

Name: _____

Show all work. May use compass, protractor and calculator

1. **G – CO 12** Construct a segment congruent to \overline{JK} . Be sure to show all construction marks.



2. **G – CO 1** Find the measure of the complement of $\angle M$ where $m\angle M = 31.1^\circ$.

3. **A – REI 1 Multiple Choice:** Identify the property that justifies the statement $\overline{AB} \cong \overline{CD}$ and $\overline{CD} \cong \overline{EF}$. So $\overline{AB} \cong \overline{EF}$.

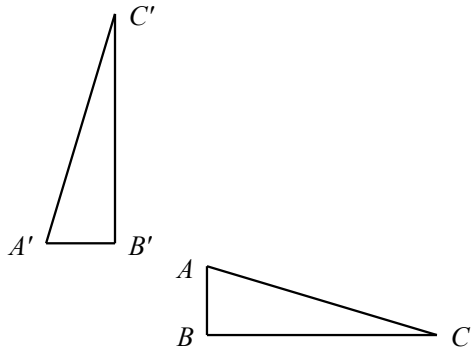
- A. Reflexive Property of Congruence
- B. Substitution Property of Equality
- C. Symmetric Property of Congruence
- D. Transitive Property of Congruence

4. **G – CO 1** An angle measures 2 degrees more than 3 times its complement. Find the measure of its complement.

5. **G - CO 9** Find the coordinates of the midpoint of \overline{MC} with endpoints C(1, -6) and M(7, 5).

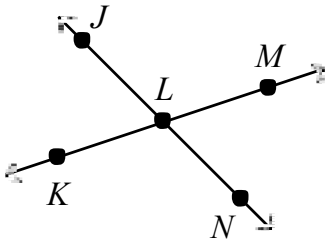
6. **G-CO 1.** Find the distance between the points (-2, 5) and (7, 4). Leave exact.

7. **G – CO 1 Multiple Choice:** Identify the transformation. Then use arrow notation to describe the transformation.

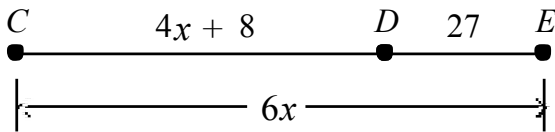


- A. The transformation is a 90° rotation. $ABC \rightarrow A'B'C'$
- B. The transformation is a 45° rotation. $ABC \rightarrow A'B'C'$
- C. The transformation is a reflection. $ABC \rightarrow A'B'C'$
- D. The transformation is a translation. $ABC \rightarrow A'B'C'$

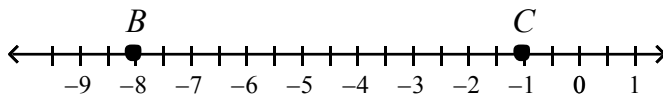
8. **G – CO 1** Angle JLK and Angle _____ are vertical angles



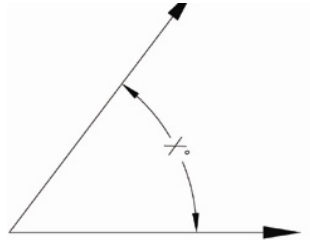
9. **G – CO 1** Given D is between C and E. Find CE



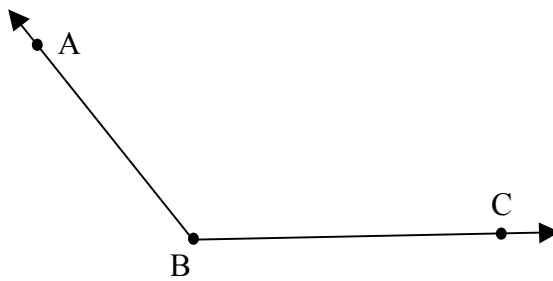
10. **G – CO 1** Find the length of \overline{BC} .



11. **G-CO 12** Find the value of x to the nearest degree. Then classify the angle as acute, right or obtuse.



12. **G-CO 12** Use a compass and straight edge to construct the angle bisector for angle ABC. Be sure to show all construction marks.



13. **A – REI 1 Multiple Choice:** Solve the equation $4x - 6 = 34$. Write a justification for each step.

| | |
|--|----------------|
| $4x - 6 = 34$ | Given equation |
| $\begin{array}{r} +6 \\ 4x \end{array} = 40$ | [1] |
| $4x = 40$ | Simplify. |
| $\frac{4x}{4} = \frac{40}{4}$ | [2] |
| $x = 10$ | Simplify. |

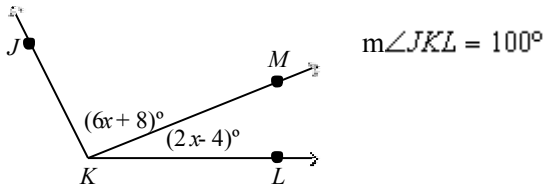
- A. [1] Substitution Property of Equality; [2] Division Property of Equality
- B. [1] Division Property of Equality; [2] Subtraction Property of Equality
- C. [1] Addition Property of Equality; [2] Division Property of Equality
- D. [1] Addition Property of Equality; [2] Reflexive Property of Equality

14. **A – REI 1 Multiple Choice:** A gardener has 26 feet of fencing for a garden. To find the width of the rectangular garden, the gardener uses the formula $P = 2l + 2w$, where P is the perimeter, l is the length, and w is the width of the rectangle. The gardener wants to fence a garden that is 8 feet long. How wide is the garden? Solve the equation for w , and justify each step.

| | |
|-------------------------------|----------------------------------|
| $P = 2l + 2w$ | Given equation |
| $26 = 2(8) + 2w$ | [1] |
| $26 = 16 + 2w$ | Simplify. |
| $-16 = -16$ | Subtraction Property of Equality |
| $10 = 2w$ | Simplify. |
| $\frac{10}{2} = \frac{2w}{2}$ | [2] |
| $5 = w$ | Simplify. |
| $w = 5$ | Symmetric Property of Equality |

- A. [1] Substitution Property of Equality. [2] Division Property of Equality. The garden is 5 ft wide.
 B. [1] Substitution Property of Equality. [2] Subtraction Property of Equality. The garden is 5 ft wide.
 C. [1] Simplify. [2] Division Property of Equality. The garden is 5 ft wide.
 D. [1] Subtraction Property of Equality. [2] Simplify. The garden is 5 ft wide.

15. **A – REI 1 Multiple Choice:** Write a justification for each step.

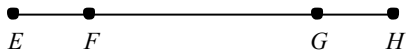


| | |
|---|-----------------------------------|
| $m\angle JKL = m\angle JKM + m\angle MKL$ | [1] |
| $100^\circ = (6x + 8)^\circ + (2x - 4)^\circ$ | Substitution Property of Equality |
| $100 = 8x + 4$ | Simplify. |
| $96 = 8x$ | Subtraction Property of Equality |
| $12 = x$ | [2] |
| $x = 12$ | Symmetric Property of Equality |

- A. [1] Transitive Property of Equality [2] Division Property of Equality
 B. [1] Angle Addition Postulate [2] Division Property of Equality
 C. [1] Angle Addition Postulate [2] Simplify.
 D. [1] Segment Addition Postulate [2] Multiplication Property of Equality

16. **G – CO 9 Multiple Choice:** Fill in the blanks to complete the two-column proof.

Given: $EG = FH$ **Prove:** $EF = GH$



Proof:

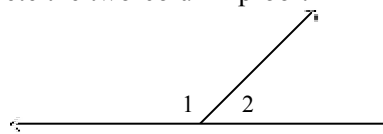
| | |
|---------------------|----------------------------------|
| $EG = FH$ | Given information |
| $EG = EF + FG$ | [1] |
| $FH = FG + GH$ | Segment Addition Postulate |
| $EF + FG = FG + GH$ | [2] |
| $EF = GH$ | Subtraction Property of Equality |

- | | | |
|----|---------------------------------------|---------------------------------------|
| A. | [1] Angle Addition Postulate | [2] Subtraction Property of Equality |
| B. | [1] Substitution Property of Equality | [2] Transitive Property of Equality |
| C. | [1] Segment Addition Postulate | [2] Definition of congruent segments |
| D. | [1] Segment Addition Postulate | [2] Substitution Property of Equality |

17. **G – CO 9 Multiple Choice:** Fill in the blanks to complete the two-column proof.

Given: $\angle 1$ and $\angle 2$ are supplementary and $m\angle 1 = 135^\circ$

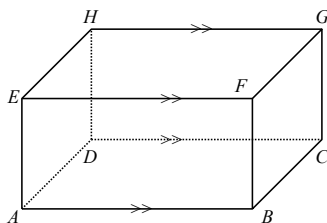
Prove: $m\angle 2 = 45^\circ$



| Statements | Reasons |
|---|--------------------------|
| 1. $\angle 1$ and $\angle 2$ are supplementary. | 1. Given |
| 2. [1] | 2. Given |
| 3. $m\angle 1 + m\angle 2 = 180^\circ$ | 3. [2] |
| 4. $135^\circ + m\angle 2 = 180^\circ$ | 4. Substitution Property |
| 5. $m\angle 2 = 45^\circ$ | 5. [3] |

- | | | |
|-------------------------------|--|--------------------------------------|
| A.[1] $m\angle 2 = 135^\circ$ | [2] Definition of complementary angles | [3] Substitution Property |
| B.[1] $m\angle 1 = 135^\circ$ | [2] Definition of supplementary angles | [3] Substitution Property |
| C.[1] $m\angle 1 = 135^\circ$ | [2] Definition of supplementary angles | [3] Subtraction Property of Equality |
| D.[1] $m\angle 1 = 135^\circ$ | [2] Definition of complementary angles | [3] Subtraction Property of Equality |

18. **G – CO 1** Identify a pair of parallel segments contained in plane AEFB



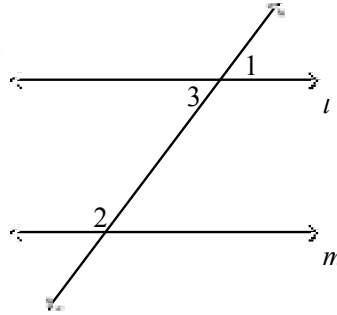
19. **G – CO 1 Multiple Choice:** What rule would you use to translate a triangle 8 units to the left?

- A. $(x, y) \rightarrow (x + 8, y)$
- B. $(x, y) \rightarrow (x - 8, y)$
- C. $(x, y) \rightarrow (x, y - 8)$
- D. $(x, y) \rightarrow (x, y + 8)$

20. **G – CO 9 Multiple Choice:** Write a two-column proof

Given: $m\angle 1 + m\angle 2 = 180^\circ$

Prove: $l \parallel m$

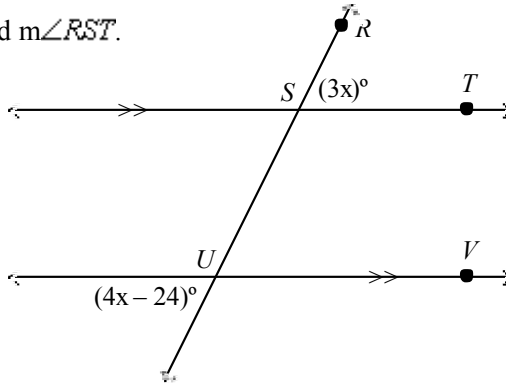


Proof:

| Statements | Reasons |
|--|---------------------------------|
| 1. $m\angle 1 + m\angle 2 = 180^\circ$ | 1. Given |
| 2. $m\angle 1 = m\angle 3$ | 2. [1] |
| 3. $m\angle 3 + m\angle 2 = 180^\circ$ | 3. Substitution (Steps 1 and 2) |
| 4. $l \parallel m$ | 4. [2] |

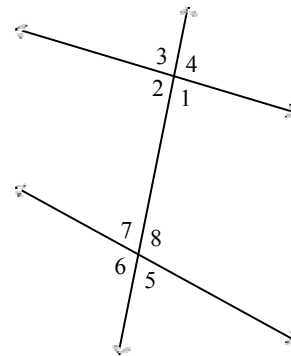
- A. [1] Vertical Angle Theorem [2] Converse of the Same-Side Interior Angles Theorem
- B. [1] Vertical Angle Theorem [2] Same-Side Interior Angles Theorem
- C. [1] Vertical Angle Theorem [2] Converse of the Same-Side Exterior Angles Theorem
- D. [1] Converse of the Same-Side Interior Angles Theorem [2] Vertical Angle Theorem

21. **G – CO 9** Find $m\angle RST$.



22. **G – CO 9** Use the diagram to find the following

- a. Angle 2 and angle _____ are same side interior angles
- b. Angle 8 and angle _____ are alternate interior angles
- c. Angle 5 and angle _____ are alternate exterior angles
- d. Angle 6 and angle _____ are vertical angles



23. **G – CO 1 Matching:** Match each vocabulary term with its definition.

a. Postulate b. Opposite Rays c. Line d. Endpoint

e. Segment f. Vertex of a graph g. Ray h. Plane

_____ A straight path that has no thickness and extends forever

_____ Have a common endpoint and form a line

_____ A statement that is accepted as true without proof.

_____ A part of a line that starts at an endpoint and extends forever in one direction

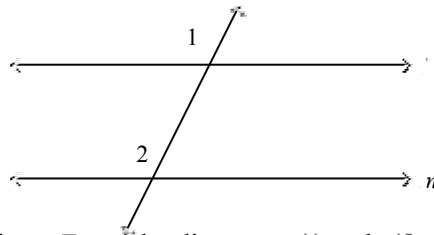
_____ A flat surface that has no thickness and extends forever

_____ A point on a graph

_____ A point at an end of a segment or the starting point of a ray

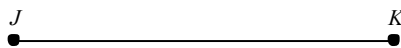
_____ A part of a line consisting of two endpoints and all points between them.

24. **G-CO 9 Multiple Choice** Use the Converse of the Corresponding Angles Postulate and $\angle 1 \cong \angle 2$ to show that $l \parallel m$.



- A. $\angle 1 \cong \angle 2$ is given. From the diagram, $\angle 1$ and $\angle 2$ are corresponding angles. So by the Converse of the Corresponding Angles Postulate, $l \parallel m$.
- B. $\angle 1 \cong \angle 2$ is given. From the diagram, $\angle 1$ and $\angle 2$ are alternate interior angles. So by the Converse of the Alternate Interior Angles Postulate, $l \parallel m$.
- C. By the Converse of the Corresponding Angles Postulate, $\angle 1 \cong \angle 2$. From the diagram, $l \parallel m$.
- D. $\angle 1 \cong \angle 2$ is given. From the diagram, $\angle 1$ and $\angle 2$ are corresponding angles. So by the Corresponding Angles Postulate, $l \parallel m$.

25. **G-CO12** Use a compass and straight edge to construct the perpendicular bisector of the given segment. Be sure to show all construction marks.



Answer Key

1. (4pts) $\overset{J}{\bullet} \text{-----} \overset{K}{\bullet}$

2. $90^\circ - 31.1^\circ$ (2pts)

$= 58.9^\circ$ (2pts)

3. D (4pts)

4. $3x + 2 + x = 90$ (2pts)

$x = 22$ (2pts)

5. $\left(\frac{1+7}{2}, \frac{-6+5}{2}\right)$ (2pts)

$= \left(4, -\frac{1}{2}\right)$ (2pts)

6. $\sqrt{(7+2)^2 + (4-5)^2}$ (2pts)

$= \sqrt{82}$ (2pts)

7. A (4pts) or B (2pts)

8. MLN (4pts)

9. $4x+8+27=6x$ (2pts)

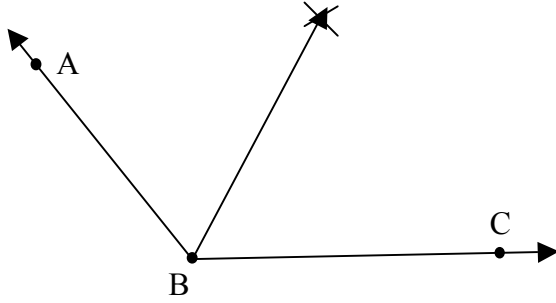
$x = 17.5$ (1pt)

CE = 105 (1pt)

10. $BC = |-8 - (-1)| = 7$ (4pts)

11. 53° (2pts) and acute (2pts)

12. (4pts)



13. C (4pts), A (2pts) or D (2pts)

14. B (4pts), A (2pts) or C (2pts)

15. B (4pts), A (2pts) or C (2pts)

16. D (4pts) or C(2pts)

17. C (4pts), B (2pts) or D (2pts)

18. \overline{EF} and \overline{AB} (4pts)

19. B (4pts) or A (2pts)

20. A (4pts), B (2pts) or C (2pts)

21. $3x = 4x - 24$ (2pts)

$$x = 24 \text{ (1pt)}$$

$$m\angle RST = 72^\circ \text{ (1pt)}$$

22. a. angle 7 (1pt) b. angle 2 (1pt) c. angle 3 (1pt) d. angle 8 (1pt)

23. (1/2pt each) c, b, a, g, h, f, d, and e

24. A (4pts)

25. (4pts)

