ and $\angle 9$ are corresponding angles.

d) $\angle 3$ and $\angle 6$ are alternate interior angles.

2. Name the plane parallel to plane *AEF*.

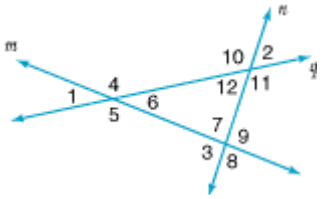
a) plane *CHF*

b) plane *DBA*

c) plane *DGH*

d) plane *EFH*

3. Name a pair of corresponding angles.



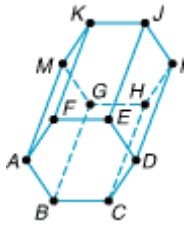
a) $\angle 4$ and $\angle 7$

b) $\angle 9$ and $\angle 12$

c) $\angle 2$ and $\angle 3$

d) $\angle 1$ and $\angle 6$

4. How many segments intersect $\overline{AM}$?



a) 4 b) 3

c) 6 d) 5

5. Which of the following best describes the front and back covers of a notebook when closed?

a) skew planes b) intersecting planes

c) parallel planes d) a single plane