Geometry 3.1

Identify the relationships between two lines or two planes
Name angle pairs formed by lines and transversals

parallel lines // Same slope, same plane, don't intersect

skew lines — skew: don't int. diff planes

parallel planes never intersect (keep going)

Spaghetti

interior inside

exterior outside

consecutive in a row

alternate every other

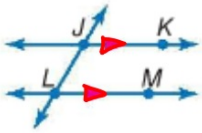
corresponding

transversal a line (t) intersecting 2 or more other lines

KeyConcepts Parallel and Skew

Parallel lines are coplanar lines that do not intersect.

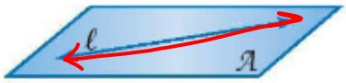
Example $\overleftrightarrow{JK} \parallel \overleftrightarrow{LM}$



Arrows are used to indicate that lines are parallel.

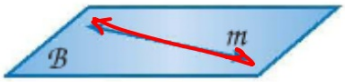
Skew lines are lines that do not intersect and are not coplanar.

Example Lines ℓ and m are skew.



Parallel planes are planes that do not intersect.

Example Planes $\mathcal{A}$ and $\mathcal{B}$ are parallel.

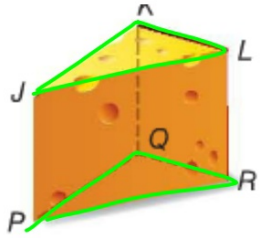


$\overleftrightarrow{JK} \parallel \overleftrightarrow{LM}$ is read as *line JK is parallel to line LM.*

Real-World Example 1 Identify Parallel and Skew Relationships

Identify each of the following using the wedge of cheese below.

a. all segments parallel to $\overline{IP}$



b. a segment skew to $\overline{KL}$

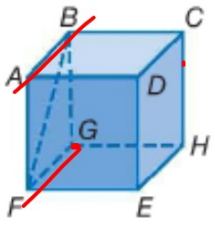
$\overline{JP}$ $\overline{PR}$ $\overline{PQ}$

c. a plane parallel to plane PQR

JKL

GuidedPractice

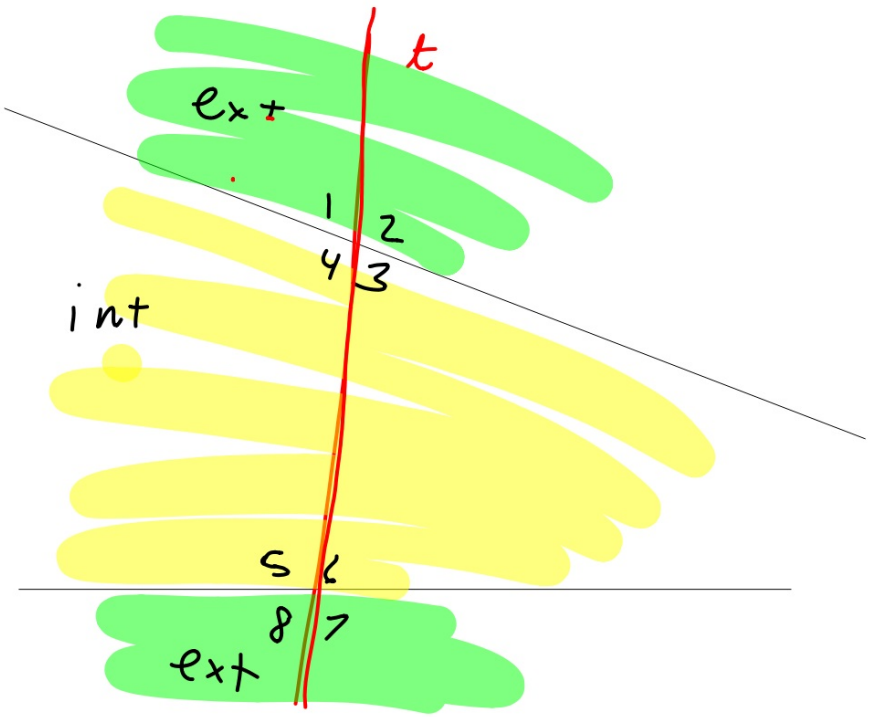
Identify each of the following using the cube shown.



1A. all segments skew to $\overleftrightarrow{BC}$ $\bar{A}\bar{F}$ $\bar{D}\bar{E}$ $\bar{H}\bar{E}$ $\bar{F}\bar{G}$

1B. a segment parallel to $\overleftrightarrow{EH}$

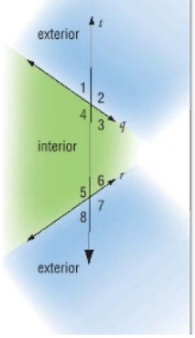
1C. all planes parallel to plane *DCH*


t
ext
1
2
4
3
int
5
6
8
7
ext

p. 174

KeyConcept Transversal Angle Pair Relationships

Four **interior angles** lie in the region between lines q and r.	$\angle 3, \angle 4, \angle 5, \angle 6$
Four **exterior angles** lie in the two regions that are not between lines q and r.	$\angle 1, \angle 2, \angle 7, \angle 8$
Consecutive interior angles are interior angles that lie on the same side of transversal t.	$\angle 4$ and $\angle 5$, $\angle 3$ and $\angle 6$
Alternate interior angles are nonadjacent interior angles that lie on opposite sides of transversal t.	$\angle 3$ and $\angle 5$, $\angle 4$ and $\angle 6$
Alternate exterior angles are nonadjacent exterior angles that lie on opposite sides of transversal t.	$\angle 1$ and $\angle 7$, $\angle 2$ and $\angle 8$
Corresponding angles lie on the same side of transversal t and on the same side of lines q and r.	$\angle 1$ and $\angle 5$, $\angle 2$ and $\angle 6$ $\angle 3$ and $\angle 7$, $\angle 4$ and $\angle 8$



Example 3 Identify Transversals and Classify Angle Pai

Identify the transversal connecting each pair of angles in the photo. Then classify the relationship between each pair of angles.

a. ∠1 and ∠3

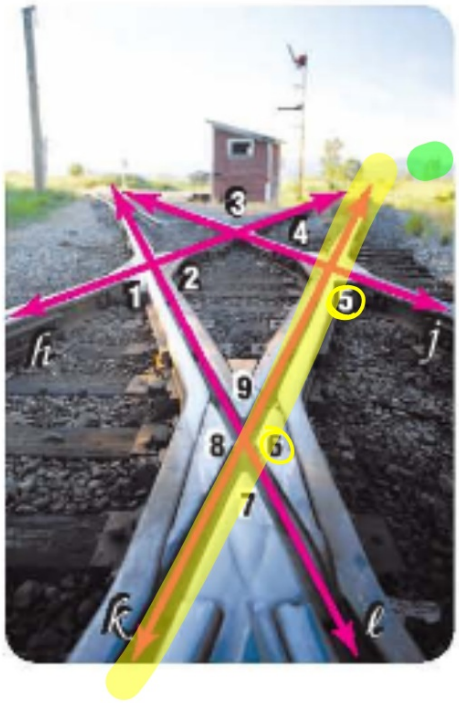
trans = h
alt. ext

b. ∠5 and ∠6

trans k
cons int.

c. ∠2 and ∠6

13-45
odds



Guided Practice

3A. ∠3 and ∠5

3B. ∠2 and ∠8

3C. ∠5 and ∠7

3D. ∠2 and ∠9