LESSON 3-1

Parallel Lines and Transversals

Identify perpendicular planes, parallel planes, a line parallel to a plane, skew lines, and a line perpendicular to a plane

Apply properties and theorems about angles associated with parallel and perpendicular lines to solve problems

What is the difference between parallel and skew lines?

Parallel

Lines that are in the same plane
Lines that never intersect

Skew

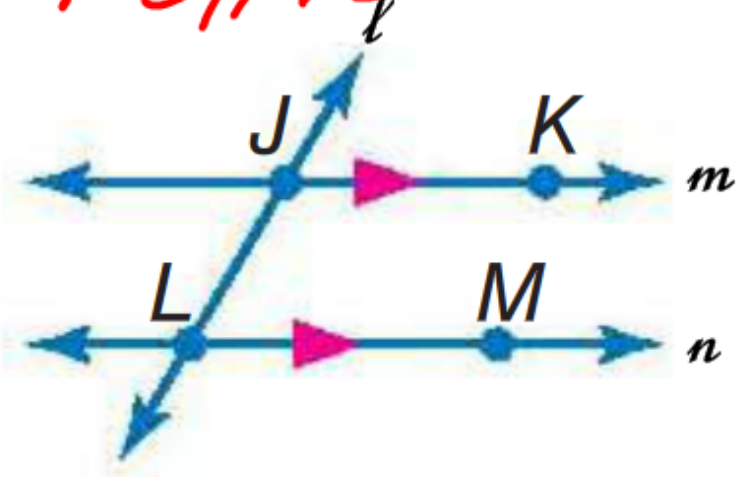
Lines that are not in the same plane
Lines that never intersect

Not parallel

Symbols

	Parallel	Not Parallel
Symbol	//	∦
Example	$\overleftrightarrow{JK} \parallel \overleftrightarrow{LM}$	$\ell \nparallel n$

$m \parallel n$



1. all planes that intersect plane OPT

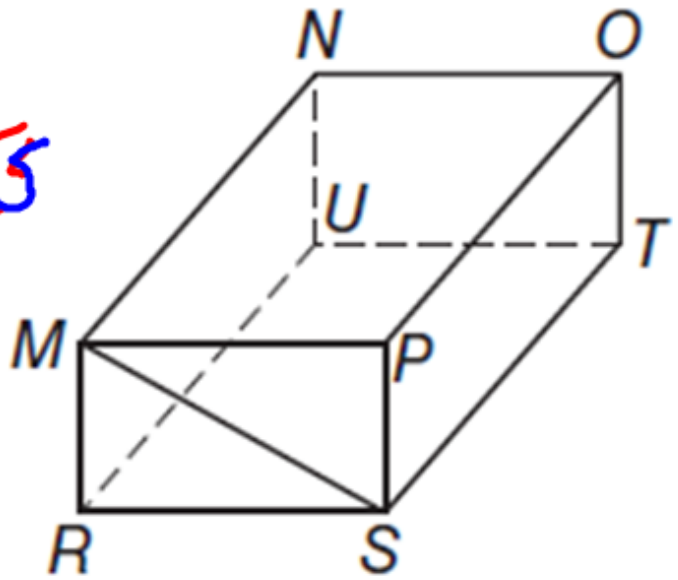
MNO, NUT, MRS, UTS

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

$\overline{MR}$, $\overline{PS}$, $\overline{OT}$

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

$\overline{SP}$, $\overline{OP}$, $\overline{MN}$, $\overline{MR}$, $\overline{MS}$



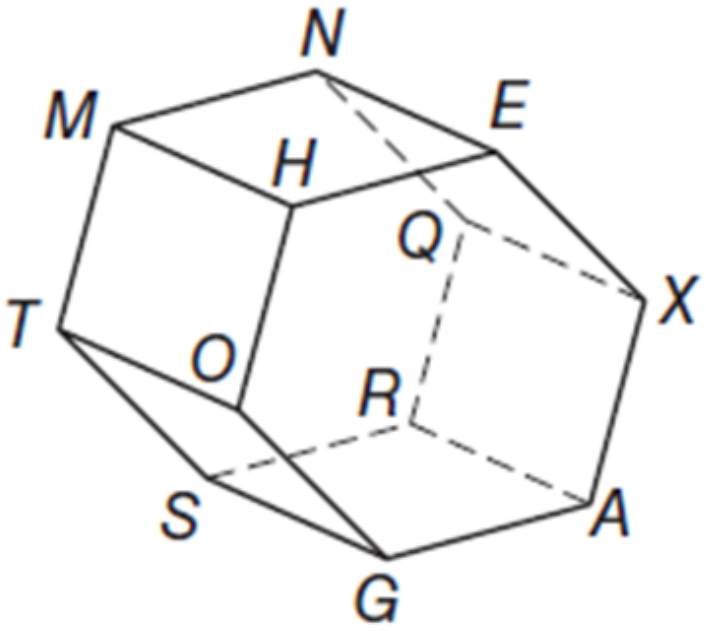
4. all segments parallel to $\overline{QX}$

RA, EN, JG, TO, MH

5. all planes that intersect plane MHE

MTO, HOG, STM, NEX

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



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

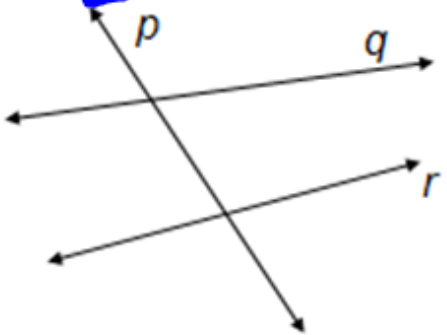
NE, MH, XQ, TO, TS, QK, QN, MT,

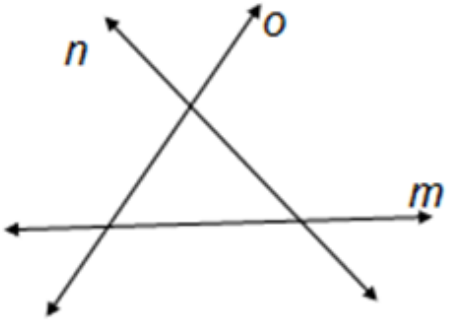
What is a Transversal?

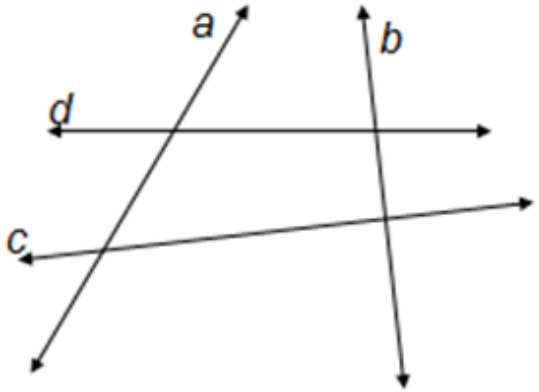
- A line that cuts two or more lines at two different points

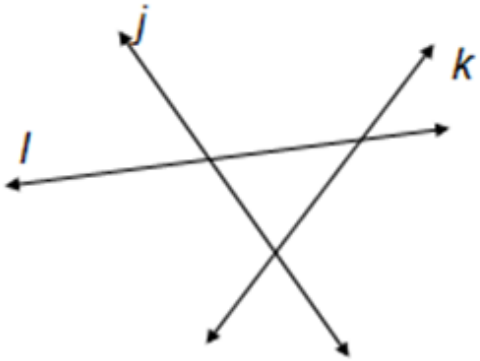
transversal

Ex:





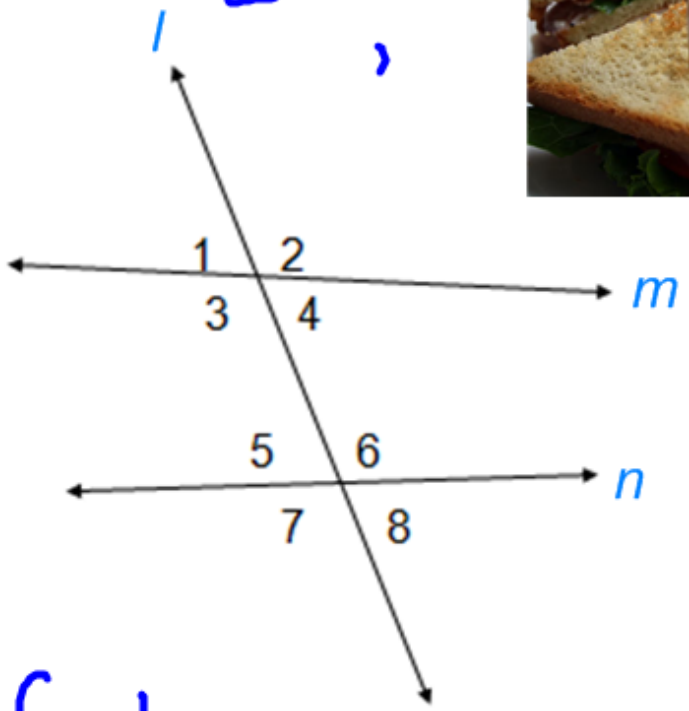




Special Angles formed by a transversal

Imagine a sandwich: lines *m* and *n* are represented by the bread
line *l* is represented by the toothpick

transv.



Angle Names	#'s
Interior	∠3, ∠4, ∠5, ∠6
Exterior	∠1, ∠2, ∠7, ∠8
Pairs Consecutive Interior	∠3 and ∠5 ∠4 and ∠6 inside, same side of transv.
Alternate Interior	∠6 & ∠3 ∠4 & ∠5 inside, different sides of transv.
Alternate Exterior	∠7 & ∠2 ∠1 & ∠8 outside & different sides of transv
Corresponding	∠1 & ∠5, ∠2 & ∠6, ∠4 & ∠8, ∠3 & ∠7 one int & one ext & same side of trans

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

Also identify the transversal connecting them

4. ∠1 and ∠5

C "p"

5. ∠6 and ∠14

AI "ℓ"

6. ∠2 and ∠8

AE "p"

7. ∠3 and ∠11

C "n"

8. ∠12 and ∠3

CI "n"

9. ∠4 and ∠6

AI "p"

10. ∠6 and ∠16

AI "ℓ"

11. ∠11 and ∠14

CI "q"

12. ∠10 and ∠16

AE "q"