For questions 1 – 10, use a number or one of the following words to complete the sentences: **collinear, non-collinear, endpoint(s), perpendicular, parallel vertex, capital, opposite rays**

1. To draw a line segment, I need exactly ___2___ points.
2. To name a line segment, I use the ___endpoints___
3. To name an angle, I must use ___3___ points. The ___vertex___ must be the 2nd point.
4. To name a ray, I use ___2___ points. The first point must be the ___endpoint___
5. Points are named with ___capital___ letter(s).

6. Two rays which together form a straight line are called ___opp. rays___
7. Two lines that meet at 90° angles are called ___perpendicular___ lines
8. Two lines that are in the same plane and never intersect are called ___parallel___ lines
9. You need at least three ___coplanar___ points to name a plane

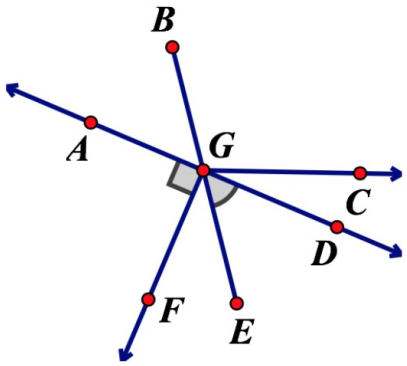
For questions 10 – 17, use the diagram at the right. Please use the correct symbol for naming lines, rays, segments, and angles.

10. Name a line: $\overleftrightarrow{AD}$

11. Name 2 rays: $\overrightarrow{GA}$ and $\overrightarrow{GD}$

12. Name 2 line segments: $\overline{BE}$ and $\overline{AD}$

13. Name a right angle: $\angle AGF$

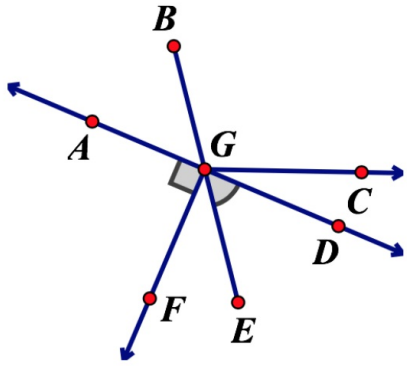



14. Name a line perpendicular to $\overleftrightarrow{AD}$: $\overleftrightarrow{GF}$

15. Name 3 points that are collinear A, G, and D

16. Name 3 points that are non-collinear: F, E, and G

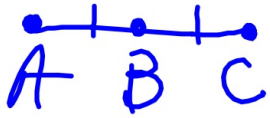
17. Name a pair of opposite rays. $\overrightarrow{GA}$ and $\overrightarrow{GD}$



**Objective 2: I can use a midpoint to find the length of a segment.**

A midpoint of a segment is a point that divides the segment into 2 = parts. A midpoint, or any line, ray, or other segment through a midpoint, is said to bisect the segment. Let's draw a segment with its midpoint and label it below.

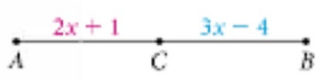
What equations could you write? 1) $AB = BC$




2) $AB + BC = AC$ (Seg. add post.)

**Example 6:** Find the value of x, and each indicated length.

A) C is the midpoint of $\overline{AB}$. Find AC, CB and AB.




$2x+1=3x-4$

$1=x-4$

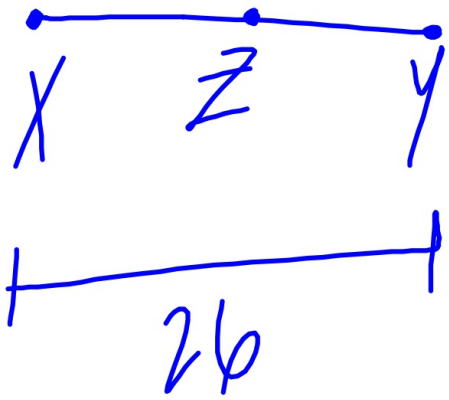
$x=5$

$AC = 11$

$CB = 11$

$AB = 22$

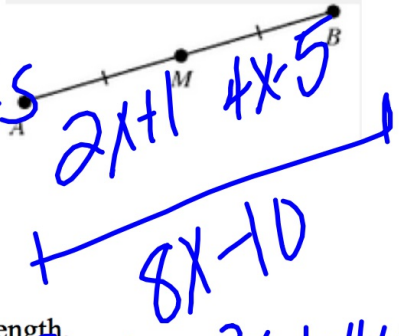
B) Z is the midpoint of $\overline{XY}$ and XY = 26. Find XZ and ZY.




XZ = 13

ZY = 13

C) Use the diagram at the right for parts *i* – *iii*.




*i)* Is M a midpoint of $\overline{AB}$? Why or why not?

yes b/c tick marks

*ii)* If AB = 16 inches, how long is $\overline{AM}$ and $\overline{MB}$?

8 in.

iii) If $AM = 2x + 1$, $MB = 4x - 5$ and $AB = 8x - 10$, find each length.

$x =$ 3

$AM =$ 7

$MB =$ 7

$AB =$ 14

$2x+1 = 4x-5$

$x = 3$

$8x-10 = 2x+1+4x-5$

$x = 3$

**Geometry** **Section 1-4 Continued: Segments, Rays, Parallel Lines and Planes**

**Objective 3: Identifying Segments and Rays**

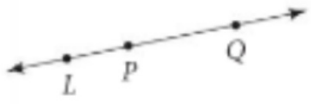
Many geometric figures, such as squares and angles, are formed by parts of lines called segments or rays.

A segment is the part of a line consisting of two endpts & all pants btw.

A ray is the part of a line consisting of one endpt & all pants on one side of endpt.

opp rays are two collinear rays with same endpt. Opposite rays always form a line.

**Example 1:** Name the segments and rays in the figure below.




*The segments are: $\overline{LP}$, $\overline{LQ}$, $\overline{PQ}$

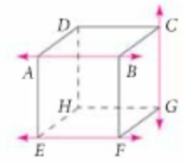
*The rays are: $\overrightarrow{PL}$ $\overrightarrow{PQ}$ $\overrightarrow{LQ}$ $\overrightarrow{LP}$

**QC1:** $\overrightarrow{LP}$ and $\overrightarrow{PL}$ form a line. Are they opposite rays? Explain.

No, they don't share the same endpt.

**Objective 4: Recognizing Parallel Figures**

Lines that do not intersect may or may not be coplanar. parallel lines are coplanar lines that do not intersect. skew lines are noncoplanar, and they are not ll and dont intersect.

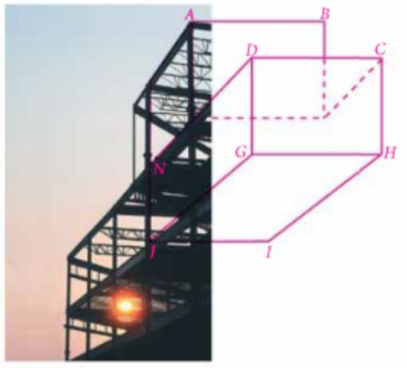



$\overleftrightarrow{AB} \parallel \overleftrightarrow{EF}$

$\overleftrightarrow{AB}$ and $\overleftrightarrow{CG}$ are skew.

*Segments or rays are parallel if they lie in ll lines. They are skew if they lie in skew lines.

**Example 2:** Use the diagram of the skyscraper to answer Example 1 and QC 1.




A) Name all labeled segments that are parallel to $\overline{DC}$. $\overline{GH}$, $\overline{AB}$, $\overline{JI}$

B) Name all labeled segments that are skew to $\overline{DC}$. $\overline{NJ}$, $\overline{GJ}$, $\overline{HI}$

**QC 2:** A) Name all labeled segments that are parallel to $\overline{GJ}$.

$\overline{HI}$, $\overline{DN}$

B) Name all labeled segments that are skew to $\overline{GJ}$.

$\overline{AB}$, $\overline{CD}$, $\overline{CH}$

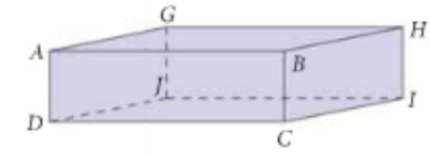
C) Name another pair of parallel segments.

DN, HI

D) Name another pair of skew segments.

$\overline{DN}$, $\overline{HC}$

parallel planes are planes that parallel don't intersect. A line and a plane that do not intersect are also




Plane $ABCD \parallel$ Plane $GHIJ$.

Plane $ABCD \parallel \overleftrightarrow{GH}$.

**Example 3:** Use the diagram above to name the figures.

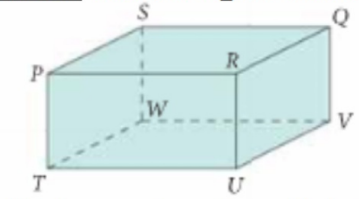
A) Two pairs of parallel planes

plane ABHG ∥ DCIJ

B) A line that is parallel to plane GHIJ.

$\overleftrightarrow{AB}$ ∥ plane GHIJ.

**QC 3:** Use the figure below to name the figures.




A) Three pairs of parallel planes

TUR ∥ SQV

PSW ∥ RQV

SQR ∥ WVU

B) A line that is parallel to plane QRUV.

$\overleftrightarrow{SP}$