Unit 2, Day 01: 1-1 Points, Lines, & Planes

3 undefined terms of Geometry: (What are the right words/symbols?)

- **Point:** a location that has neither shape nor size.
  - ★ Named by a capital letter: point T
- **Line:** made up of points and has no thickness or width.
  - ★ Named by 2 capital letters: $\overleftrightarrow{VY}$ **or**
  - ★ Named by a lowercase cursive letter: line n

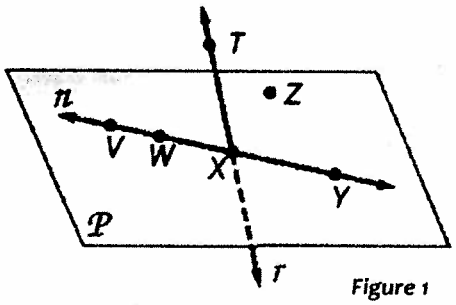


Figure 1

- **Plane:** a flat surface made up of points and extends infinitely in all directions. There is exactly one plane through any 3 points that are non-collinear.
  - ★ Named by a capital cursive letter: plane $\mathcal{P}$ (Fig. 1) **or** plane $\mathcal{A}$ (Fig. 2)
  - ★ Named by 3 capital letters that are **noncollinear:** plane VWZ (Fig. 1) **or** plane TWQ (Fig. 2)

Types of points:

- **Collinear:** points that are on the same line.
  - ★ 3 collinear points are V, W, and X (Fig. 1) or W, X, and Y (Fig. 1)
- **Non-collinear:** points that are NOT on the same line.
  - ★ 3 non-collinear points are X, Y, and Z (Fig 1) or V, N, and M (Fig 2)
- **Coplanar:** points that are on the same plane.
  - ★ 3 coplanar points are X, Y, and Z (Fig 1) or P, U, and T (Fig 2)
- **Non-coplanar:** points that are NOT on the same plane.
  - ★ 4 non-coplanar points are X, Y, Z, and T (Fig. 1) or W, Q, R, and N (Fig. 2)

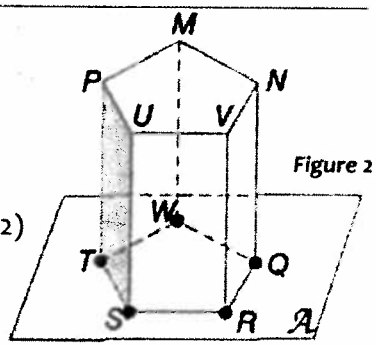


Figure 2

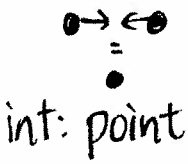
we have to pick 4 b/c 3 will always be coplanar!

Intersections of Lines and Planes:

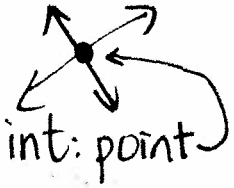
- **Intersection:** two or more geometric figures come together to form a common set of points.
- **Space:** a boundless three-dimensional set of all points.

1-8: Draw a picture of the following set of undefined terms. Then state their intersection.

1. 2 Points

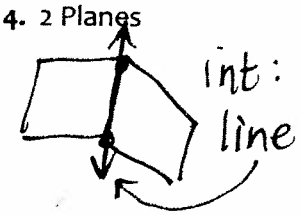


2. 2 Lines

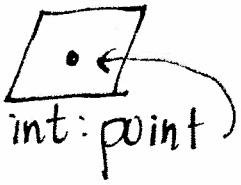


3. A Point & a Line

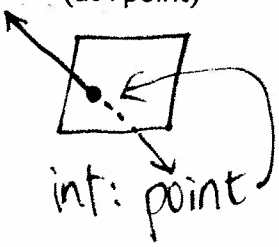
4. 2 Planes



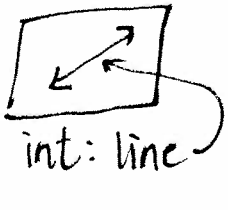
5. A Point & a Plane



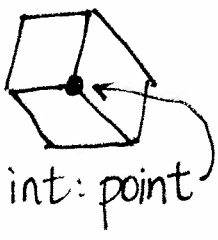
6. A Line & a Plane (at 1 point)



7. A Line & a Plane more than 1 point)

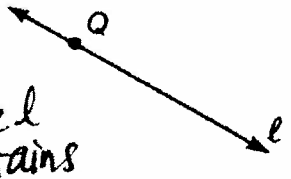


8. 3 Planes



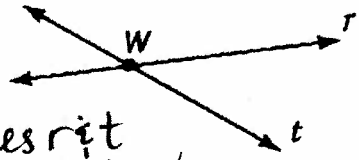
9-14: Write a description for each figure.

9.



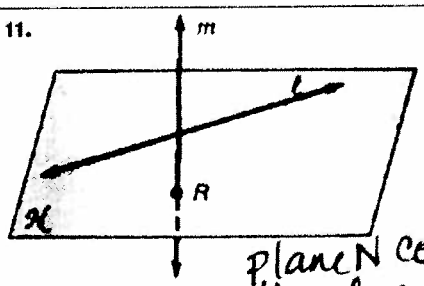
Line ℓ contains point Q

10.



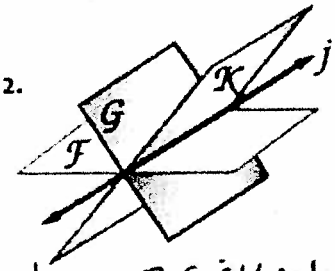
Lines r & t int. at pt. W

11.



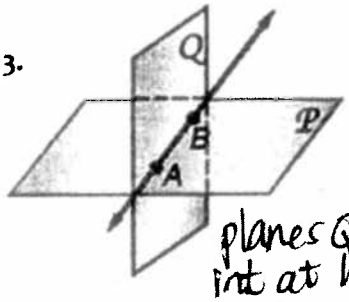
plane N cont. line ℓ & line m int. plane N at point R

12.



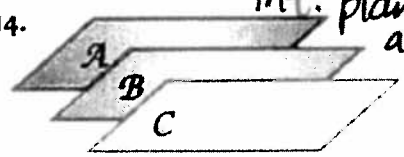
planes F, G, & K int. at line j

13.



planes Q & P int at line AB

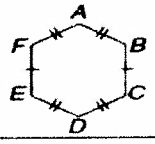
14.



Planes A, B, & C are parallel (do not intersect)

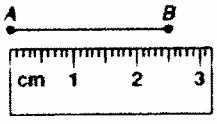
Unit 2, Day 01: 1-2 Linear Measure

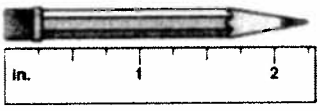
- **Line Segment:** can be measured because it has 2 endpoints.
  - ★ Named with 2 points, written either $\overline{AB}$ or $\overline{BA}$. (see #1 below)
  - ★ The measure of a segment is written without the segment mark: AB,
- **Betweenness of Points:** a point is between 2 other points only if they are collinear and the sum of 2 parts equals the whole: RS + ST = RT (use example 3 below)
- **Segment Addition Postulate** (Pg 142): if a point B is between A and C, then AB + BC = AC
- **Congruent Segments:** Segments that have the same measure (indicated by tic marks)
  - ★ The symbol for congruency is $\cong$.
  - ★ Which segments are congruent on hexagon ABCDEF? $\overline{FA} \cong \overline{AB} \cong \overline{CD} \cong \overline{DE}$ & $\overline{EF} \cong \overline{BC}$

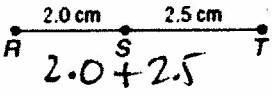


Find the length of each segment or object.

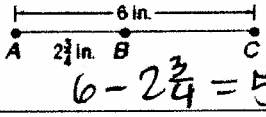
1. AB = 2.5 cm
2. Pencil = 2.25 in.
3. RT = 4.5 cm
4. BC = $3\frac{1}{4}$ in







2.0 + 2.5



$6 - 2\frac{3}{4} = 5\frac{4}{4} - 2\frac{3}{4}$

Use the given information to find the value of the variable and all segments on the figure.

Hint: Draw a segment and label all the parts. Then use the Segment Addition Postulate to write an equation.

5. **Given: S is between R and T**
   RS = 2x, ST = 5x + 4, and RT = 32

R 2x S 5x+4 T

32

$2x + 5x + 4 = 32$
$7x + 4 = 32$
$7x = 28$
$x = 4$

x = 4 RS = 8 (2(4)) ST = 24 (5(4)+4)

6. **Given: Y is between X and Z.**
   XY = 3a, XZ = 5a − 4, and YZ = 14

X 3a Y 14 Z

5a − 4

$3a + 14 = 5a - 4$
$14 = 2a - 4$
$18 = 2a$
$9 = a$

a = 9 XY = 27 (3(9)) XZ = 41 (5(9)−4)