**Geometry Points, Lines, Planes, Collinear, Coplanar Notes Date:**

**Objective 1: Basic Terms of Geometry**

Recall:

* A \_\_\_\_\_\_\_\_\_\_\_ can be thought of as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, like a "meeting point" with friends. A point has no \_\_\_\_\_\_. It is represented by a small dot and is named by a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A \_\_\_\_\_\_\_\_ is a set of points.

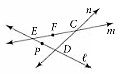
\*Draw a point and label it here:

* A \_\_\_\_\_\_ can be thought of as a series of \_\_\_\_\_\_\_\_\_ that extends in two opposite directions without end. You can name a line by any two \_\_\_\_\_\_\_\_\_\_\_ on the line or with a single \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Points that lie on the same line are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

\*Draw a line and label it with two points here:

\*Draw a line and label it with a lowercase letter here:

**Example 1:** Use the diagram below to answer parts A-E.



A) Are points E, F, and C collinear? If so, name the line on which they lie.

B) Are points E, F, and D collinear? If so, name the line on which they lie.

C) Are points F, P, and C collinear? D) Name line *m* in three other ways.

I)

II)

III)

E) Why do you think arrowheads are used when drawing a line of naming a line such as ?

* A \_\_\_\_\_\_\_\_\_\_ is a flat surface that has no \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. A plane contains many lines and extends without end in the directions of all its lines. You can name a plane by either a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or by at least \_\_\_\_\_ of its noncollinear points. Points and lines in the same plane are \_\_\_\_\_\_\_\_\_\_\_\_\_.

\*Name a plane by a single capital letter here:

\*Name a plane by at least 3 points here:

**Example 2:** Each surface of the cube represents part of a plane. Use it for A-C.



A) Name the plane represented by the front of the ice cube.

B) List three different names for the plane represented by the top of the ice cube.

C) What other point is on plane GFA?

**Objective 2: Basic Postulates of Geometry**

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_ is an accepted statement of fact.

You have used some of the following geometry postulates in algebra. For example, you used Postulate 1-1 when you graphed an equation such as y = -2x+8. You plotted two points and then drew the line through those two points.



Recall from algebra that one way to solve a system of two equations is to graph the two equations and find their intersection point. As the graphs of y = -2x + 8 and y = 3x - 7 show below, the two lines intersect at \_\_\_\_\_\_\_\_\_\_. The solution to the system of equations is \_\_\_\_\_\_\_\_. This illustrates Postulate 1-2.







**Example 3:** Use the diagram to answer A-D.



A) What is the intersection of plane HGF and plane BCG?

B) What is the intersection of plane ABCD and plane HDAE?

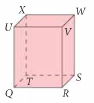
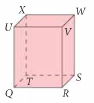
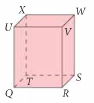
C) Name two planes that intersect in 

D) Name two planes that intersect in 



**Example 4:** Use the diagram to answer the following questions.

A) B) C)

A) Shade the plane that contains Q, S, and R.

B) Shade the plane that contains W, V, and Q.

C) Shade the plane that contains W, T, and S.

D) Name another point that is in the same plane as X, W, and U.

E) Name another point that is coplanar with points U, R, and S.