Lesson 1.1 Points, Lines, Planes

Sunday, August 18, 2024 8:22 PM

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Lesson 1.1 PointsLines...

Lesson 1.1 Points, Lines, and Planes

MA.912.GR.1.1
Prove relationships and theorems about lines and angles. Solve mathematical and real-world problems involving postulates, relationships and theorems of lines and angles.

Content Objective
Students will analyze figures to identify points, lines, and planes and identify intersections of lines and planes.

Learn
Points, Lines, and Planes

Undefined Terms	
A **point** is a location. It has neither shape nor size. Named by a capital letter Example point A ≠ no dimension	A 1 letter
A **line** is made up of points and has no thickness or width. There is exactly one line through any two points. Named by the letters representing two points on the line or a lowercase script letter Example line m, line PQ or $\overleftrightarrow{PQ}$, line QP or $\overleftrightarrow{QP}$	2 letters 

1 dimension

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Learn
Points, Lines, and Planes

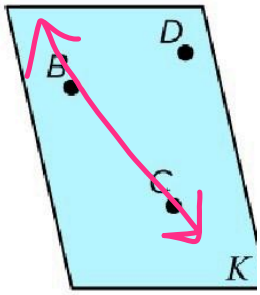
Undefined Terms

2 dimensional

A **plane** is a flat surface made up of points that extends infinitely in all directions. There is exactly one plane through any three points not on the same line.

Named by a capital script letter or by the letters naming three points that are not all on the same line

Example plane $\mathcal{K}$, plane *BCD*, plane *CDB*, plane *DCB*, plane *DBC*, plane *CBD*, plane *BDC*



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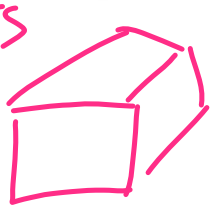
Learn
Points, Lines, and Planes

3 letters



3 dimension

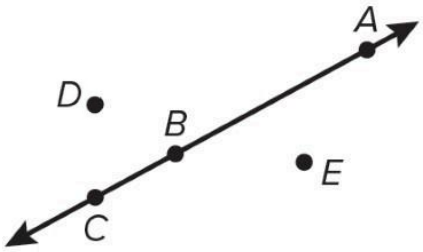
Space is defined as a boundless three-dimensional set of all points. Space can contain lines and planes.

Collinear points are points that lie on the same line.

Noncollinear points do not lie on the same lin

D, E

Points *A*, *B*, and *C* are collinear.



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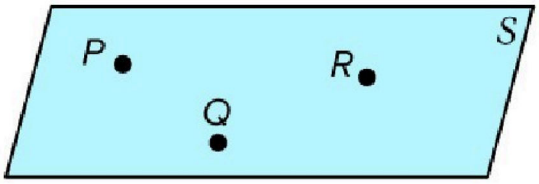
Learn

Points, Lines, and Planes

Coplanar points are points that lie in the same plane.
Noncoplanar points do not lie in the same plane.



Points *P*, *Q*, and *R* are coplanar in plane *S*.

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Example 1
Name Lines and Planes

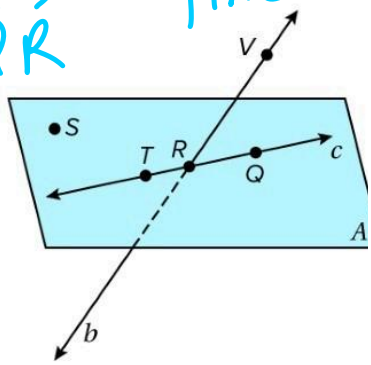
Use the figure to name each of the following.

a. a line containing point *Q* line QR

b. a plane containing point *S* and point *T*

Plane TRS
Plane A

line c
$\overleftrightarrow{QR}$



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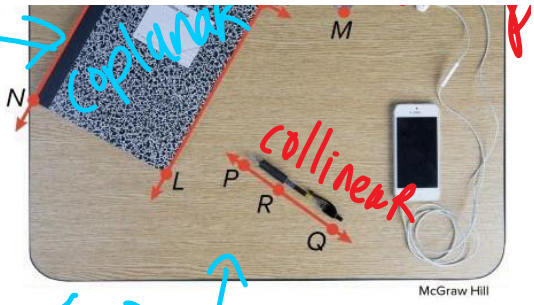
Example 2
Model Points, Lines, and Planes

STUDENT DESK Name the geometric terms modeled by the objects in the picture.

picture. Plane (Notebook) Plane JKL



$\overleftrightarrow{QR}$ Line PR

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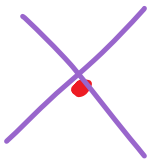
Learn
Intersections of Lines and Planes

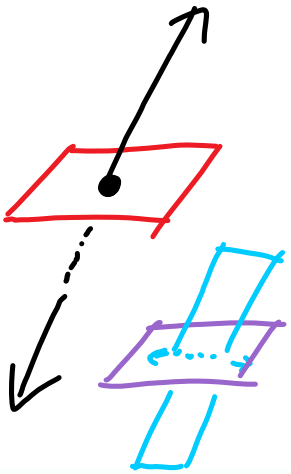
The **intersection** of two or more geometric figures is the set of points they have in common.

Two lines intersect in a point.



Lines intersect planes at a point.

Planes intersect each other at a line.



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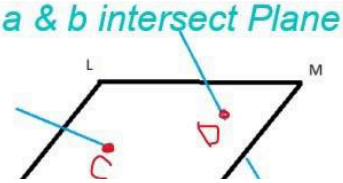
Learn
Intersections of Lines and Planes

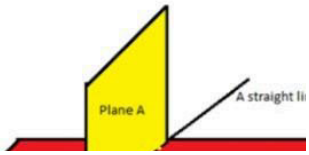
Two lines intersect in a _point_. Lines intersect planes at a _point_. Planes intersect each other at a _line_.

*line a & b intersect at Point Q.

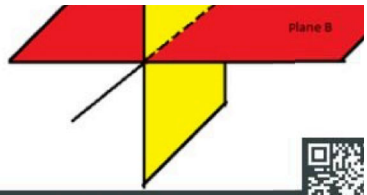
*lines a & b intersect Plane NLM at a point C & D .



*Plane A & Plane B



intersect at line a



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Example 4
Interpret Drawings

Refer to the figure.

a. How many planes appear in this figure? flat surfaces 6

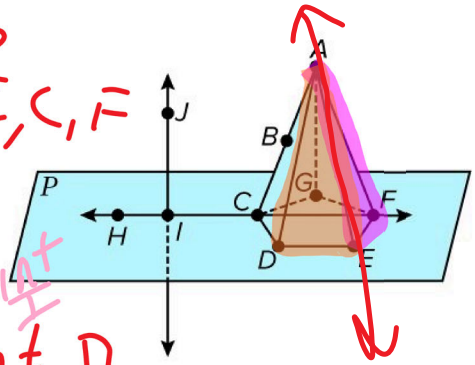
b. Name four points that are collinear. same line H, I, C, F

c. Name the intersection of plane *GAC* and plane $\mathcal{P}$. 2 planes int. at a line $\overleftrightarrow{CG}$

d. Where does line JI intersect Plane P? plane & a line int. at a point

e. Where does line AD intersect line DE? 2 lines int. at a point Point D

f. Where does Plane AFE intersect Plane ADE? 2 planes int. at a line $\overleftrightarrow{AE}$



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