Geometry Placement Test

I. Fill in the blank with the best answer. (3 points each)

1. _____ The trigonometric function defined as "the adjacent side over the hypotenuse."

2. _____ An angle with a measure greater than 90º but less than 180º.

3. _____ A piece of the circumference of a circle.

4. _____ Any two angles whose measures add to 90º.

5. _____ An infinite number of connected lines lying in the same flat surface; it has length and width; two dimensional.

6. _____ A four-sided polygon with two parallel sides and two sides that are not parallel.

7. _____ A rectangular solid with all edges having the same length.

8. _____ Two or more points in the same line.

9. _____ Having the same size and shape.

10. _____ Distance around any two-dimensional geometric shape.

II. Given the drawing at right, answer the following questions. (3 points each)

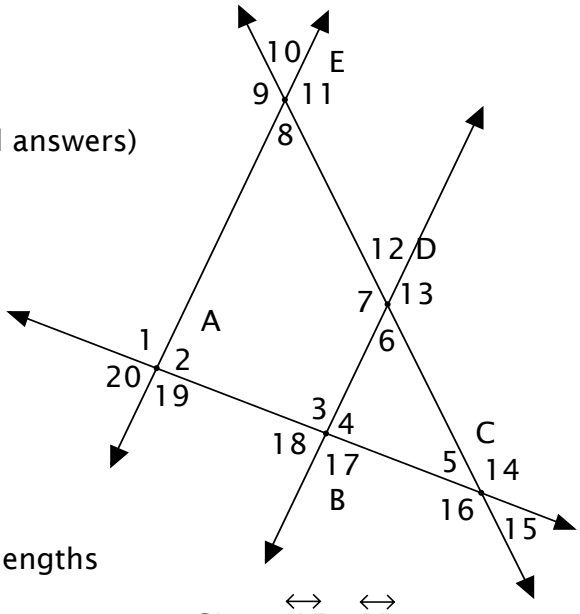
1. What kind of quadrilateral is quadrilateral ABDE?

2. What angle(s) correspond(s) to ∠10? (give all answers)

3. m∠6 = ____°

4. m∠5 = ____°

5. Given that segment DC is 8 inches, find the lengths of the other two sides of triangle BCD.



Given: $\overleftrightarrow{AE} \parallel \overleftrightarrow{BD}$

m∠8 = 60°

m∠4 = 90°

6. m∠14 = ____°

7. Is m∠2 = m∠11? Why or why not?

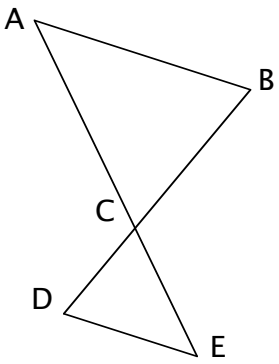
8. Name all the labeled points that are not collinear with point B in the drawing.

9. For $\Delta BCD \sim \Delta ACE$, use your answers from #5 above and find the length of the segment AE if CE = 20.

10. Using your answers from #5 and #9, what is the length of segment AB?

III. Write a proof for each of the following. (12 points each)

1.



Given: $\overline{CE} \cong \overline{CA}$

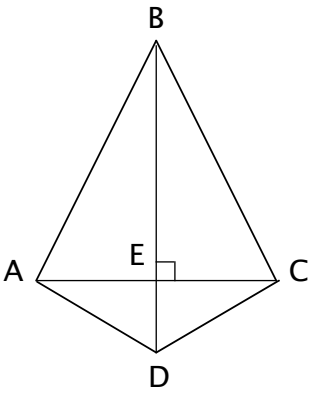
$\angle ABC \cong \angle EDC$

Prove: $\Delta ABC \cong \Delta CDE$

The drawing is a sketch and is not to scale.

Statements	Reasons

2.

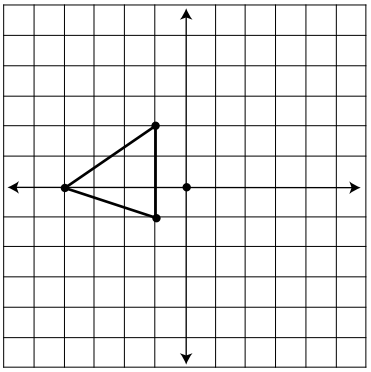


Given: $\overline{AB} \cong \overline{BC}$

Prove: $\overline{AE} \cong \overline{EC}$

Statements	Reasons

IV. Graph the reflection of the triangle about the Y–axis. (5 points)



V. Find the volume of a sphere if the radius is given as 3 cm. (5 points)

VI. Find the surface area of a rectangular solid with edges of lengths 2 cm, 5 cm, and 7 cm. (5 points)

VII. The measure of an exterior angle of a regular polygon is 45°. Name the shape of the polygon. (5 points)

VIII. Simplify the following radical expressions, if possible. Reduce to the simplest terms. (4 points each)

1. $\left(3\sqrt{2}\right)\left(4\sqrt{22}\right) =$

2. $\frac{4}{\sqrt{3}} - \frac{2\sqrt{6}}{\sqrt{2}} =$

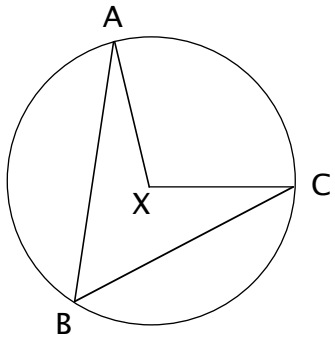
3. $-3\sqrt{5} + \sqrt{5} =$

4. $\sqrt{2} + \sqrt{3} + \sqrt{4} + \sqrt{1} =$

IX. Given that the circumference of a circle is 8π, find the radius. (5 points)

X. Draw a segment four inches long. Now construct the perpendicular bisector to that segment. Measure your results to check. (5 points)

XI. If the length of the minor arc AC in the diagram below is 98^{o}, give the measures of the central angle and the inscribed angle shown. (5 points)



Given: X is the center of the circle.

XII. If the hypotenuse of a right triangle is 5 cm and one leg is 2 cm, what is the measurement of the other leg? (5 points)

XIII. Given that $\sin \theta = \frac{3}{5}$, find the values of the other 5 trigonometry functions. (10 points)