

Your Name

Mrs. Theo

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2.6 and 3.1 - Parallel Lines and Planes

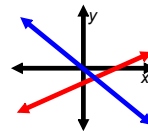
Notes

get out exterior Angle Thm
Practice

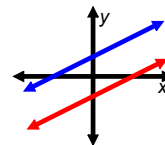
In Algebra 1 (2-dimensions), lines could do one of 3 things:

2D
Two Lines
Can

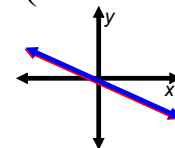
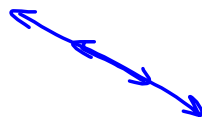
1.) Intersect each other



2.) Be Parallel to each other



3.) Be Coinciding/on top of each other (same line)



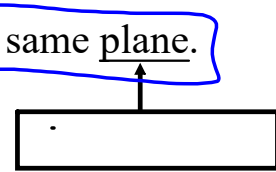
In 3-dimensional Geometry, we have other options!

3D Two Lines

Parallel Lines

Lines that do not intersect but are in the same plane.

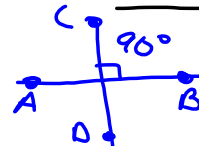
- Symbol: $\overline{AB} \parallel \overline{CD}$
parallel



Perpendicular

segments, rays, and lines intersect to form right angles.

- Symbol: $\overline{AB} \perp \overline{CD}$
perpendicular



Skew Lines

Lines that do not intersect and are not in the same plane.

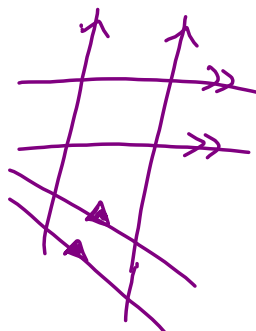
- Only happens in 3D

Parallel Planes

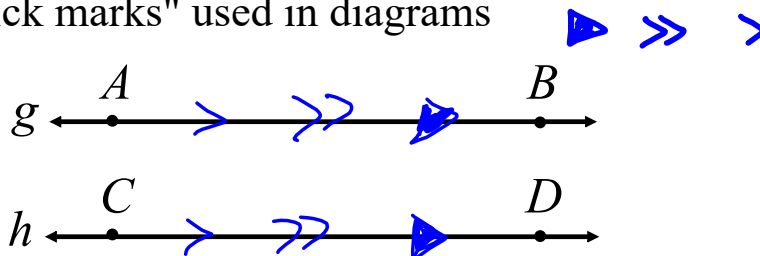
Planes (infinite surfaces) that do not intersect.

$U \parallel T$ means Plane $U \parallel$ Plane T

Symbols and Notation for Parallel Lines



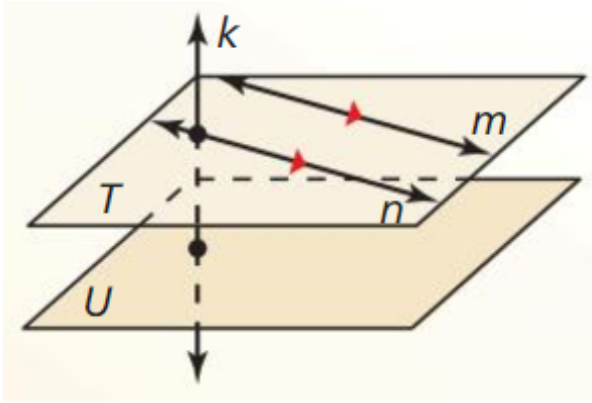
- "Tick marks" used in diagrams



- Notation for parallel lines

$\overline{AB} \parallel \overline{CD}$ "Line AB is parallel to line CD"

$g \parallel h$ "Line g is parallel to line h"



Plane T \parallel Plane U

and

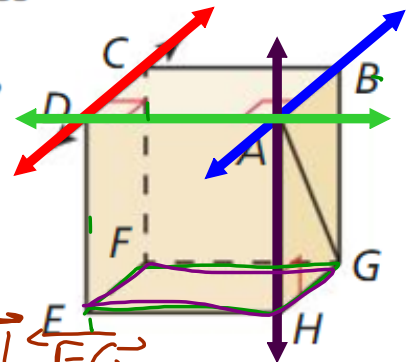
$m \parallel n$

Example #1

Identifying Lines and Planes

Think of each segment in the figure as part of a line. Which line(s) or plane(s) appear to fit the description?

- a. line(s) parallel to \overleftrightarrow{CD} and containing point A
 (Handwritten: \overleftrightarrow{AB} , \overleftrightarrow{GH} , \overleftrightarrow{EF})
- b. line(s) skew to \overleftrightarrow{CD} and containing ~~point A~~
 (Handwritten: \overleftrightarrow{AH} , \overleftrightarrow{AG} , \overleftrightarrow{BG} , \overleftrightarrow{EH} , \overleftrightarrow{FG})
- c. line(s) perpendicular to \overleftrightarrow{CD} and containing point A
 (Handwritten: \overleftrightarrow{DA} , \overleftrightarrow{DE} , \overleftrightarrow{CF} , \overleftrightarrow{CB})
- d. plane(s) parallel to plane EFG and containing point A



Plane ABC

Artist:
Song:



Example #2 Identifying Parallel and Perpendicular Lines

The given line markings show how the roads in a town are related to one another.

a. Name a pair of parallel lines.

$$\overrightarrow{DM} \parallel \overrightarrow{EF}$$

b. Name a pair of perpendicular lines.

$$\overrightarrow{BM} \perp \overrightarrow{DM}$$

c. Is $\overrightarrow{FE} \parallel \overrightarrow{AC}$? Explain.



Artist: REM

Song: Man on the Moon

