

GSE Geometry

Name: _____

Date: _____

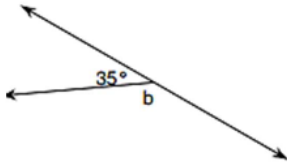
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Unit 1 Review: Geometry Basics

Learning Target #1: Basics of Geometry & Definitions

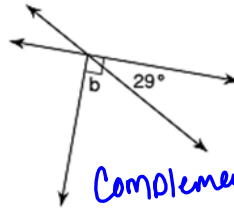
For problems 1-3, name the types of angles (complementary, supplementary, or vertical) and find b .

1.



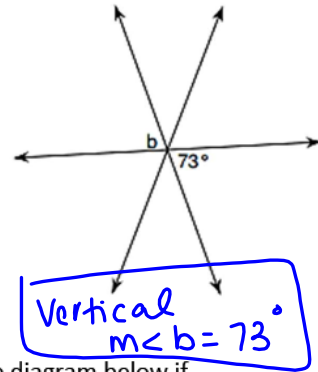
Supplementary
 $m\angle b + 35 = 145$
 $m\angle b = 145^\circ$

2.



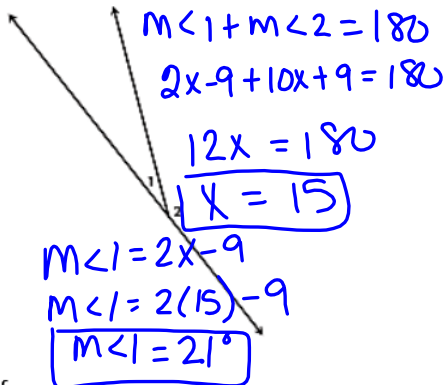
Complementary
 $m\angle b + 29 = 90$
 $m\angle b = 61^\circ$

3.



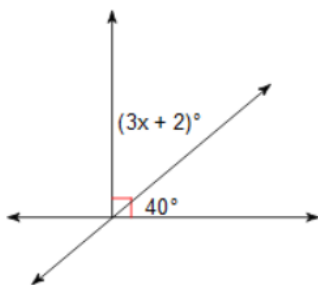
Vertical
 $m\angle b = 73^\circ$

4. In the diagram below, $\angle 1$ and $\angle 2$ are a linear pair. Find $m\angle 1$ if $m\angle 1 = 2x - 9$ and $m\angle 2 = 10x + 9$.



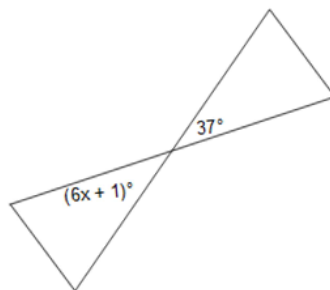
Solve for x .

6.



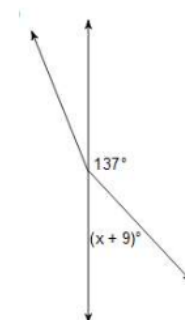
$3x + 2 + 40 = 90$
 $3x + 42 = 90$
 $3x = 48$
 $x = 16$

7.



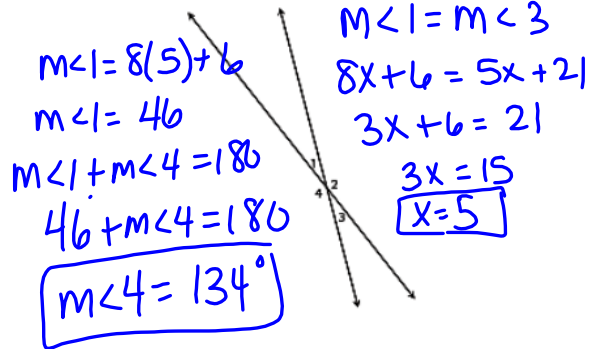
$6x + 1 = 37$
 $6x = 36$
 $x = 6$

8.



$x + 9 + 137 = 180$
 $x + 146 = 180$
 $x = 34$

5. Find $m\angle 4$ in the diagram below if $m\angle 1 = 8x + 6$ and $m\angle 3 = 5x + 21$.



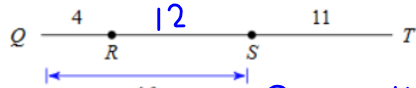
$m\angle 1 = m\angle 3$
 $8x + 6 = 5x + 21$
 $3x + 6 = 21$
 $3x = 15$
 $x = 5$
 $m\angle 1 = 8(5) + 6$
 $m\angle 1 = 46$
 $m\angle 1 + m\angle 4 = 180$
 $46 + m\angle 4 = 180$
 $m\angle 4 = 134^\circ$

Learning Target #2: Geometry Relationships

Find the indicated length.

9.

Find RT



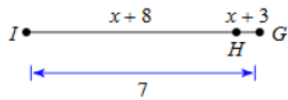
$$\begin{aligned} QR + RS &= QS \\ 4 + RS &= 16 \\ RS &= 12 \end{aligned}$$

$$RT = 12 + 11$$

$$\boxed{RT = 23}$$

Solve for x .

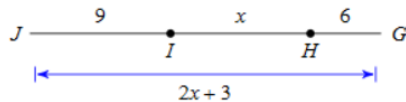
11.



$$\begin{aligned} x + 8 + x + 3 &= 7 \\ 2x + 11 &= 7 \\ 2x &= -4 \end{aligned}$$

$$\boxed{x = -2}$$

13.



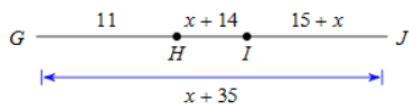
$$\begin{aligned} 9 + x + 6 &= 2x + 3 \\ x + 15 &= 2x + 3 \\ 15 &= x + 3 \end{aligned}$$

$$\boxed{x = 12}$$

Find the indicated length.

15.

Find IJ



$$11 + x + 14 + 15 + x = x + 35$$

$$2x + 40 = x + 35$$

$$x + 40 = 35$$

$$x = -5$$

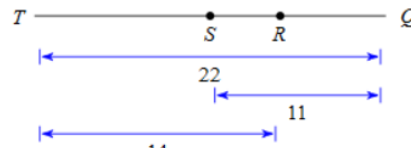
$$IJ = 15 + x$$

$$IJ = 15 + (-5)$$

$$\boxed{IJ = 10}$$

10.

Find SR

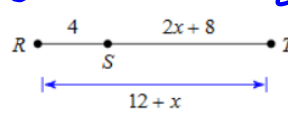


$$\begin{aligned} TS &= 14 - SR \\ TS + SR &= 14 \\ RQ &= 11 - SR \\ SR + RQ &= 11 \\ 14 - SR + SR + 11 - SR &= 22 \\ 25 - SR &= 22 \end{aligned}$$

$$-SR = -3$$

$$\boxed{SR = 3}$$

12.



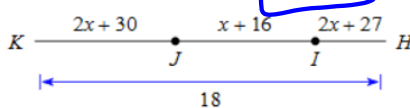
$$4 + 2x + 8 = 12 + x$$

$$2x + 12 = 12 + x$$

$$x + 12 = 12$$

$$\boxed{x = 0}$$

14.



$$2x + 30 + x + 16 + 2x + 27 = 18$$

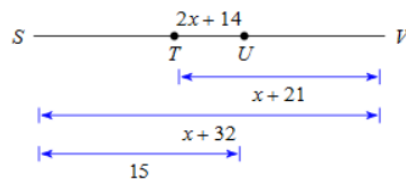
$$5x + 73 = 18$$

$$5x = -55$$

$$\boxed{x = -11}$$

16.

Find SV



$$x + 21 + 15 - (2x + 14) = x + 32$$

$$x + 36 - 2x - 14 = x + 32$$

$$-x + 22 = x + 32$$

$$\begin{array}{r} -x \\ -x \hline \end{array}$$

$$-2x + 22 = 32$$

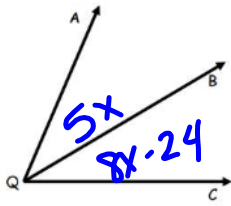
$$-2x = 10 \quad x = -5$$

$$SV = x + 32$$

$$SV = -5 + 32$$

$$\boxed{SV = 27}$$

17.



$$5x = 8x - 24$$

$$-3x = -24$$

$$x = 8$$

\overline{QB} is the angle bisector of $\angle AQC$.

$m\angle AQB = 5x$

$m\angle BQC = 8x - 24$

$m\angle AQB = 5(8)$

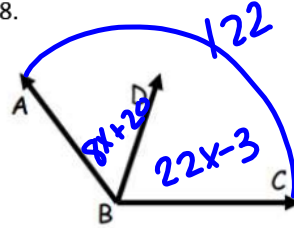
Find the following:

$x = \underline{8}$ $m\angle AQB = \underline{40}$

equal

$m\angle BQC = \underline{40}$ $m\angle AQC = \underline{80}$

18.



$$8x + 20 + 22x - 3 = 122$$

$m\angle ABC = 122$

$m\angle ABD = 8x + 20$

$m\angle DBC = 22x - 3$

$$30x + 17 = 122$$

$$30x = 105$$

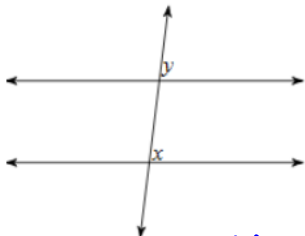
$$x = 3.5$$

$x = \underline{3.5}$ $m\angle ABD = \underline{48}$ $\rightarrow 8x + 20$
 $8(3.5) + 20$

$m\angle DBC = \underline{74}$ $\rightarrow 22x - 3$
 $22(3.5) - 3$

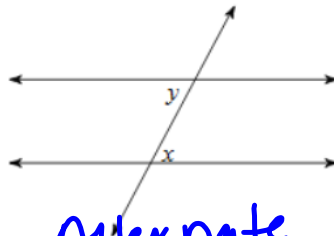
Identify the relationship between the given angles (x & y).

19.



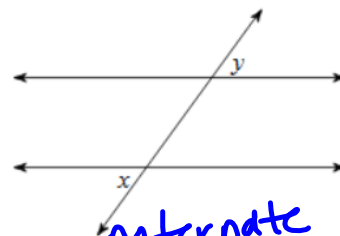
Corresponding angles

20.



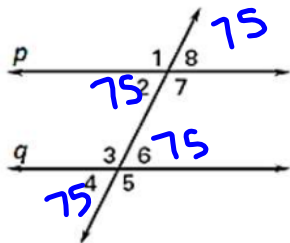
Alternate Interior Angles

21.



Alternate exterior Angles

22. If $p \parallel q$ and $m\angle 2 = 75^\circ$, find the measures of all the angles formed by the parallel lines cut by the transversal.

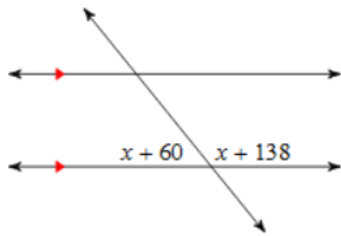


$m\angle 1 = \underline{105}$ $m\angle 2 = \underline{75}$ $m\angle 3 = \underline{105}$ $m\angle 4 = \underline{75}$

$m\angle 5 = \underline{105}$ $m\angle 6 = \underline{75}$ $m\angle 7 = \underline{105}$ $m\angle 8 = \underline{75}$

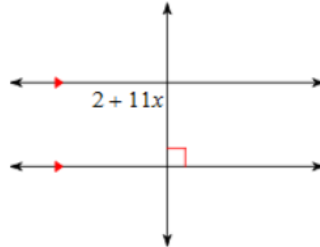
Solve for x.

23.



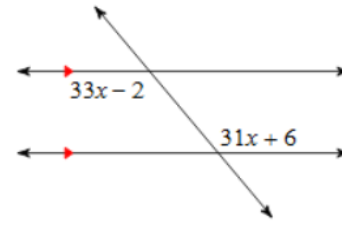
$$\begin{aligned} x+60+x+138 &= 180 \\ 2x+198 &= 180 \\ 2x &= -18 \\ \boxed{x &= -9} \end{aligned}$$

24.



$$\begin{aligned} 2+11x &= 90 \\ 11x &= 88 \\ \boxed{x &= 8} \end{aligned}$$

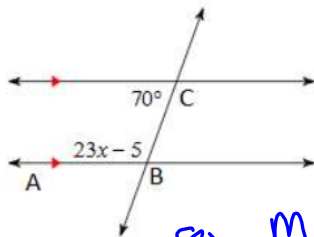
25.



$$\begin{aligned} 33x-2 &= 31x+6 \\ 2x-2 &= 6 \\ 2x &= 8 \\ \boxed{x &= 4} \end{aligned}$$

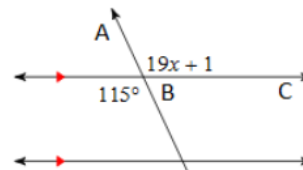
Determine the measure of $\angle ABC$.

26.



$$\begin{aligned} 23x-5+70 &= 180 \\ 23x+65 &= 180 \\ 23x &= 115 \\ x &= 5 \\ m\angle ABC &= 23x-5 \\ m\angle ABC &= 23(5)-5 \\ \boxed{m\angle ABC &= 110^\circ} \end{aligned}$$

27.



$$\begin{aligned} 19x+1 &= 115 \\ 19x &= 114 \\ x &= 6 \\ m\angle ABC &= 115^\circ \\ \text{vertical angles are} \\ \text{congruent} \end{aligned}$$

Learning Target #3: Algebraic & Geometric Proofs

Match the property to each statement (PROPERTIES CAN BE USED MORE THAN ONCE).

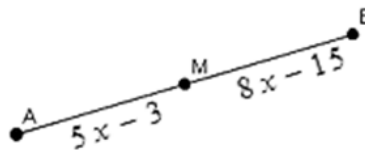
28. D If $CD = 15$ and $LM = 15$, then $CD = LM$.
29. C If $AB = 3x - 2$ and $x = 2$, then $AB = 4$.
30. B $16 = 16$
31. D $\angle A = 62^\circ$ and $\angle B = 62^\circ$, so $\angle A = \angle B$.
32. C $AB = 2x + 2$ and $DE = 4x - 1$. $AB = DE$ so $2x + 2 = 4x - 1$.
33. A $2x + 1 = 6$ and $6 = 2x + 1$.

- A. Symmetric Property
- B. Reflexive Property
- C. Substitution Property
- D. Transitive Property

34. Complete the proof.

GIVEN: M is the midpoint of segment AB.

PROVE: $x = 4$

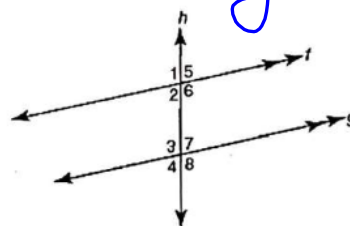


	<u>Statements</u>	<u>Reasons</u>
1.	M is the midpoint of segment AB.	Given
2.	$\overline{AM} \cong \overline{MB}$	Definition of a midpoint
3.	$AM = MB$	Definition of Congruent Segments
4.	$5x - 3 = 8x - 15$	Substitution
5.	$-3 = 3x - 15$	Subtraction property of equality
6.	$12 = 3x$	Addition Property
7.	$4 = x$	Division Property
8.	$x = 4$	Symmetric Property

35. Complete the proof.

GIVEN: $f \parallel g$, h is a transversal

PROVE: $\angle 1$ and $\angle 4$ are supplementary



	<u>Statements</u>	<u>Reasons</u>
1.	$f \parallel g$, h is a transversal	Given
2.	$\angle 1$ & $\angle 2$ and $\angle 3$ & $\angle 4$ are linear pairs.	Definition of a linear pair
3.	$\angle 1 + \angle 2 = 180$	Linear pairs are supplementary
4.	$\angle 3 + \angle 4 = 180$	Linear pairs are supplementary
5.	$\angle 1 \cong \angle 3$	Corresponding angles are Congruent
6.	$\angle 1 + \angle 4 = 180$	Substitution
7.	$\angle 1$ and $\angle 4$ are supplementary	Definition of Supplementary