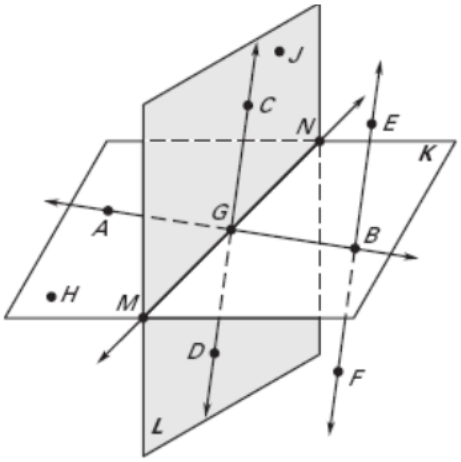
Name_____ Per _____

1.1 Points, Lines, Planes

1. Use the diagram below to answer the following questions.



a. Give five other names for $\overleftrightarrow{AB}$.

b. Give another name for $\overline{CG}$.

c. Give another name for $\overrightarrow{FB}$.

d. Name all rays with endpoint *G*

e. What ray is opposite $\overrightarrow{GC}$?

f. Are points *A*, *G*, and *N* collinear?

g. Are points *A*, *G*, and *N* coplanar?

h. Name the intersection of $\overleftrightarrow{AB}$ and $\overleftrightarrow{MN}$

i. Name the intersection of $\overleftrightarrow{CD}$ and plane *ABH*.

j. Name the intersection of plane *K* and plane *L*.

k. Name the intersection of $\overleftrightarrow{EF}$ and plane *K*.

2. Use the diagram below to determine whether each statement is TRUE of FALSE.

a. Point X lies on line m.

b. X, W, and Z are collinear.

c. Point W lies on $\overline{VY}$.

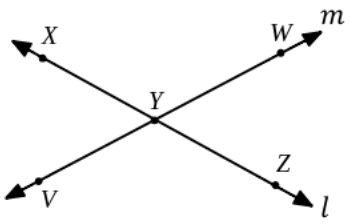
d. X, W, and Z are coplanar.

e. line *l* and line *m* meet at point *Y*

f. $\overrightarrow{VW}$ and $\overrightarrow{VY}$ are the same rays.

g. $\overrightarrow{YX}$ and $\overrightarrow{YV}$ are opposite rays.

h. $\overrightarrow{YW}$ and $\overrightarrow{YV}$ are opposite rays.



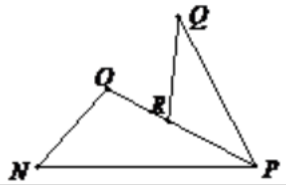
3. Circle all undefined terms.

Plane	Ray	Segment
Angle	Point	Line
Square	Parallel	Area

4. Mark the diagram based on the statements below.

$\overline{ON} \cong \overline{RQ}$

$\overline{PO} \cong \overline{QP}$



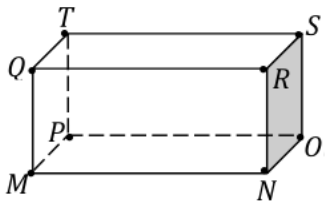
5. Name a point that is coplanar with each of the given points.

a. $M, N,$ and O ,____

b. $T, Q,$ and P ,____

c. $T, S,$ and R ,____

d. $O, S,$ and R ,____



6. Mike says $\overleftrightarrow{XY}$ is the same as $\overleftrightarrow{YX}$. Chris says $\overline{PT}$ is the same as $\overline{TP}$. Jay says $\overrightarrow{JK}$ is the same as $\overrightarrow{KJ}$. Who is wrong? Explain why.

7. Which of the following is the definition of a ray?

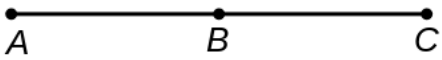
A. a part of a line consisting of two points and all of the points between them

B. a point on a line segment that is not directly in the middle.

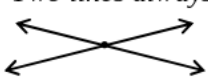
C. a part of a plane that consists of points that are collinear.

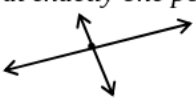
D. a part of a line consisting of an endpoint and all the points of the line on one side of the endpoint.

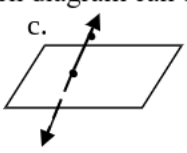
8. Given $AB = 4$ and $AC = 8$. Explain how Kelly knows that $\overline{AB} \cong \overline{BC}$.



9. "*Two lines always intersect at exactly one point*". Which diagram can be used to prove this statement is false?

a. 

b. 

c. 

d. 

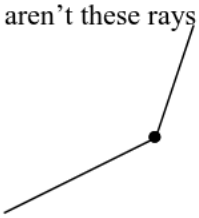
10. Define coplanar points.

Now draw and label plane A with coplanar points W, H and S.

Lastly, add and label points C and O such that they are collinear with point W but not coplanar with points H and S.

11. Consider each diagram below.

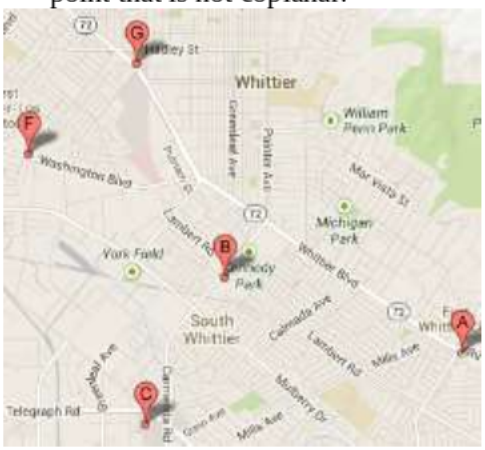
a. Why aren't these rays **opposite rays**?



b. Why aren't these rays **opposite rays**?

c. Explain why these rays are **opposite rays** (two reasons).

12. One real life representation of a plane is a map. The points on the map indicate local McDonald restaurants in Whittier. The points on the map are ***coplanar***. A Goodyear blimp flying overhead is an example of a point that is not coplanar.



Illustrate your own real world example of coplanar and non-coplanar points.

For the last 6 problems, sketch and label the diagram that represents the following.

13. Points A, B, C, are collinear and D is not coplanar to A, B, and C.

14. $\overleftrightarrow{MN}$ intersects $\overleftrightarrow{PQ}$ at point M.

15. Plane GIH intersecting $\overleftrightarrow{AB}$ at point J where $\overleftrightarrow{AB}$ is not coplanar to GIH.

16. Opposite rays $\overrightarrow{HP}$ and $\overrightarrow{HN}$ where point T lies on $\overrightarrow{HP}$ and is not between H and P.

17. Sketch three lines that intersect at a single point.

18. Sketch three lines that have two points of intersection.