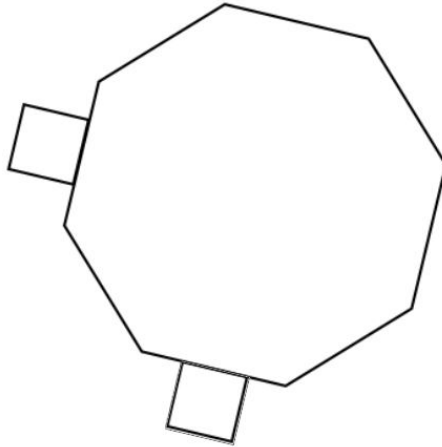
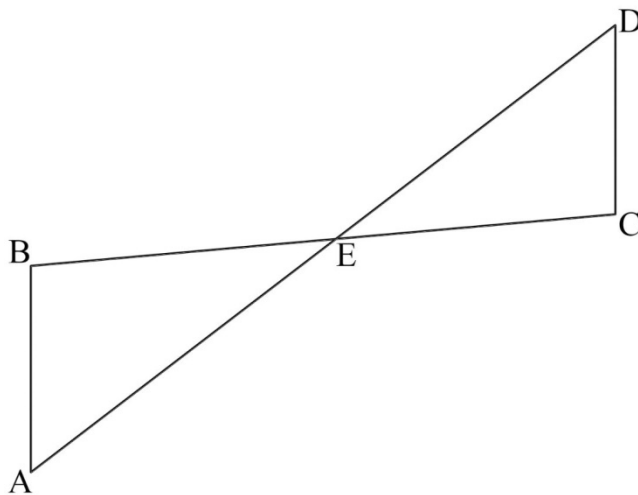


Geometry Homework #18

- 1) Determine which types of symmetries the following figure contains and then draw all lines of symmetry and all points of symmetry on the figure:



- 2) In triangle ABC , point D lies on segment AC such that segment BD is a median. If $\overline{AB} \cong \overline{BC}$, prove that triangles ABD and CDB are congruent.
- 3) If $ABCD$ is a quadrilateral with diagonal AC , and $\triangle ABC$ and $\triangle CDA$ congruent? If they are congruent, explain why, and if they are not congruent, explain why and draw a counter example.
- 4) In the following figure, $\triangle ABC$ and $\triangle CDE$. Are any of the triangles formed congruent? If they are congruent, explain why, and if they are not congruent, explain why and draw a counter example.



- 5) Perform the following transformation to determine the final location of each point (Show ALL work!): Translate 3 units to the left, 2 units up, vertical reflection over the line $x = -2$, a counter-clockwise rotation of 84 degrees about the point $(-3, 2)$, and a size transformation of 3 times larger for the point $(-1, -4)$.
- 6) If the radius of a circle is 8 and the center is the point $(-3, 5)$, find the equation of the circle.
- 7) If the center of a horizontal ellipse is the point $(6, -4)$ and the minor axis is 6 while the major axis is 14, find the equation of the ellipse.

- 8) Using nothing more than a straightedge and a compass, construct the line segment AB and then create a perpendicular bisector through that segment.
- 9) If the equation of a circle is $(x-5)^2 + (y+6)^2 = 16$, determine its radius and center.
- 10) If the equation of an ellipse is $\frac{(x+4)^2}{25} + \frac{(y-1)^2}{81} = 1$, determine the center and the length of the minor and major axes.
- 11) Using nothing more than a straightedge and a compass, construct angle ABC and then create the bisector of that angle.
- 12) If the diameter of a circle is 12 and the center is the point $(7, 9)$, find the equation of the circle.
- 13) If the center of a vertical ellipse is the point $(-3, -2)$ and the minor axis is 8 while the major axis is 18, find the equation of the ellipse.
- 14) Using nothing more than a straightedge and a compass, construct the line segment AB, find the midpoint of that segment, C, and then construct perpendicular bisectors through segments AC and CB.
- 15) If the equation of a circle is $(x-5)^2 + (y-7)^2 = 36$, determine its radius and center.
- 16) If the equation of an ellipse is $\frac{(x-6)^2}{64} + \frac{(y+3)^2}{9} = 1$, determine the center and the length of the minor and major axes.
- 17) Using nothing more than a straightedge and a compass, construct angle ABC and then divide that angle into four equal angles.
- 18) If the equation of a circle is $(x+3)^2 + (y-2)^2 = 25$, determine its diameter and center AND graph the circle.
- 19) If the equation of an ellipse is $\frac{(x-1)^2}{4} + \frac{(y+4)^2}{25} = 1$, determine the center and the length of the minor and major axes AND graph the ellipse.
- 20) Find the equation from the graph below:

