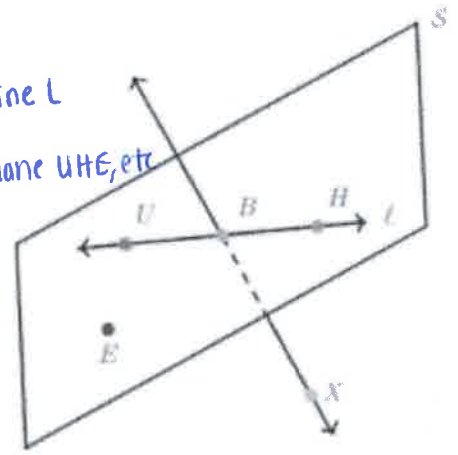
Geometry
Section 1.1 – 1.3 Review Extra Practice

Name : Key

Use the diagram below to answer questions #1 – 5.



1. Please give two other names for $\overleftrightarrow{UB}$. $\overleftrightarrow{BU}$, $\overleftrightarrow{BH}$, $\overleftrightarrow{HB}$, $\overleftrightarrow{UH}$, $\overleftrightarrow{HU}$, line L

2. Please give another name for Plane UBE. Planes, Plane BHE, Plane UHE, etc

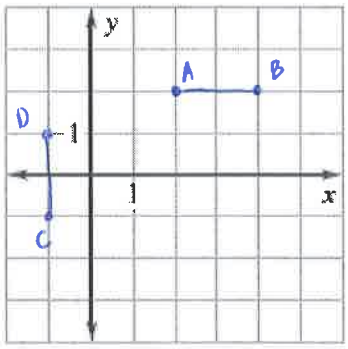
3. Please give another name for $\overline{HB}$. $\overrightarrow{HU}$

4. Please name the intersection of plane S and $\overleftrightarrow{BX}$. Point B

5. Please name three collinear points.
U, B, H

Plot the given points in a coordinate plane. Then determine whether the line segments named are congruent.

6. $A(2, 2)$, $B(4, 2)$, $C(-1, -1)$, $D(-1, 1)$;
$\overline{AB}$ and $\overline{CD}$

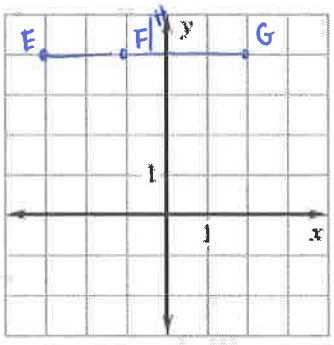


AB = 2

CD = 2

$\overline{AB} \cong \overline{CD}$ because they are the same length

7. $E(-3, 4)$, $F(-1, 4)$, $G(2, 4)$, $H(-1, 4)$;
$\overline{EF}$ and $\overline{GH}$

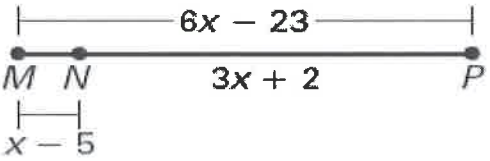


EF = 2

HG = 3

$\overline{EF} \ncong \overline{HG}$ because they are different lengths

8. Find *NP*.



MN + NP = MP

x − 5 + 3x + 2 = 6x − 23

4x − 3 = 6x − 23

−3 = 2x − 23

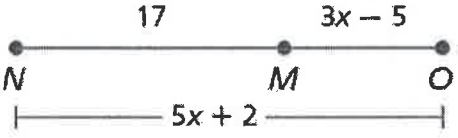
20 = 2x

x = 10

NP = 3(10) + 2

NP = 32

9. Find *NO*.



NM + MO = NO

17 + 3x − 5 = 5x + 2

3x + 12 = 5x + 2

12 = 2x + 2

10 = 2x

x = 5

NO = 5(5) + 2

NO = 27

Point *J* is between *H* and *K* on $\overline{HK}$. Use the given information to write an equation in terms of *x*. Solve the equation. Then find *HJ* and *JK*.

10. $HJ = 5x - 4$
$JK = 8x - 10$
$KH = 38$

$HJ + JK = HK$

$5x - 4 + 8x - 10 = 38$

$13x - 14 = 38$

$13x = 52$

$\boxed{x = 4}$

$HJ = 5(4) - 4$

$\boxed{HJ = 16}$

$JK = 8(4) - 10$

$\boxed{JK = 22}$

11. $HJ = 5x - 3$
$JK = x - 9$
$KH = 5x$

$HJ + JK = HK$

$5x - 3 + x - 9 = 5x$

$6x - 12 = 5x$

$-12 = -1x$

$\boxed{x = 12}$

$HJ = 5(12) - 3$

$\boxed{HJ = 57}$

$JK = 12 - 9$

$\boxed{JK = 3}$

Find the coordinates of the midpoint of the segment with the given endpoints.

12. $A(6, -3)$ and $B(10, 5)$ ($x_1\ y_1$ and $x_2\ y_2$)

$M = \left(\frac{6+10}{2}, \frac{-3+5}{2}\right) = \left(\frac{16}{2}, \frac{2}{2}\right) = \boxed{(8, 1)}$

13. $M(14, 7)$ and $N(-9, 1)$ ($x_1\ y_1$ and $x_2\ y_2$)

$M = \left(\frac{14+-9}{2}, \frac{7+1}{2}\right) = \left(\frac{5}{2}, \frac{8}{2}\right) = \boxed{(2.5, 4)}$

14. $Y(-13, 8)$ and $Z(2, -10)$ ($x_1\ y_1$ and $x_2\ y_2$)

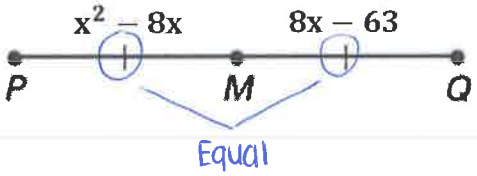
$M = \left(\frac{-13+2}{2}, \frac{8+-10}{2}\right) = \left(\frac{-11}{2}, \frac{-2}{2}\right) = (-5.5, -1)$

15. $C(-5, -17)$ and $D(-18, 12)$ ($x_1\ y_1$ and $x_2\ y_2$)

$M = \left(\frac{-5+-18}{2}, \frac{-17+12}{2}\right) = \left(-\frac{23}{2}, -\frac{5}{2}\right) = \boxed{(-11.5, -2.5)}$

In the diagram, *M* is the midpoint of the segment. Find the indicated length.

16. Find *MQ*.



Equal

$x^2 - 8x = 8x - 63$

$x^2 - 16x + 63 = 0$

$(x - 9)(x - 7) = 0$

$x = 9, x = 7$

Check

$x = 9$: $(9)^2 - 8x = 9$ ✓

$8(9) - 63 = 9$

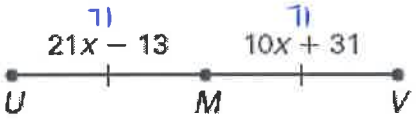
$x = 7$: $(7)^2 - 8(7) = -7$ ✗

$8(7) - 63 = -7$

can't have neg. distance

$\boxed{x = 9, MQ = 9}$

17. Find *UV*.



71 71

$21x - 13 = 10x + 31$

$11x - 13 = 31$

$11x = 44$

$\boxed{x = 4}$

$UM = 21(4) - 13$

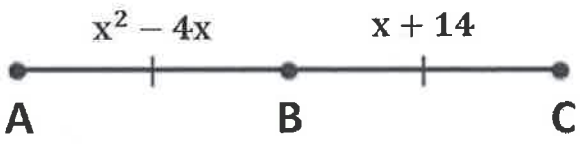
$UM = 71$

$UV = 71 + 71$

$\boxed{UV = 142}$

For problems #18 and 19, please solve for x and find all possible values for AB, BC and AC.

18.



$x^2 - 4x = x + 14$

$x^2 - 5x - 14 = 0$

$(x-7)(x+2) = 0$

$x = 7, x = -2$

Check:

$x=7$: $(7)^2 - 4(7) = 21 = AB$ ✓

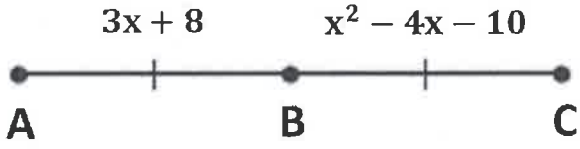
$7 + 14 = 21 = BC$

$x=-2$: $(-2)^2 - 4(-2) = 12 = AB$ ✓

$-2 + 14 = 12 = BC$

$x=7$	$x=-2$
$AB = 21$	$AB = 12$
$BC = 21$	$BC = 12$
$AC = 42$	$AC = 24$

19.



$3x + 8 = x^2 - 4x - 10$

$0 = x^2 - 7x - 18$

$0 = (x-9)(x+2)$

$x = 9, x = -2$

Check:

$x=9$: $3(9) + 8 = 35$

$(9)^2 - 4(9) - 10 = 35$ ✓

$x=-2$: $3(-2) + 8 = 2$

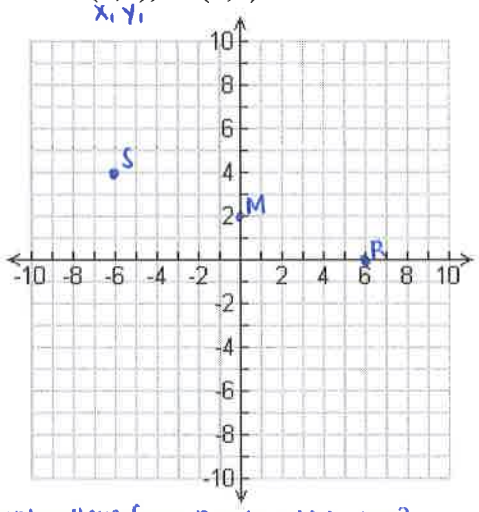
$(-2)^2 - 4(-2) - 10 = 2$ ✓

$x=9$	$x=-2$
$AB = 35$	$AB = 2$
$BC = 35$	$BC = 2$
$AC = 70$	$AC = 4$

Use the given endpoint R and midpoint M of $\overline{RS}$ to find the coordinates of the other endpoints.

20. R (6,0), M (0,2)

x_1, y_1



count pattern from R→M: left 6, up 2

Repeat pattern from R→S: S(-6,4)

OR

x-values: $M = \frac{x_1 + x_2}{2}$ y-values: $M = \frac{y_1 + y_2}{2}$

$\frac{0}{1} = \frac{6 + x_2}{2}$ $\frac{2}{1} = \frac{0 + y_2}{2}$

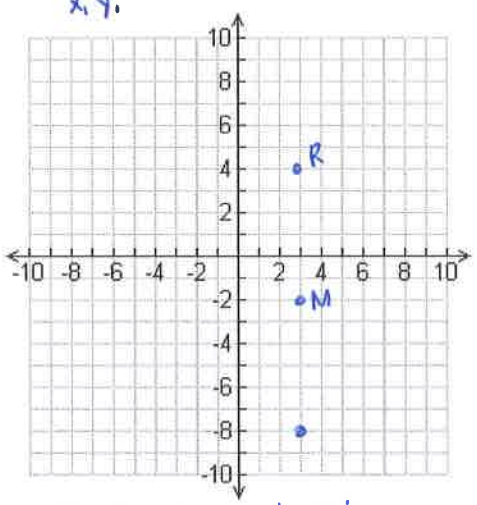
$0 = 6 + x_2$ $4 = 0 + y_2$

$-6 = x_2$ $4 = y_2$

S(-6,4)

21. R (3,4), M (3, –2)

x_1, y_1



pattern from R→M: down 6

repeat from M→S: S(3,-8)

OR

x-values: $M = \frac{x_1 + x_2}{2}$ y-values: $M = \frac{y_1 + y_2}{2}$

$\frac{3}{1} = \frac{3 + x_2}{2}$ $\frac{-2}{1} = \frac{4 + y_2}{2}$

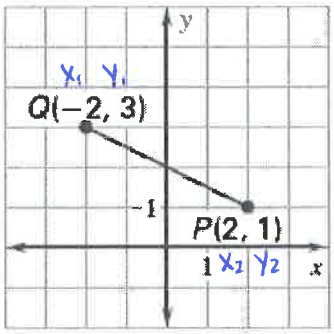
$6 = 3 + x_2$ $-4 = 4 + y_2$

$3 = x_2$ $-8 = y_2$

S(3,-8)

Find the length of the segment in simplest radical form.

22.



$QP = \sqrt{(2--2)^2+(1-3)^2}$

$= \sqrt{(2+2)^2+(1-3)^2}$

$= \sqrt{(4)^2+(-2)^2}$

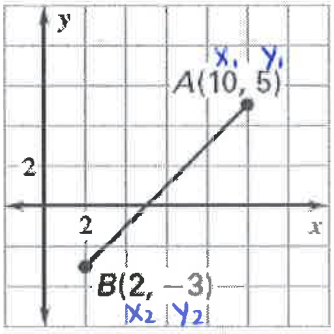
$= \sqrt{16+4}$

$= \sqrt{20}$

$= \sqrt{4}\sqrt{5}$

$\boxed{QP = 2\sqrt{5}}$

23.



$AB = \sqrt{(2-10)^2+(-3-5)^2}$

$= \sqrt{(-8)^2+(-8)^2}$

$= \sqrt{64+64}$

$= \sqrt{128}$

$= \sqrt{64}\sqrt{2}$

$\boxed{AB = 8\sqrt{2}}$

The endpoints of two segments are given. Find each segment length in simplest radical form and tell whether the segments are congruent.

24. $\overline{KL}$: $K(-4, 13)$, $L(-1, -11)$

$\overline{MN}$: $M(-1, -2)$, $N(-1, -11)$

$KL = \sqrt{(-1--4)^2+(-11-13)^2}$

$= \sqrt{(-1+4)^2+(-11-13)^2}$

$= \sqrt{(3)^2+(-24)^2}$

$= \sqrt{9+576}$

$= \sqrt{585}$

$= \sqrt{9}\sqrt{65}$

$\boxed{KL = 3\sqrt{65}}$

$MN = \sqrt{(-1--1)^2+(-11--2)^2}$

$= \sqrt{(-1+1)^2+(-11+2)^2}$

$= \sqrt{(0)^2+(-9)^2}$

$= \sqrt{81}$

$\boxed{MN = 9}$

$\overline{KL} \ncong \overline{MN}$ because they are not the same length

25. $\overline{OP}$: $O(6, -2)$, $P(3, -2)$

$\overline{QR}$: $Q(5, 2)$, $R(1, 5)$

$OP = \sqrt{(3-6)^2+(-2--2)^2}$

$= \sqrt{(-3)^2+(-2+2)^2}$

$= \sqrt{9+(0)^2}$

$= \sqrt{9}$

$\boxed{OP = 3}$

$QR = \sqrt{(1-5)^2+(5-2)^2}$

$= \sqrt{(-4)^2+(3)^2}$

$= \sqrt{16+9}$

$= \sqrt{25}$

$\boxed{QR = 5}$

$\overline{OP} \ncong \overline{QR}$ because they are not the same length.