Pre-EOC Assesment

Geometry #2
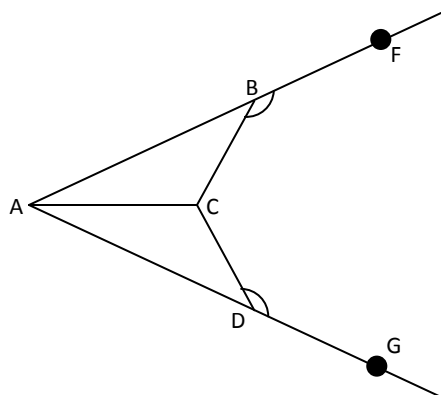
Wahkiakum School District

1. Seth was supposed to prove $\triangle ABC \cong \triangle PQR$ by SAS for his homework assignment. He wrote the following proof:

    Given $\angle ABC \cong \angle PRQ$, $\overline{AB} \cong \overline{PQ}$, and $\overline{BC} \cong \overline{QR}$, then $\triangle ABC \cong \triangle PQR$ by SAS.

    Which statement should be changed in order for Seth's proof to be correct?
    - **A** $\angle ABC \cong \angle PRQ$ **should be rewritten as** $\angle ABC \cong \angle PQR$.
    - B $\overline{AB} \cong \overline{PQ}$ should be rewritten as $\overline{AB} \cong \overline{PR}$.
    - C $\overline{BC} \cong \overline{QR}$ should be rewritten as $\overline{AC} \cong \overline{QR}$.
    - D $\triangle ABC \cong \triangle PQR$ by SAS should be rewritten as $\triangle ABC \cong \triangle PQR$ by SSA.
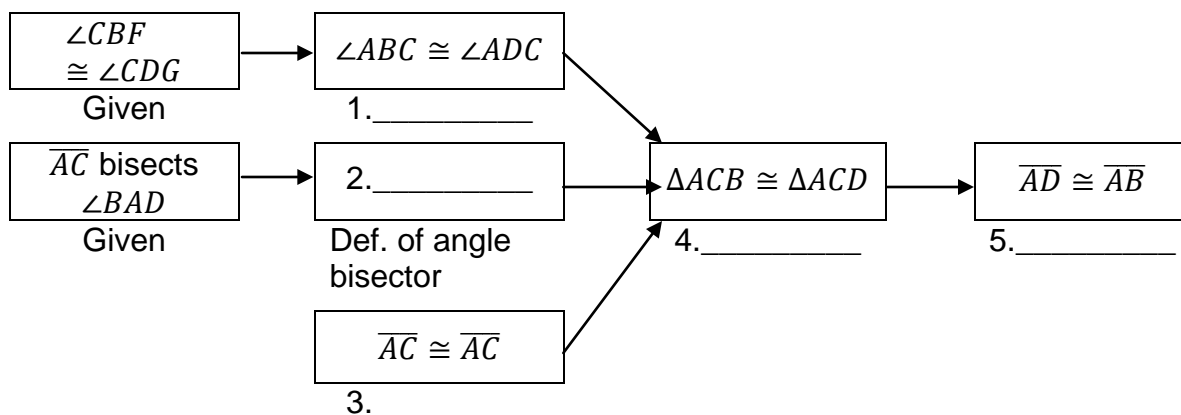
2. Which of the following best describes a counterexample to the assertion below:
    Two lines in a plane always intersect in exactly one point.
    - A   Coplanar Lines
    - B   Intersecting Lines
    - **C**   **Parallel Lines**
    - D   Perpendicular Lines

3. Which of the following statements is true:
    - A   A postulate is a proven fact using theorems, definitions, and undefined terms.
    - **B**   **A theorem is a proven fact using postulates, definitions, and undefined terms.**
    - C   Some defined geometric terms are line, plane, and point.
    - D   Some undefined geometry terms are angle, ray, and line segment.

4.   Given: $\angle CBF \cong \angle CDG$, $\overline{AC}$ bisects $\angle BAD$.
        Prove: $\overline{AD} \cong \overline{AB}$

Proof:

$\angle CBF$ $\cong \angle CDG$ Given	→	$\angle ABC \cong \angle ADC$ 1._____
$\overline{AC}$ bisects $\angle BAD$ Given	→	2._____ Def. of angle bisector
		$\overline{AC} \cong \overline{AC}$ 3._____

$\Delta ACB \cong \Delta ACD$ 4._____   → $\overline{AD} \cong \overline{AB}$ 5._____

A   1. Congruent Supplements Theorem; 2. $\angle ACB \cong \angle ACD$; 3.
       Transitive Property of Congruence; 4. CPCTC; 5. AAS
B   1. Congruent Supplements Theorem; 2. $\angle CAB \cong \angle CAD$; 3.
       Transitive Property of Congruence; 4. AAS; 5. CPCTC
**C   1. Congruent Supplements Theorem; 2. $\angle CAB \cong \angle CAD$; 3.
       Reflexive Property of Congruence; 4. AAS; 5. CPCTC**
D   1. Congruent Supplements Theorem; 2. $\angle ACB \cong \angle ACD$; 3.
       Reflexive Property of Congruence; 4. CPCTC; 5. AAS

5.   If an indirect proof is used to prove the following theorem, then which assumption must be proved false?

If two lines form a pair of congruent corresponding angles, then the lines are parallel.

      A   The corresponding angles are congruent.
      B   The corresponding angles are not congruent.
      C   The lines intersect.
      D   The lines do not intersect.

6.   Given the statement:

Conditional: *If the table top is rectangular, then its diagonals are congruent.*

The inverse of the conditional statement is:

Inverse: *If the diagonals of a table top are congruent, then it is rectangular.*

Identify by writing **yes** <u>or</u> **no** on the first line below if the statement above has correctly identified the inverse of the conditional. If the inverse above is incorrect, correctly write it in the space below.
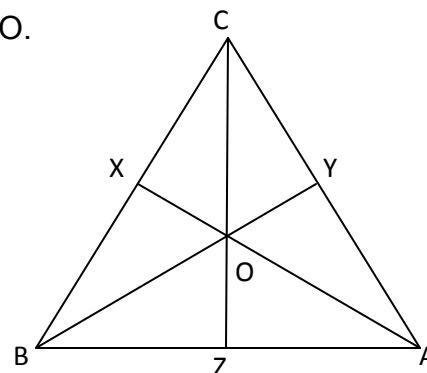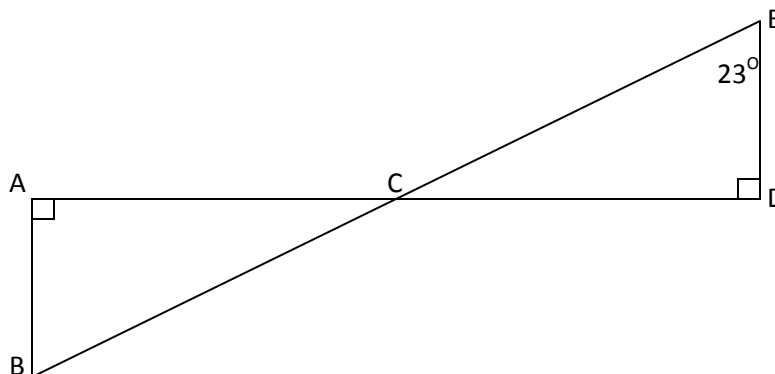
NO

_____

Inverse of Conditional

If the table top is not rectangular, then its diagonals are not congruent.

_____

_____

_____

_____

_____

_____

7. In △ABC, Point O is the centroid. BY = 18. Find BO.

    A　6
    B　9
    C　12
    D　27

8. Given that $\triangle ABC \cong \triangle DEC$ and $m\angle E = 23°$, find $m\angle ACB$.
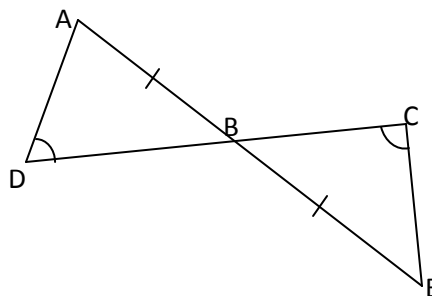
    A　$m\angle ACB = 77°$
    B　$m\angle ACB = 67°$
    C　$m\angle ACB = 23°$
    D　$m\angle ACB = 113°$

9. Triangle JKE is an obtuse isosceles triangle with $m\angle E = 10°$ and KE > JK. Which of the following is a possible measure of $\angle J$?

    A　170°
    B　160°
    C　85°
    D　10°

10.   In the diagram:

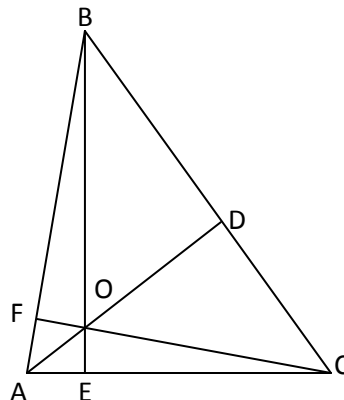$\overline{AB} \cong \overline{EB}$

$\angle ADB \cong \angle ECB$

Prove $\triangle ABD \cong \triangle EBC$ using mathematical language and concepts.

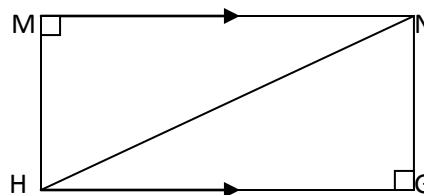| Statements	Reasons
1. $\overline{AB} \cong \overline{EB}, \angle ADB \cong \angle ECB$	**1. Given**
2. $\angle DBA \cong \angle CBE$	**2. Vertical Angles Theorem**
3. $\triangle ABD \cong \triangle EBC$	**3. AAS**

11. Choose the true statement based on knowing point O is the orthocenter of triangle ABC.

    A $\angle BDA \cong \angle CDA$
    B $\overline{BO} \cong \overline{CO}$
    C $\angle BAD \cong \angle CAD$
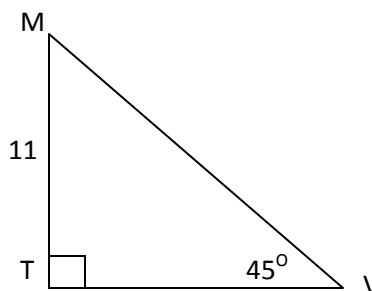   D $\overline{EO} \cong \overline{FO}$

12. Which triangles are congruent in the diagram?

    A   ΔHMN ≅ ΔHGN
    B   **ΔHMN ≅ ΔNGH**
    C   ΔNMH ≅ ΔNGH
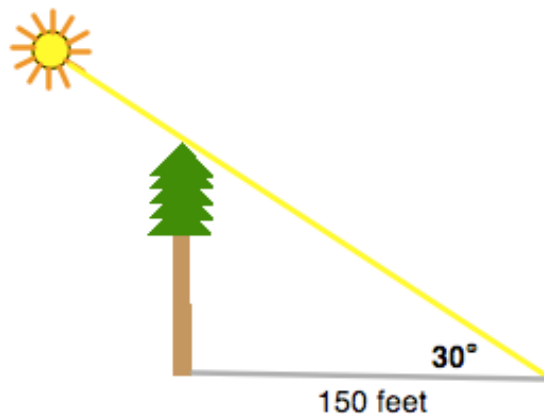   D   ΔMNH ≅ ΔHGN

13. Find the length of side TV.

    A   11
   B $11\sqrt{2}$
    C $11\sqrt{3}$
    D   22

14. A tree casts a shadow that is 150 feet long. If the angle of elevation from the tip of the shadow to the top of the tree is 30°, how tall is the tree to the nearest foot?

    A   **87 feet**
    B   106 feet
    C   212 feet
    D   259 feet

15. A rectangular prism is shown. The base of the prism is a square. The length of the diagonal from top corner A to opposite bottom corner B is 2 feet.

A   9 inches

9 inches

B
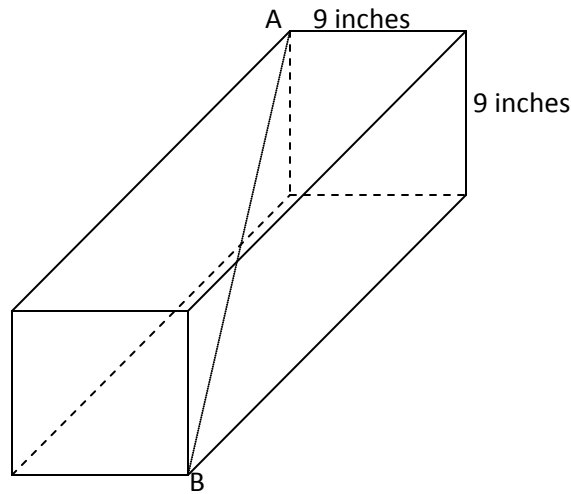
Determine the exact length of the box in inches. Write your answer on the line.
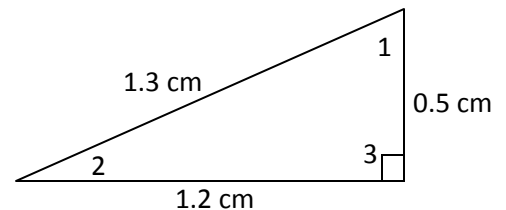
What is the exact length of the box? 33.67 inches

16. Which side lengths represent the sides of a right triangle?
   - A   1, 1, 2
   - B   2, 3, 5
   - **C   5, 12, 13**
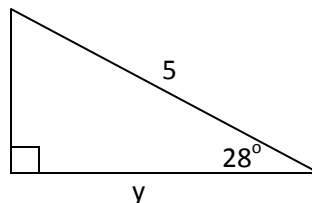   - D   7, 23, 25

17. Use the trigonometric ratio $\sin A = 0.38$ to determine which angle of the triangle is $\angle A$.
   - **A $\angle 2$**
   - B $\angle 1$
   - C $\angle 3$
   - D   No Solution

   1

   1.3 cm

   0.5 cm

   2

   3

   1.2 cm

18. Find the value of y.
   - A $y = 5\sin 28°$
   - B $y = 5\sin 28°$
   - C $y = 5\cos 62°$
   - **D $y = 5\sin 62°$**

   5

   28°

   y

19. At takeoff, a plane flies at an angle of 10° with the runway. After it has traveled a ground distance of 2,800 feet, find the vertical distance the plane has gained from takeoff. Round your answer to the nearest foot.
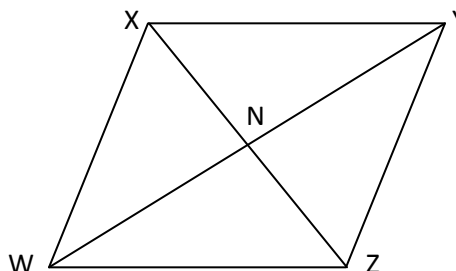   A   486 feet
    B   494 feet
    C   2,757 feet
    D   15,880 feet

20. In parallelogram PQRS the measures of angle P and angle R are each 146°. What is the measure of angle Q?
    A   146°
    B   112°
    C   68°
    D   34°

21. Which statement can you use to conclude that quadrilateral XYZW is a parallelogram?
    A $\overline{XW} \cong \overline{YZ}$ and $\overline{XY} \cong \overline{WZ}$
    B $\overline{XW} \cong \overline{WZ}$ and $\overline{XY} \cong \overline{WZ}$
    C $\overline{YN} \cong \overline{NX}$ and $\overline{XN} \cong \overline{NY}$
    D $\overline{XW} \cong \overline{YZ}$ and $\overline{XY} \cong \overline{YZ}$


22. Which description does NOT guarantee that a quadrilateral is a parallelogram?
    A   A quadrilateral with both pairs of opposite sides congruent.
    B   A quadrilateral with the diagonals bisecting each other.
    C   A quadrilateral with consecutive angles supplementary.
    D   Quadrilateral with two opposite sides parallel.

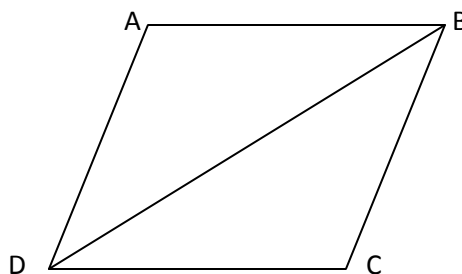23. In the following polygon, determine the value of x.
    A   78
    B   81
    C   95
    D   99
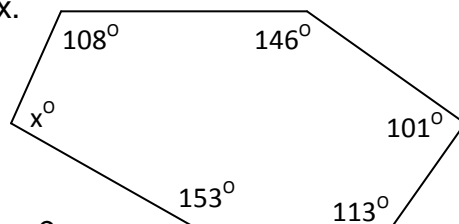
24. What is the sum of the exterior angles of a polygon?
    A   180°
    B   360°
    C   540°
    D   720°

25. What is the missing reason for the proof?
     Given: Parallelogram ABCD with diagonal $\overline{BD}$
   **Prove**: $\triangle ABD \cong \triangle CDB$

Statements	Reasons
1. $\overline{AD} \parallel \overline{BC}$	1. Definition of parallelogram
2. $\angle ADB \cong \angle CBD$	2. Alternate Interior Angles Theorem
3. $\overline{AB} \parallel \overline{CD}$	3. Definition of parallelogram
4. $\angle ABD \cong \angle CDB$	4. Alternate Interior Angles Theorem
5. $\overline{DB} \cong \overline{DB}$	5. Reflexive Property of Congruence
6. $\triangle ABD \cong \triangle CDB$	6. _____

   A   Reflexive Property of Congruence
   B   ASA
   C   Alternative Interior Angles Theorem
   D   SSS
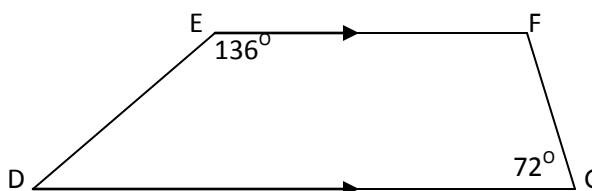
26. In the accompanying diagram of rectangle *ABCD*, $m\angle ABE = 30$ and $m\angle CFE =$
     144. Find $m\angle BEF$.

   A   36°
   B   60°
   C   84°
   D   90°
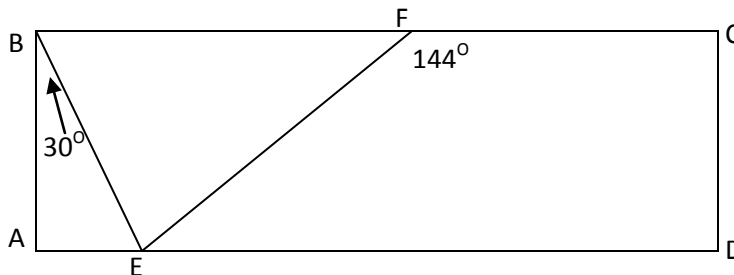
27. In trapezoid DEFG, find $m\angle D$.

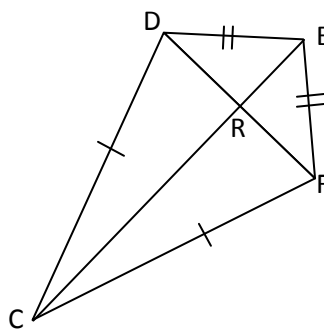   **A   44**
   B   72
   C   108
   D   136

28.   Which of the following statements is always true of any rhombus ABCD?

        A $\angle A \cong \angle B$

        B $\overline{AB} \perp \overline{BC}$

        C $\overline{AC} \cong \overline{BD}$
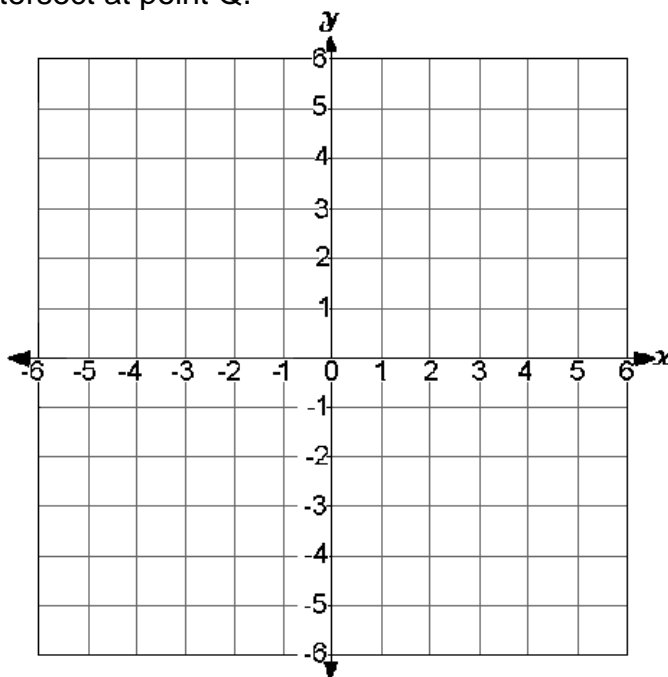
        D $\overline{AC} \perp \overline{BD}$

29.   In kite DEFC, if $m\angle DCF = 20$ and $m\angle DEF = 80$, find $m\angle CDE$.

    Write your answer on the line below

$$m\angle CDE = \textbf{130°}$$

30.   The vertices of a square are (3, 1), (-2, 0), (-1, -5), and (4, -4). The diagonals of the square intersect at point Q.

Determine the coordinates of point Q.

You may use the blank grid to help determine the solution.   Write your answer on the line.

What are the coordinates of point Q? (1, -2)

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31.   Isosceles triangle ABC has vertices at A(0, 0), B(8, 0), and C(x, 12).   The value of x could be:
       A   **4**
       B   8
       C   12
       D   16

32.   What is the most precise name for a quadrilateral with vertices (-4, -1), (1, -1), (4, 3), and (-1, 3)?
       A   Kite
       B   Parallelogram
       C   Trapezoid
       D   Rhombus

33. The U.S. Census Bureau reported a national population of 299,894,924 on its Population Clock in mid-October of 2006. One can say that the U.S. population is 3 hundred million (3×10^8) and be precise to one digit. Although the population had surpassed 3 hundred million by the end of that month explain why 3×10^8 remained precise to one digit.

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34. What is the best estimate for the surface area of the prism?

        A   34 ft^2
        B   48 ft^2
        C   72 ft^2
        D   96 ft^2

5.7 feet

1.8 feet

2.9 feet
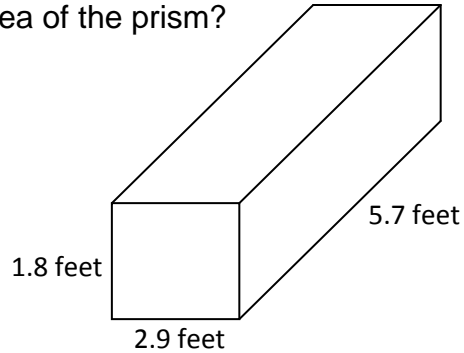
35. Convert 20 miles/hour to meters/second (round to the nearest meter).
    1 mile = 5,280 feet
    1 foot = .3048 meters
    Write your answer on the line below.

20 miles/hour = 8.94 meters/second

36. There are 5 horses on 12 acres of land. What is the mean number of square yards per horse?
    1 acre = 43,560 square feet

        A   8,712 square yards
        B   11,616 square yards
        C   34,848 square yards
        D   58,080 square yards

37. On a coordinate grid, a grocery store is located at (3,0) and the hardware store is located at (4,3). If the hardware store is the midpoint between the grocery store and the pharmacy, what is the approximate distance from the hardware store to the pharmacy? (Note: 1 unit equals 1 mile)

        A   1.5 miles
        B   1.58 miles
        C   3.16 miles
        D   3.5 miles