Geometry, Ch 1-1 Exercises, pg 5, #1-12, 14-15, 17-22, 25-32, 39a+b

1. Write in words what each symbol means.

a. Q point Q

b. $\overline{MN}$ segment MN

c. $\overrightarrow{ST}$ ray ST ; not ray TS

d. $\overleftrightarrow{FG}$ line FG

2. Compare colinear and coplaner points.

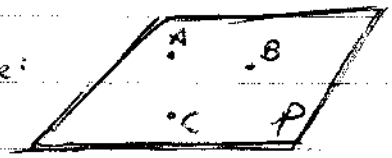
Are colinear points coplaner?

Are coplaner points colinear?

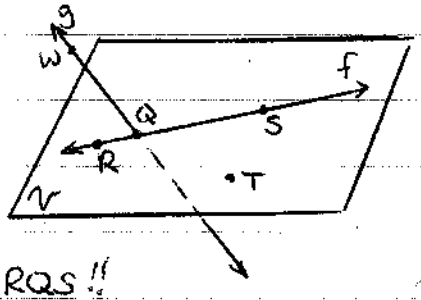
Colinear points lie in the same line. Since a line lies in a plane, colinear points must also be coplaner.

Coplaner points do not have to be colinear.

Counter-example:



Use the diagram for #3-7



3. Give 2 other names for $\overleftrightarrow{WQ}$

$\overleftrightarrow{QW}$ or line g

4. Give another name for plane V.

Sample: plane RQT. Not plane RQS !!

5. Name 3 colinear points; then name a 4th point not colinear with them.

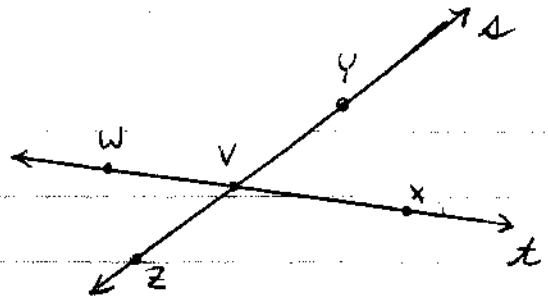
points R, Q, S are colinear ; either W or T are not colinear with them.

6. Name a point not coplaner with R, S, and T. point W

7. Is point W coplaner with points Q and R? Explain. Yes.

Any 3 non-colinear points define a plane. In this case, it's not the plane drawn.

Use the diagram for #8-12



8. What is another name for $\overline{ZY}$?

$\overline{YZ}$; not line s

9. Name all rays with endpoint V.

$\overrightarrow{VW}$, $\overrightarrow{VY}$, $\overrightarrow{VZ}$, $\overrightarrow{VX}$

10. Name two pairs of opposite rays

(1) $\overrightarrow{VW}$ and $\overrightarrow{VX}$ (2) $\overrightarrow{VY}$ and $\overrightarrow{VZ}$

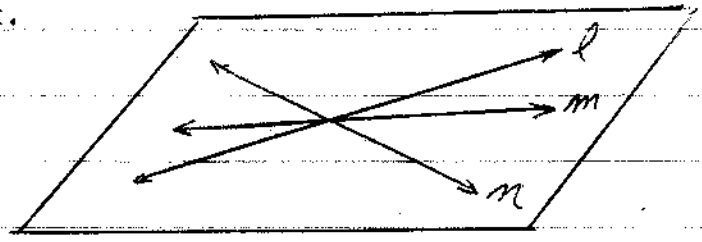
11. Give another name for $\overrightarrow{WV}$.

$\overrightarrow{WX}$

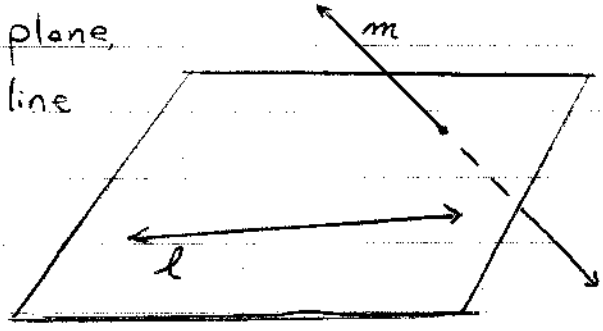
12. Describe the error: $\overrightarrow{VW}$ and $\overrightarrow{VZ}$ are opposite rays because they have the same endpoint.

Opposite Rays must have a common endpoint, with the endpoint V between points W and Z.

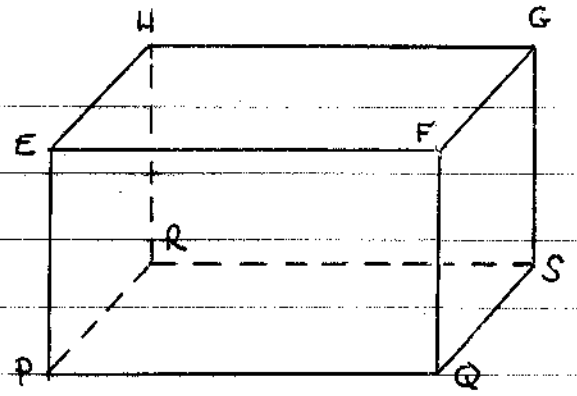
14. Sketch three lines in a plane that intersect at a single point.



15. Sketch one line that lies in a plane and one line that does not line in the plane.



Use the diagram for #17-22



17. Name intersection of $\overleftrightarrow{PR}$ and $\overleftrightarrow{HR}$.

point R

18. Name the intersection of plane EFG and plane FGS.

$\overleftrightarrow{FG}$

19. Name the intersection of plane PQS and plane HGS. $\overleftrightarrow{RS}$

20. Are points P, Q, F colinear? No Are they coplanar? Yes

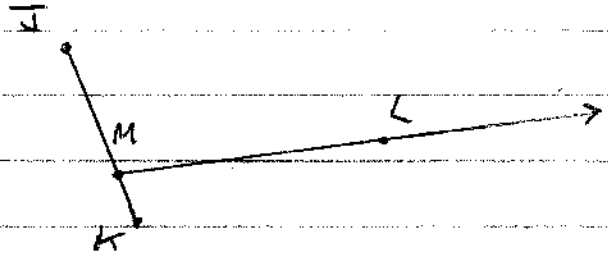
21. Are points P and G colinear? Yes Are they coplanar? Yes

22. Name 3 planes that intersect at point E.

[Many correct answers] One sample: plane EHG, plane EFQ, and plane EHS

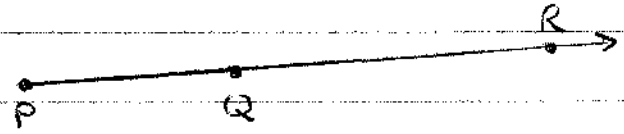
25. Sketch: Three noncolinear points J, K, and L.

Sketch $\overline{JK}$ and add a point M on $\overline{JK}$. Then sketch $\overrightarrow{ML}$.



26. Sketch: Draw two points P and Q. Then sketch $\overrightarrow{PQ}$.

Add a point R on the ray so Q is between P and R.



Algebra: Given the equation of a line, and a point, use substitution to determine whether the point is on the line.

27. $y = x - 4$; $A(5, 1)$ — x, y

$(1) \stackrel{?}{=} (5) - 4$

$1 = 1$ Yes

28. $y = x + 1$; $A(1, 0)$

$(0) \stackrel{?}{=} (1) + 1$

$0 = 2$ No

29. $y = 3x + 4$; $A(7, 1)$

$(1) \stackrel{?}{=} 3(7) + 4$

$(1) = 21 + 4$

$1 = 25$ No

30. $y = 4x + 2$; $A(1, 6)$

$(6) \stackrel{?}{=} 4(1) + 2$

$6 = 6$ Yes

31. $y = 3x - 2$; $A(-1, -5)$

$(-5) \stackrel{?}{=} 3(-1) - 2$

$-5 = -3 - 2$

$-5 = -5$ Yes

32. $y = -2x + 8$; $A(-4, 0)$

$(0) \stackrel{?}{=} -2(-4) + 8$

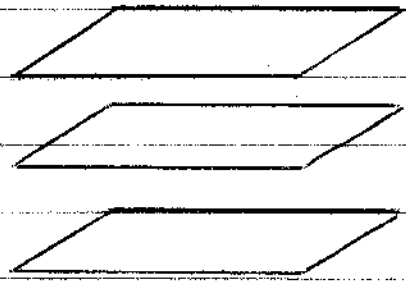
$0 = 8 + 8$

$0 = 16$ No

39. Tell whether each of the following situations involving 3 planes is possible. If possible, then make a sketch.

a. None of the planes intersect.

[All planes parallel]



b. Planes intersect in one line.