

Name: _____

CC Geometry Honors

Graded Take Home Assignment

****You must show work on ALL questions (including multiple choice) to receive full credit on this assignment****

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- 1) A regular decagon is rotated n degrees about its center, carrying the decagon onto itself. The value of n could be

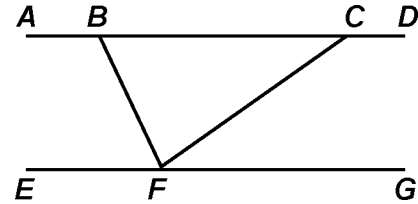
A) 150° C) 10°
 B) 225° D) 252°

- 2) Triangle $A'B'C'$ is the image of $\triangle ABC$ after a dilation followed by a translation. Which statement(s) would always be true with respect to this sequence of transformations?

I. $\triangle ABC \cong \triangle A'B'C'$
 II. $\triangle ABC \sim \triangle A'B'C'$
 III. $\overline{AB} \parallel \overline{A'B'}$
 IV. $AA' = BB'$

- A) II and III, only
 B) II, III, and IV, only
 C) IV, only
 D) I and II, only
- 3) Two right triangles must be congruent if
- A) the areas are equal
 B) the corresponding legs are congruent
 C) the lengths of the hypotenuses are equal
 D) an acute angle in each triangle is congruent
- 4) A parallelogram must be a rectangle when its
- A) diagonals are perpendicular
 B) opposite sides are parallel
 C) diagonals are congruent
 D) opposite sides are congruent

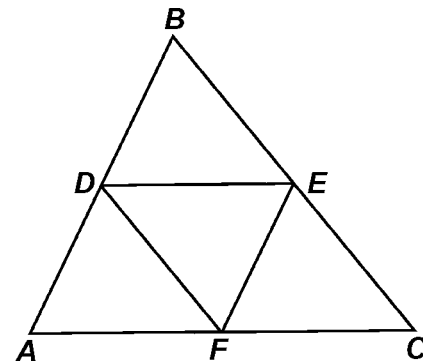
- 5) Steve drew line segments $ABCD$, EFG , BF , and CF as shown in the diagram below. Scalene $\triangle BFC$ is formed.



Which statement will allow Steve to prove $\overline{ABCD} \parallel \overline{EFG}$?

A) $\angle CBF \cong \angle GFC$
 B) $\angle ABF \cong \angle BFC$
 C) $\angle EFB \cong \angle CFB$
 D) $\angle CFG \cong \angle FCB$

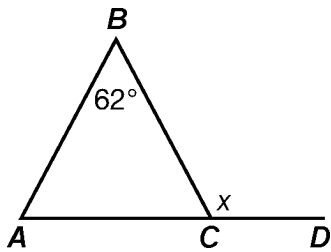
- 6) In the diagram below, \overline{DE} , \overline{DF} , and \overline{EF} are midsegments of $\triangle ABC$.



The perimeter of quadrilateral $ADEF$ is equivalent to

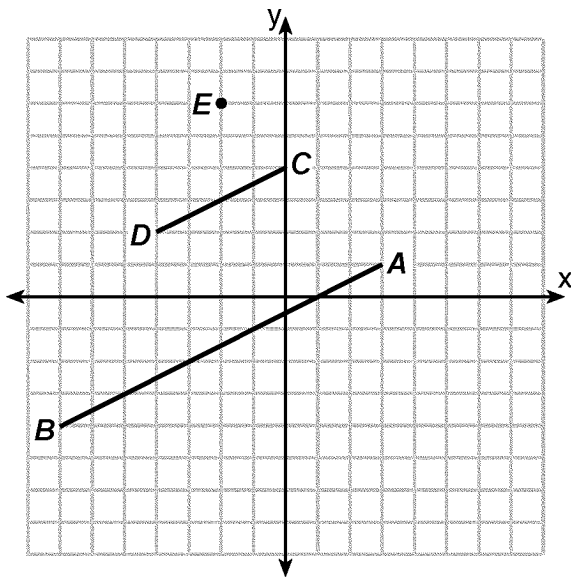
A) $\frac{1}{2}AB + \frac{1}{2}AC$ C) $AB + AC$
 B) $AB + BC + AC$ D) $2AB + 2AC$

- 7) Given $\triangle ABC$ with $m\angle B = 62^\circ$ and side extended to D , as shown below.



What value of x makes $\overline{AB} \cong \overline{CB}$?

- A) 118° C) 62°
 B) 121° D) 59°
- 8) In the diagram below, \overline{CD} is the image of \overline{AB} after a dilation of scale factor k with center E .



Which ratio is equal to the scale factor k of the dilation?

- A) $\frac{EA}{EC}$ C) $\frac{BA}{EA}$
 B) $\frac{EC}{EA}$ D) $\frac{EA}{BA}$

- 9) If $\triangle ABC$ is dilated by a scale factor of 3, which statement is true of the image $\triangle A'B'C'$?

- A) $3(m\angle C') = m\angle C$
 B) $3A'B' = AB$
 C) $m\angle A' = 3(m\angle A)$
 D) $B'C' = 3BC$

- 10) Using the information given below, which set of triangles can *not* be proven similar?

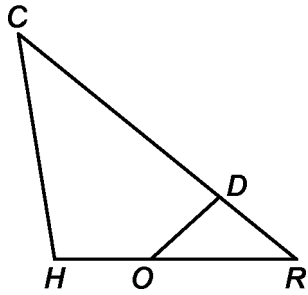
A)

B)

C)

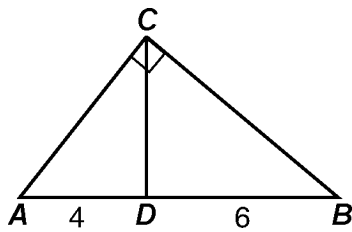
D)

- 11) In triangle CHR , O is on \overline{HR} , and D is on \overline{CR} so that $\angle H = \angle RDO$.



If $RD = 4$, $RO = 6$, and $OH = 4$, what is the length of \overline{CD} ?

- A) 11
 B) $6\frac{2}{3}$
 C) $2\frac{2}{3}$
 D) 15
- 12) In the diagram of right triangle ABC , \overline{CD} intersects hypotenuse \overline{AB} at D .

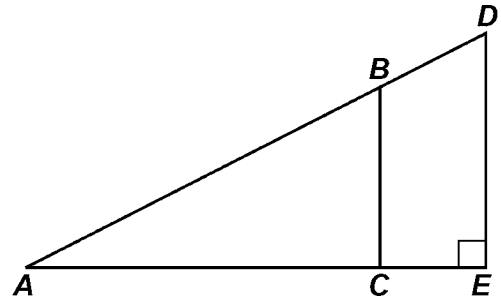


If $AD = 4$ and $DB = 6$, which length of \overline{AC} makes $\overline{CD} \perp \overline{AB}$?

- A) $4\sqrt{2}$
 B) $2\sqrt{6}$
 C) $2\sqrt{10}$
 D) $2\sqrt{15}$
- 13) In parallelogram $ABCD$, diagonals \overline{AC} and \overline{BD} intersect at E . Which one of the following statements does *not* prove parallelogram $ABCD$ is a rhombus?

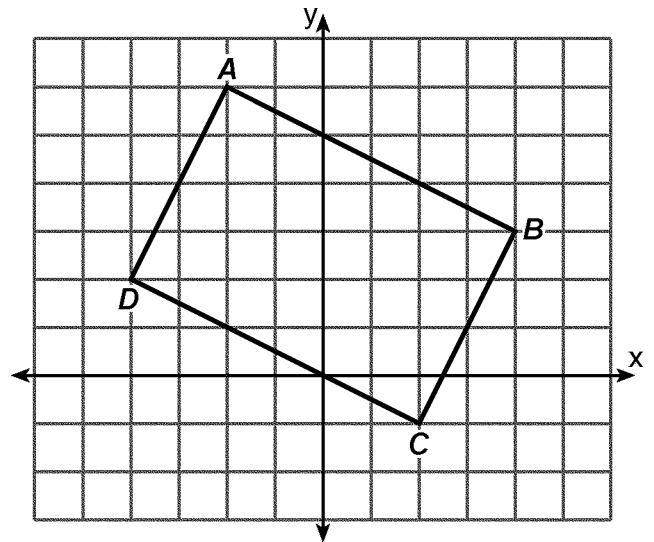
- A) $\overline{AB} \cong \overline{BC}$
 B) $\overline{AC} \perp \overline{DB}$
 C) \overline{AC} bisects $\angle DCB$.
 D) $\overline{AC} \cong \overline{DB}$

- 14) In the diagram of right triangle ADE below, $\overline{BC} \parallel \overline{DE}$.



Which ratio is always equivalent to the sine of $\angle A$?

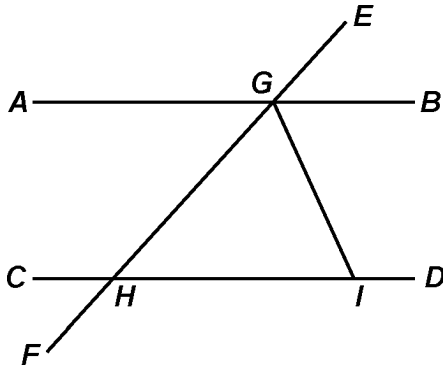
- A) $\frac{BC}{AB}$
 B) $\frac{AD}{DE}$
 C) $\frac{AB}{AC}$
 D) $\frac{AE}{AD}$
- 15) Quadrilateral $ABCD$ is graphed on the set of axes below.



When $ABCD$ is rotated 90° in a counterclockwise direction about the origin, its image is quadrilateral $A'B'C'D'$. Is distance preserved under this rotation, and which coordinates are correct for the given vertex?

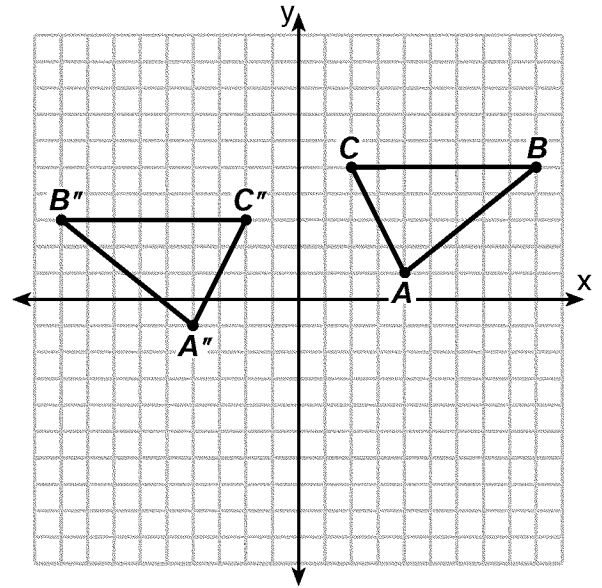
- A) no and $C'(1,2)$
 B) no and $D'(2,4)$
 C) yes and $A'(6,2)$
 D) yes and $B'(-3,4)$

- 16) In the diagram below, \overline{EF} intersects \overline{AB} and \overline{CD} at G and H , respectively, and \overline{GI} is drawn such that $\overline{GH} \cong \overline{IH}$.



If $m\angle EGB = 50^\circ$ and $m\angle DIG = 115^\circ$, explain why $\overline{AB} \parallel \overline{CD}$.

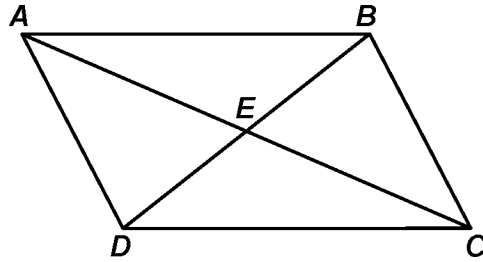
- 17) The graph below shows $\triangle ABC$ and its image, $\triangle A''B''C''$.



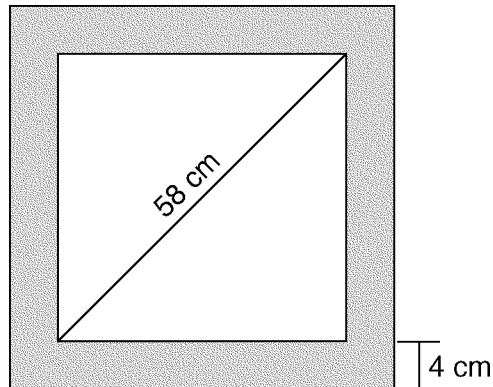
Describe a sequence of rigid motions which would map $\triangle ABC$ onto $\triangle A''B''C''$.

- 18) A ladder leans against a building. The top of the ladder touches the building 10 feet above the ground. The foot of the ladder is 4 feet from the building. Find, to the nearest degree, the angle that the ladder makes with the level ground. [Show all work.]

- 19) Given: Quadrilateral $ABCD$ is a parallelogram with diagonals \overline{AC} and \overline{BD} intersecting at E .



- (a) Prove: $\triangle AED \cong \triangle CEB$
- (b) Describe a single rigid motion that maps $\triangle AED$ onto $\triangle CEB$.
- 20) Keira has a square poster that she is framing and placing on her wall. The poster has a diagonal 58 cm long and fits exactly inside the frame. The width of the frame around the picture is 4 cm.



Determine and state the total area of the poster and frame to the nearest tenth of a square centimeter. [Show all work.]