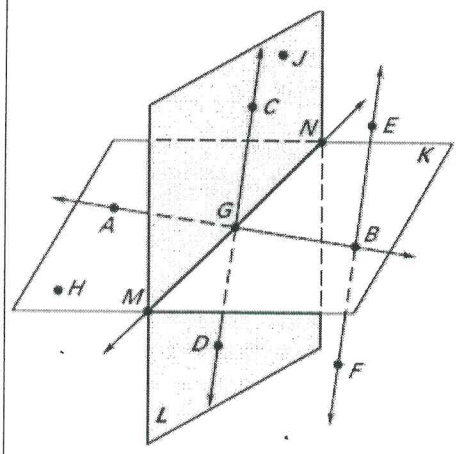
Name Answer Key Per _____

1.1 Points, Lines, Planes

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



a. Give five other names for $\overleftrightarrow{AB}$ — $\overleftrightarrow{BA}$, $\overleftrightarrow{AG}$, $\overleftrightarrow{GA}$, $\overleftrightarrow{GB}$, $\overleftrightarrow{BG}$

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

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

d. Name all rays with endpoint G. $\overrightarrow{GA}$, $\overrightarrow{GB}$, $\overrightarrow{GC}$, $\overrightarrow{GD}$, $\overrightarrow{GN}$, $\overrightarrow{GM}$

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

f. Are points A, G, and N collinear? No

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

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

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

j. Name the intersection of plane K and plane L. $\overleftrightarrow{MN}$

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

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

a. Point X lies on line m. False

b. X, W, and Z are collinear. False

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

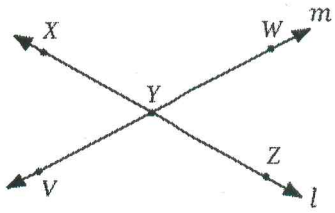
d. X, W, and Z are coplanar. True

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

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

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

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



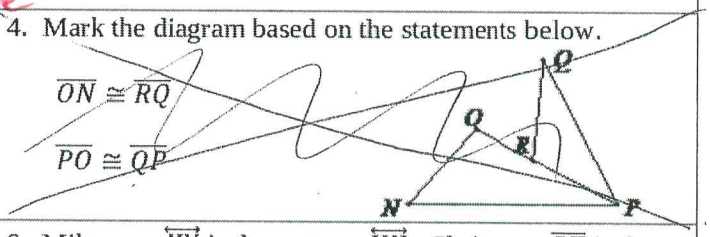
3. Circle all undefined terms.

Plane	Ray	Segment
Angle	Point	Line
Square	Parallel	Area

4. Mark the diagram based on the statements below.

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

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



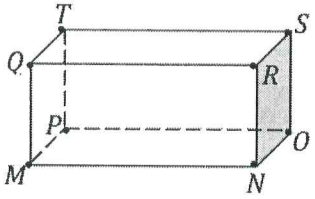
5. Name a point that is coplanar with each of the given points.

a. M, N, and O, P

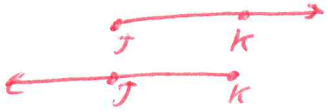
b. T, Q, and P, M

c. T, S, and R, Q

d. O, S, and R, N



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.



They are two rays that go in different directions.

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

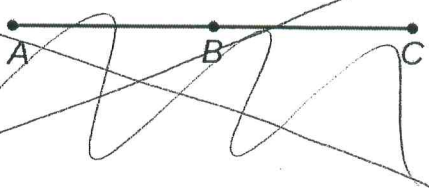
A. a part of a line consisting of two points and all of the points between them

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.

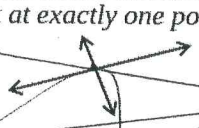
8. Given $AB = 4$ and $AC = 8$. Explain how Kelly knows that $\overline{AB} \cong \overline{BC}$.



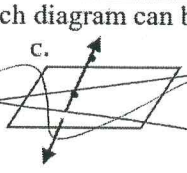
9. "*Two lines always intersect at exactly one point*". Which diagram can be used to prove this statement is false?

a.

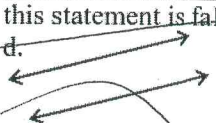
b.



c.



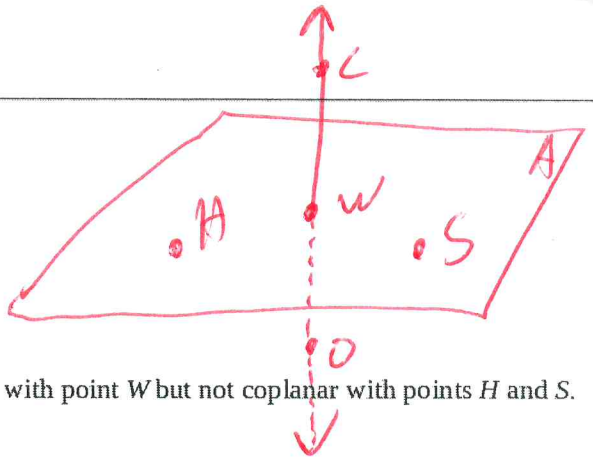
d.



10. Define coplanar points.

Points on the same plane

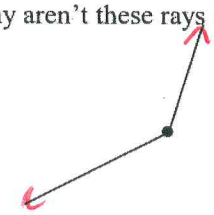
Now draw and label plane A with coplanar points W, H and S.



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**?



Not opposite directions

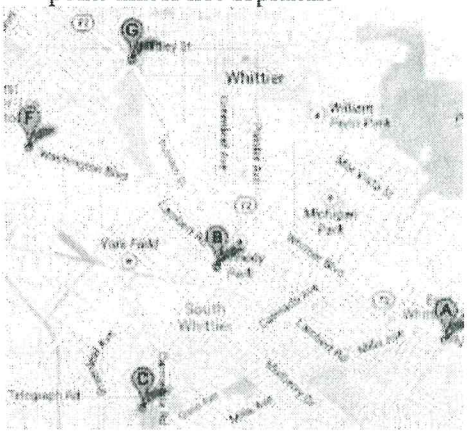
b. Why aren't these rays **opposite rays**?

Not the same endpoint

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

- Same endpoint
- opposite directions

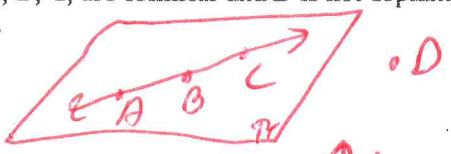
12. One real life representation of a plane is a map. The points on the map indicate local McDonald restaurants in Whittier. The points on the map are ***coplanar.*** A Goodyear blimp flying overhead is an example of a point that is not coplanar.



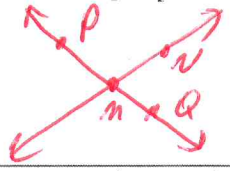
Illustrate your own real world example of coplanar and non-coplanar points.

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

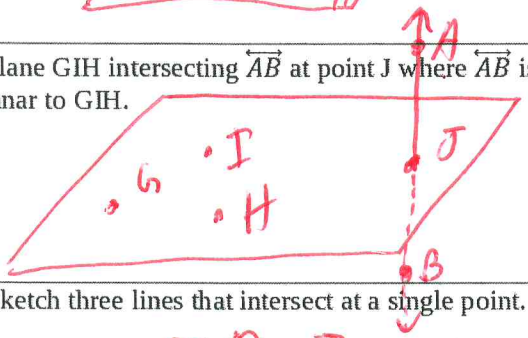
13. Points A, B, C, are collinear and D is not coplanar to A, B, and C.



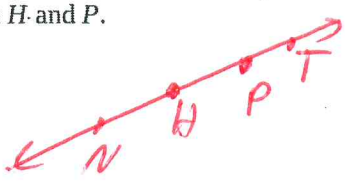
14. $\overleftrightarrow{MN}$ intersects $\overleftrightarrow{PQ}$ at point M.



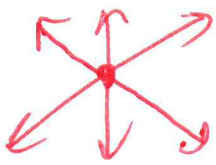
15. Plane GIH intersecting $\overleftrightarrow{AB}$ at point J where $\overleftrightarrow{AB}$ is not coplanar to GIH.



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.