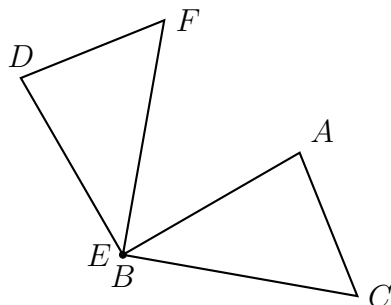


Name: _____

Classwork: Happy New Year!
Due at the end of class

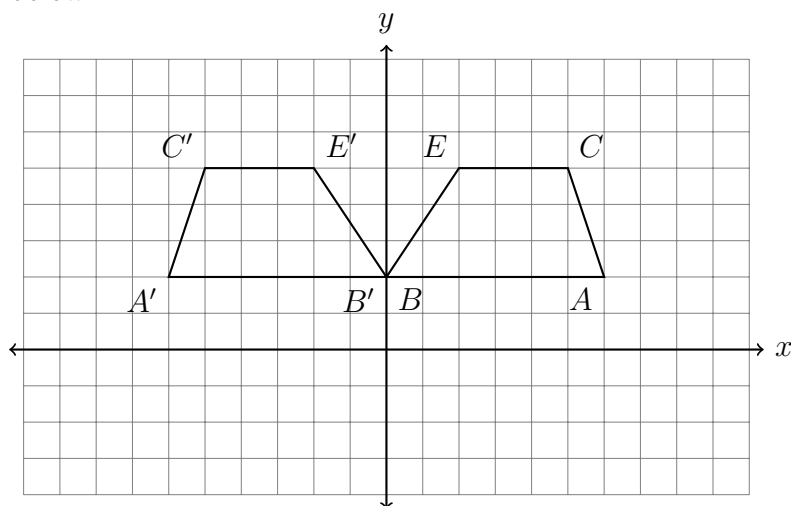
1. A rotation of 90° around the vertex B of triangle ABC carries it onto triangle DEF .



Fill in the blank with the corresponding object.

- (a) $A \rightarrow$ _____
 (b) $\angle ABC \cong$ _____
 (c) _____ $\cong \overline{EF}$
 (d) Justify that the areas of $\triangle ABC$ and $\triangle DEF$ are equal. Use the words, “rotation,” “rigid motion,” and “preserves distance.”

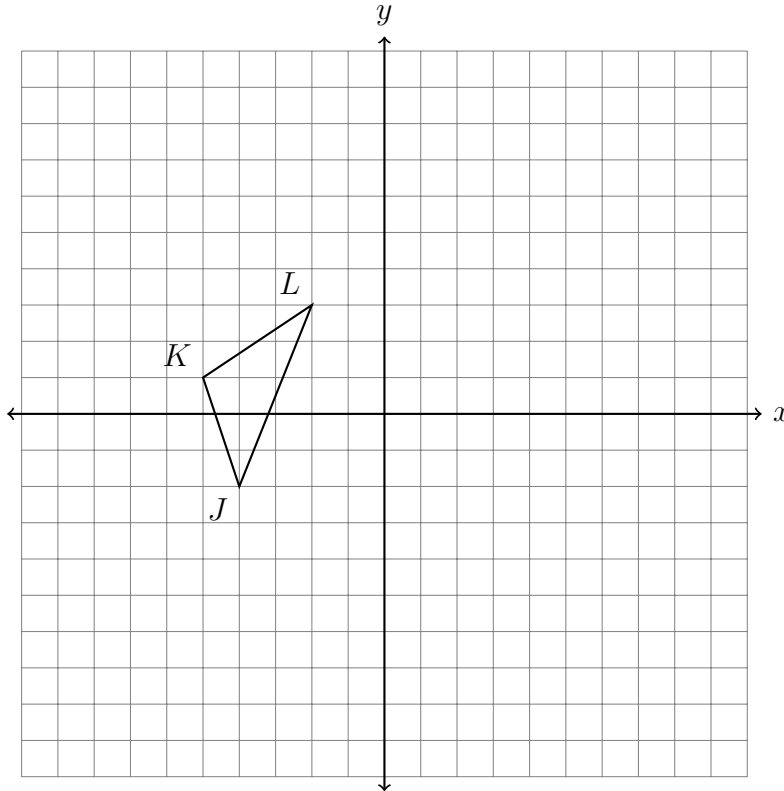
2. State the transformation that carries the trapezoid $BECA$, onto $B'E'C'A'$, as shown below.



Note: For translations, you must state the x and y quantities; for reflections, the line of reflection; for rotations, the center of rotation and quantity in degrees.

3. The vertices of $\triangle JKL$ have the coordinates $J(-4, -2)$, $K(-5, 1)$, and $L(-2, 3)$, as shown below.

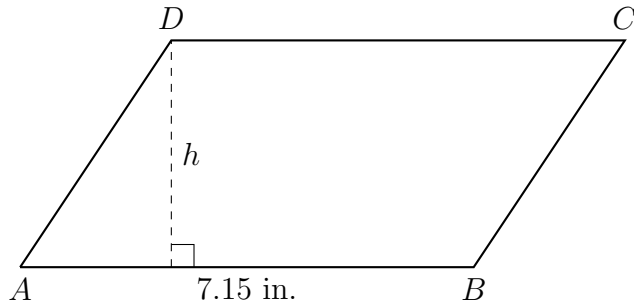
Apply a translation of $(x, y) \rightarrow (x + 6, y - 7)$ to $\triangle JKL$ and then reflect the image across the y -axis. Draw both images $\triangle J'K'L'$ and $\triangle J''K''L''$ on the set of axes below, labeling the vertices.



4. Find the volume of a cone having a height of 12 feet and round base with a diameter of 3 feet. Express your result to the *nearest cubic foot*.

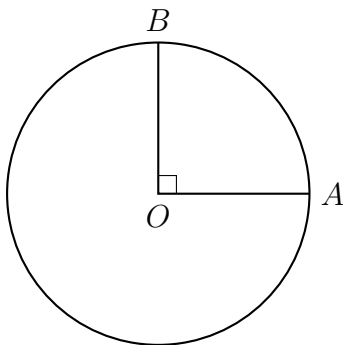
Name:

5. Find the area of parallelogram $ABCD$. The altitude h of the parallelogram is 4.5 inches and the base $AB = 7.15$ in.



6. Find the volume of a sphere with a radius of 13 inches, to the *nearest whole cubic inch*.

7. Circle O has a radius of 5 inches, and two radii are drawn, OA and OB , as shown. The radii are perpendicular, that is, $m\angle AOB = 90^\circ$.



- (a) Find the circumference of circle O .

- (b) Find the length of the arc \widehat{AB}

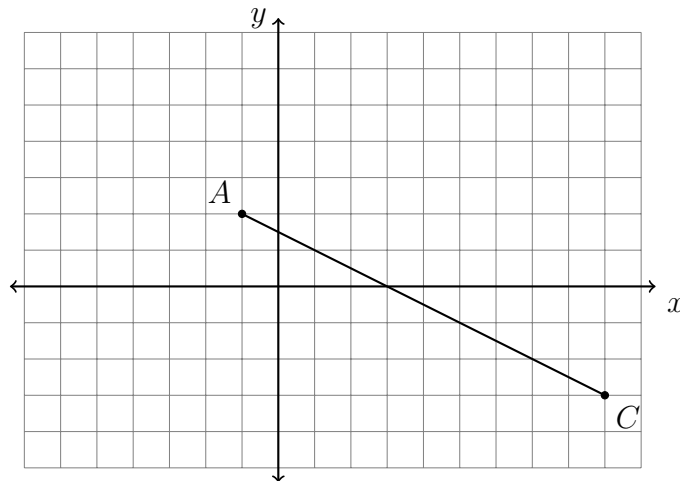
8. Find the length of \overline{AB} , where $A(5, -6)$ and $B(13, 0)$.

9. Determine relationship of each equation to the line $y = \frac{4}{3}x - 4$, circling either parallel, perpendicular, or neither.

(a) $4x - 3y = 6$ Parallel Perpendicular Neither

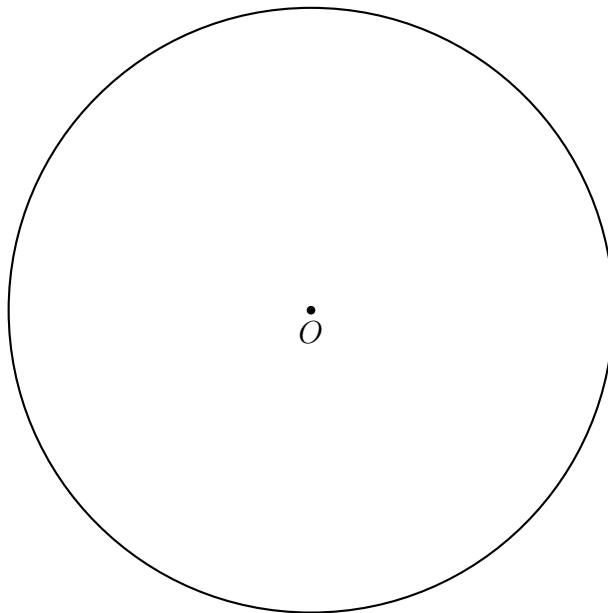
(b) $3x + 4y = 5$ Parallel Perpendicular Neither

10. In the diagram below, \overleftrightarrow{AC} has endpoints with coordinates $A(-1, 2)$ and $C(9, -3)$.

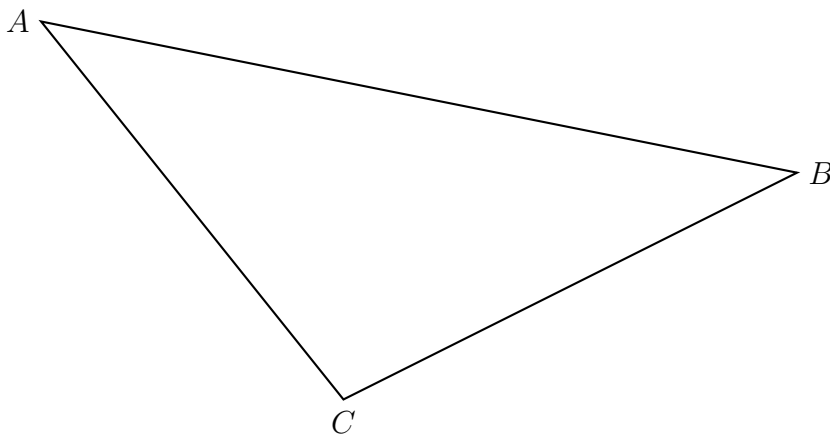


If B is a point on \overline{AC} and $AB:BC = 2:3$, what are the coordinates of B ?

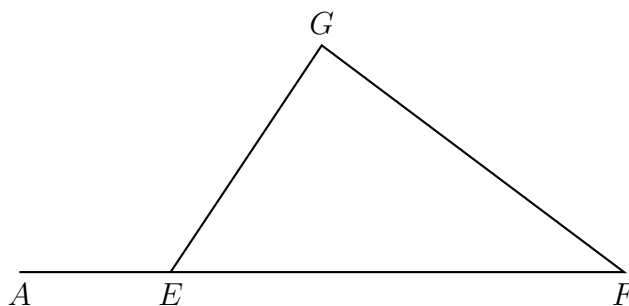
11. With a compass and straightedge, construct a hexagon inscribed in circle O . (Leave all construction marks.)



12. Using a compass and straightedge, construct a perpendicular bisector of side \overline{BC} in $\triangle ABC$ below.
(Leave all construction marks.)



13. Given $\triangle EFG$ with \overline{EF} extended to A . If $m\angle F = 44^\circ$ and $m\angle G = 92^\circ$, find $m\angle AEG$?



14. In $\triangle ABC$ shown below, $m\angle A = (5x+21)^\circ$, $m\angle B = (13x+4)^\circ$, and $m\angle C = (2x+15)^\circ$.

What is $m\angle A$?

