

<u>TERM</u>	<u>DESCRIPTION</u>	<u>PICTURE</u>	<u>SYMBOLS &amp; NOTATION</u>	<u>ALGEBRAIC REPRESENTATION</u>
J POINT				
LINE				
PLANE				
SEGMENT				
RAY				
SPACE				
COLLINEAR				
PLANAR				

Intersect -

Parallel -

Skew -

Bisect -

Angle -

Postulate -

Theorem -

vertical pair -

Basic Undefined Terms - Point, Line, Plane, Segment, Ray, Collinear, Coplanar

Notation:

Which term (s), if any, uses the following notation:

1. Small case cursive: \_\_\_\_\_
2. Large case cursive: \_\_\_\_\_
3. Large case printed: \_\_\_\_\_
4. Two large case printed letters (together) \_\_\_\_\_

Explain the difference (if any) between:

5.  $AB$  and  $\overline{AB}$  \_\_\_\_\_
6.  $\overrightarrow{AB}$  and  $AB$  \_\_\_\_\_
7.  $\overrightarrow{AB}$  and  $\overrightarrow{BA}$  \_\_\_\_\_
8.  $\overline{AB}$  and  $\overline{BA}$  \_\_\_\_\_

9. At what point do  $\overrightarrow{AB}$  and  $\overline{BC}$  intersect? \_\_\_\_\_ Drawing:

10. At what point do  $\overleftrightarrow{AC}$  and  $\overline{DC}$  intersect? \_\_\_\_\_ Drawing:

Given each diagram, correct its corresponding notation or description:

Diagram

Wrong Notation

Corrected Notation

11.



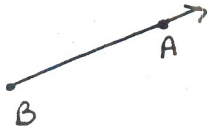
$\overleftarrow{DC}$

12.



$\overleftrightarrow{BCA}$

13.



$\overrightarrow{AB}$

Diagram

Wrong Notation

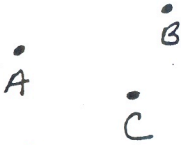
Corrected Notation

14.



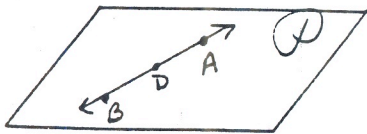
line M

15.



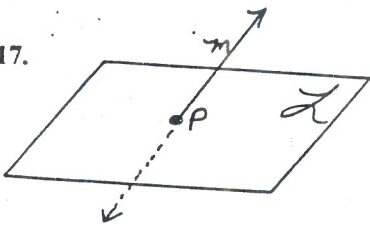
collinear points  
A, B, C

16.



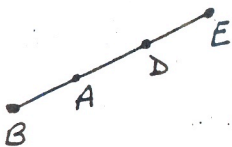
$\overleftrightarrow{BA}$  intersects  
plane P at D

17.



line m lies  
in plane L

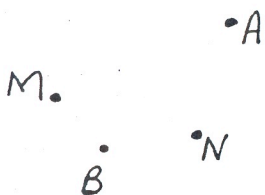
18.



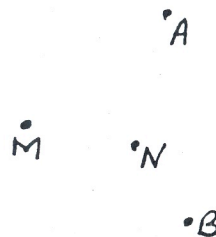
$\overline{BADE}$

Draw plane P so that the points M, A, N, and B are either:

19. Coplanar Points



20. Non Coplanar points





Draw and Label each situation neatly:

1.  $\overline{AB}$  intersecting  $\overrightarrow{BD}$

2. Lines  $m$ ,  $p$ , and  $n$  intersecting at B

3.  $\overleftrightarrow{AB}$  and  $m$  intersect at D

4. C, D, and R are collinear points

5. C, D, and R are non collinear points

6. Line  $p$  intersects plane  $\mathcal{R}$  at T

7. Line  $l$  lies in plane  $\mathcal{B}$

8. Lines  $q$  and  $p$  intersect at R contained in plane  $\mathcal{K}$

9.  $\overleftrightarrow{AB}$  intersects  $\overrightarrow{DC}$  at R

10.  $\overleftrightarrow{AB}$  contains P (this is not a plane !!) *← why?!?*

11.  $\overrightarrow{CR}$  intersects  $\mathcal{P}$  at B

12. Plane  $\mathcal{P}$  contains  $l$ ,  $m$ , and  $q$  intersecting at N

13.  $\overrightarrow{AB}$  intersects  $\mathcal{U}$  at D

14. K, M, A, R and T are coplanar

15. K, M, A, R and T are non coplanar

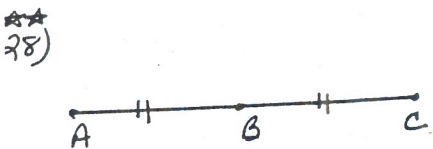
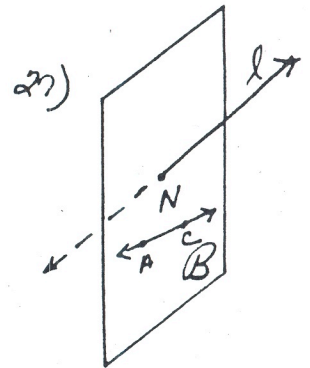
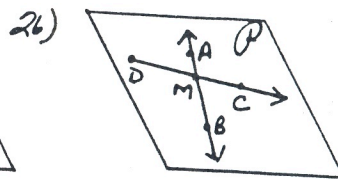
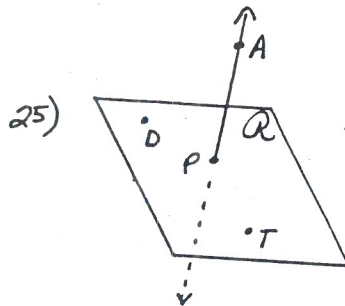
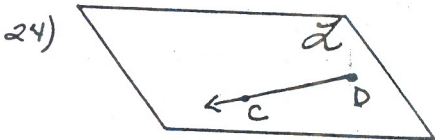
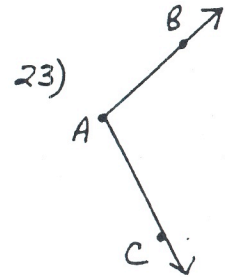
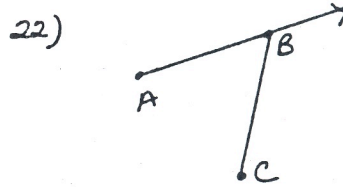
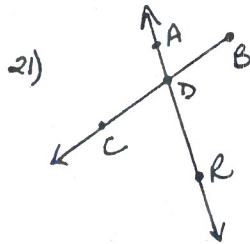
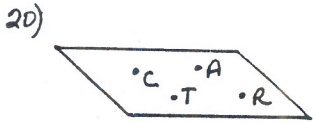
16. M, A, T and H are collinear

17. M, A, T and H are non collinear

18.  $\overline{AD}$  intersects  $\overline{DR}$

\*\*\* 19. C is the midpoint of  $\overline{RM}$

Describe each situation using correct notation. You may need 2 sentences.



29) What is wrong with this description?  
  
 "C is the midpoint of  $\overline{BD}$ "

D55/D49 Distance, Midpoint

Name \_\_\_\_\_  
Bell \_\_\_\_\_ Date \_\_\_\_\_

**Write the formulas used for distance and midpoint:**

number line

distance:

midpoint:

Coordinate plane:

distance:

midpoint:

**Number line problems**

Complete each using the given number line:



1.  $AE =$  \_\_\_\_\_
2. Is  $\overline{CE} > \overline{AC}$ ? \_\_\_\_\_
3. Is  $\overline{AC} \cong \overline{CF}$ ? \_\_\_\_\_
4. Name a segment equal to  $4ED$  \_\_\_\_\_
5. Why do you use absolute value to find distance? \_\_\_\_\_
6. What is the midpoint of  $\overline{AE}$ ? \_\_\_\_\_
7. D is the midpoint of what segment? \_\_\_\_\_

Given: these coordinates of points on the number line:

$X = 40$        $Y = -25$        $Z = 13$        $W = -15$

8.  $XY =$  \_\_\_\_\_
9. Coordinate of the midpoint of  $\overline{ZX}$  \_\_\_\_\_
10. Is  $XZ > YW$ ? \_\_\_\_\_ Show work to justify answer

**Coordinate Plane problems**

Given:  $A(3, -5)$   $B(-4, -8)$   $C(0, 4)$   $D(-6, 0)$

Find:

- |                  |  |
|------------------|--|
| 11. $AC =$ _____ | 15. midpoint of $\overline{CD}$ (____, ____) |
| 12. $BA =$ _____ | 16. midpoint of $\overline{BC}$ _____        |
| 13. $BC =$ _____ | 17. midpoint of $\overline{AD}$ _____        |
| 14. $CD =$ _____ | 18. midpoint of $\overline{AB}$ _____        |

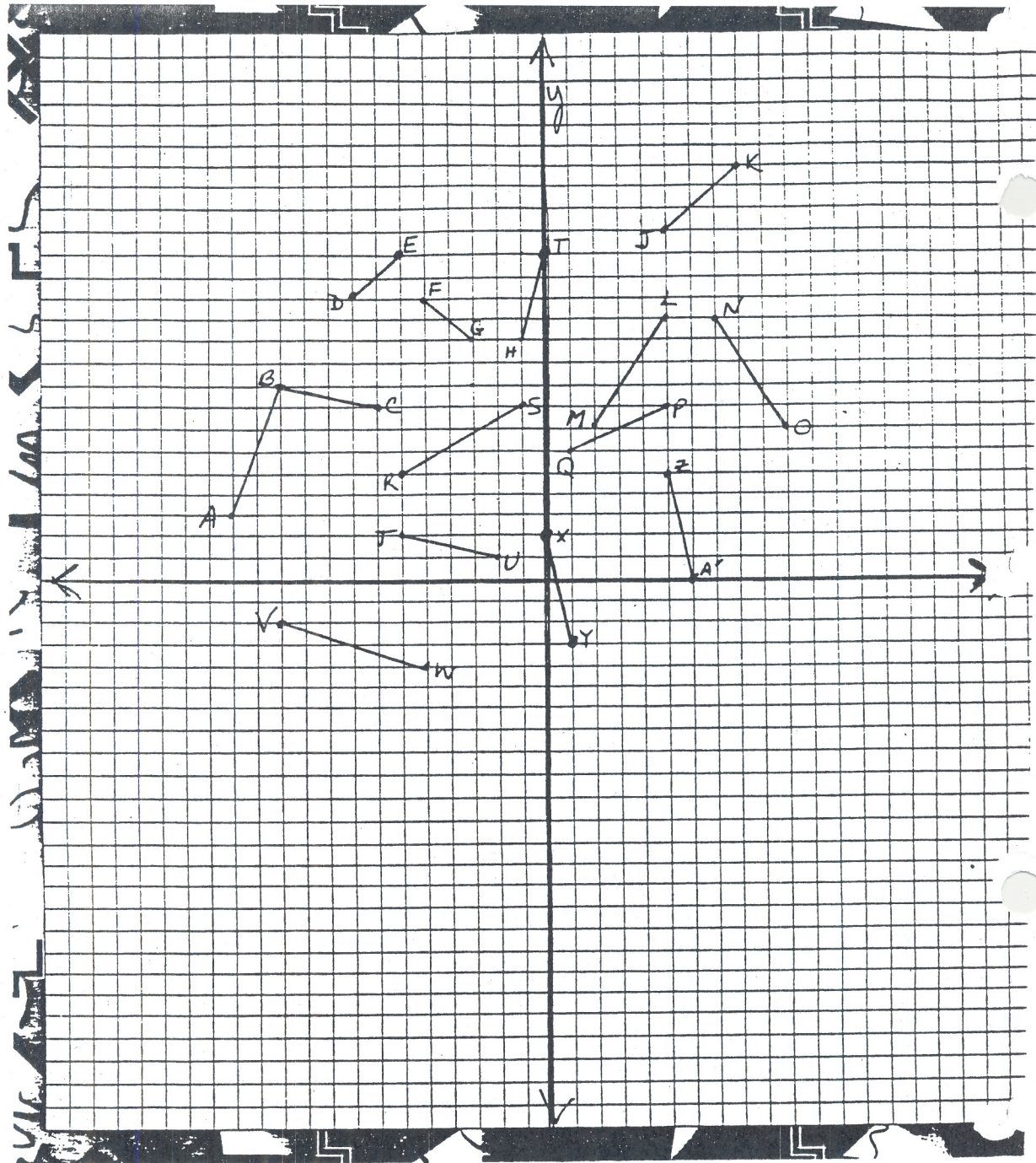
Given: B is one endpoint  
C is the midpoint  
Find D - the other endpoint



19.  $B(4, 2)$   $C(6, -4)$   $D(____, ____)$
20.  $B(0, -4)$   $C(-8, -10)$   $D$  \_\_\_\_\_
21.  $B(-2, -1)$   $C(4, 5)$   $D$  \_\_\_\_\_
22.  $B(5, -3)$   $C(-2, -3)$   $D$  \_\_\_\_\_
23.  $B(4, 1)$   $C(5, 10)$   $D$  \_\_\_\_\_



Lengths of Segments



$AB = \underline{\hspace{1cm}}$

$HI = \underline{\hspace{1cm}}$

$RS = \underline{\hspace{1cm}}$

$BC = \underline{\hspace{1cm}}$

$LM = \underline{\hspace{1cm}}$

$TU = \underline{\hspace{1cm}}$

$ZA' = \underline{\hspace{1cm}}$

$DE = \underline{\hspace{1cm}}$

$NO = \underline{\hspace{1cm}}$

$VW = \underline{\hspace{1cm}}$

$FG = \underline{\hspace{1cm}}$

$QP = \underline{\hspace{1cm}}$

$XY = \underline{\hspace{1cm}}$

Equations for segments: Complete the table below. Solve all equations on loose leaf and attach to the completed table.

Description	Picture (Draw & Label)	Equation & Reason	Solution
1. E is between A & B $AE = 2x + 6$ $EB = 3x$ $AB = 36$			$X =$ $AE =$
2. C is between A & B $AC = 6$ $BC = 4x - 3$ $AB = 43$			$X =$ $BC =$
3. D is between R & S $RD = 16 - x$ $SD = 4x$ $RS = 5x$			$X =$ $RS =$
4. F is between P & Q $PF = 11x + 2$ $FQ = 4x - 3$ $PQ = 3x + 35$			$X =$ $PQ =$
5. D is between C & B $CD = 4x - 6$ $BD = 7 - 2x$ $CB = 5x - 5$			$X =$ $BD =$
6. M is the midpoint of CB $CM = 3x - 4$ $MB = 2x + 3$			$X =$ $MB =$
7. P is the midpoint of DW $PD = 5x - 7$ $PW = 2x + 2$			$X =$ $PW =$



Description	Picture (Draw & Label)	Equation & Reason	Solution
8. R is the midpoint of EQ EQ = 18    ER = $6x + 3$			X = ER =
9. B is the midpoint CD CB = $2x + 3$ CD = 26			X = CB =
10. D is the midpoint of TV TD = $3x - 6$ TV = $4x + 20$			X = TD =
11. M is the midpoint of LP LM = $4x + 3$ LP = $6x + 14$			X = MP =
12. CD bisects TW at P TP = $5x - 7$ WP = $3x + 13$			X = TW =
13. MN bisects RS at T RT = $4x + 7$ ST = $7x + 4$			X = RS =
14. NP bisects MY at R MR = $15x - 30$ YR = $12x + 3$			X = MY =
15. CD bisects MN at S MS = $10x - 3$ NS = $7x + 12$			X = MN =



# 3-3 Study Guide and Intervention

## Slopes of Lines

**Slope of a Line** The slope  $m$  of a line containing two points with coordinates  $(x_1, y_1)$  and  $(x_2, y_2)$  is given by the formula  $m = \frac{y_2 - y_1}{x_2 - x_1}$ , where  $x_1 \neq x_2$ .

### Example

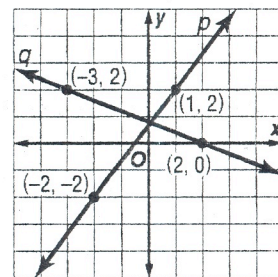
Find the slope of each line.

For line  $p$ , let  $(x_1, y_1)$  be  $(1, 2)$  and  $(x_2, y_2)$  be  $(-2, -2)$ .

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{-2 - 2}{-2 - 1} \text{ or } \frac{4}{3} \end{aligned}$$

For line  $q$ , let  $(x_1, y_1)$  be  $(2, 0)$  and  $(x_2, y_2)$  be  $(-3, 2)$ .

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{2 - 0}{-3 - 2} \text{ or } -\frac{2}{5} \end{aligned}$$



### Exercises

Determine the slope of the line that contains the given points.

1.  $J(0, 0), K(-2, 8)$

2.  $R(-2, -3), S(3, -5)$

3.  $L(1, -2), N(-6, 3)$

4.  $P(-1, 2), Q(-9, 6)$

5.  $T(1, -2), U(6, -2)$

6.  $V(-2, 10), W(-4, -3)$

Find the slope of each line.

7.  $\overline{AB}$

8.  $\overline{CD}$

9.  $\overline{EM}$

10.  $\overline{AE}$

11.  $\overline{EH}$

12.  $\overline{BM}$

