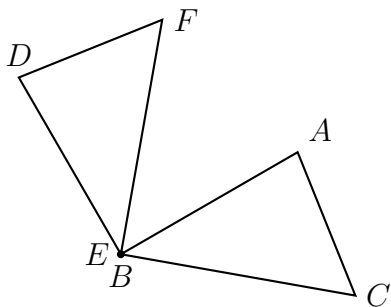


Name: \_\_\_\_\_

### 13.1 Do Now: Review of transformations

1. A rotation of  $90^\circ$  around the vertex  $B$  of triangle  $ABC$  carries it onto triangle  $DEF$ .



Fill in the blank with the corresponding object.

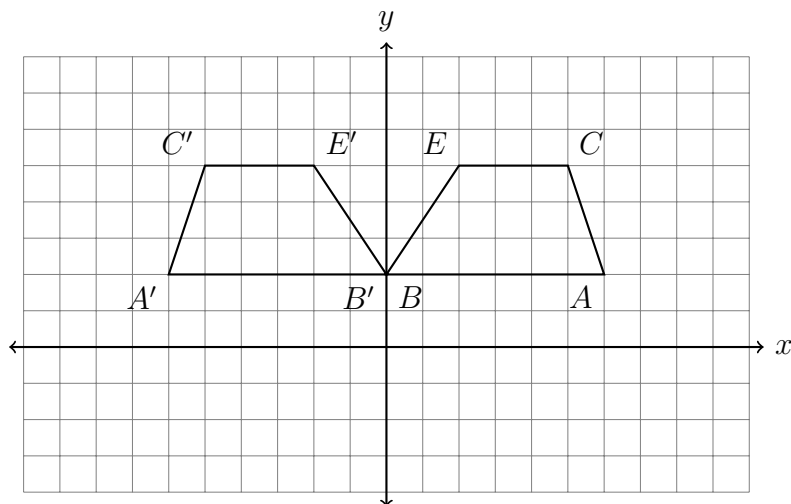
(a)  $A \rightarrow$  \_\_\_\_\_

(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.”

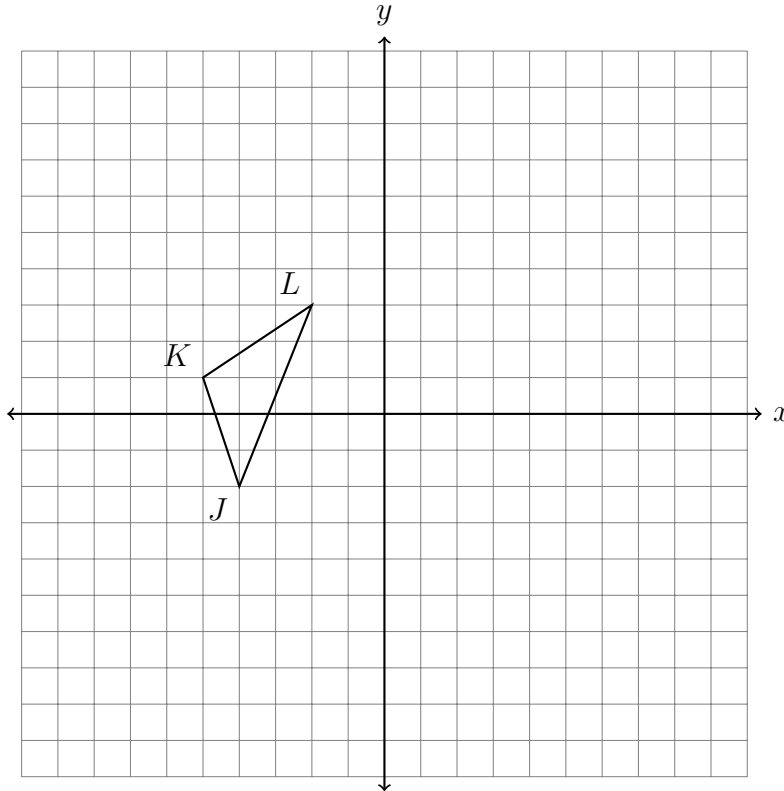
2. State the transformation that carries the trapezoid  $BECA$ , onto  $B'E'C'A'$ , as shown below.



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.

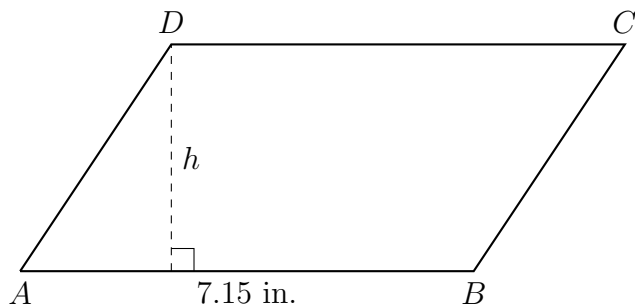
Apply a translation of  $(x, y) \rightarrow (x + 6, y - 7)$  to  $\triangle JKL$  and then reflect the image across the  $y$ -axis. Draw both images  $\triangle J'K'L'$  and  $\triangle J''K''L''$  on the set of axes below, labeling the vertices.



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*.

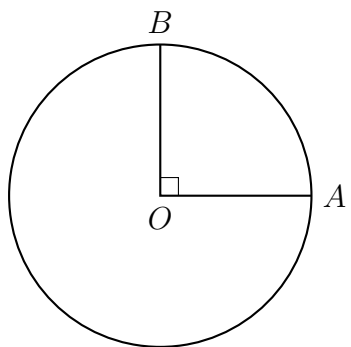
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5. Find the area of parallelogram  $ABCD$ . The altitude  $h$  of the parallelogram is 4.5 inches and the base  $AB = 7.15$  in.



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  $\widehat{AB}$

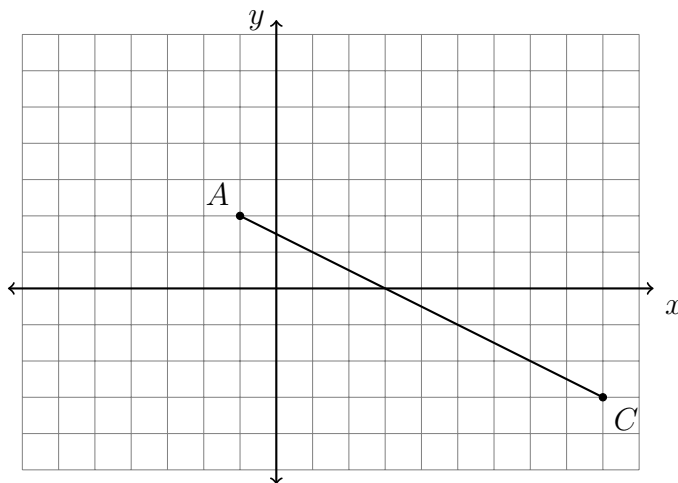
8. Find the length of  $\overline{AB}$ , where  $A(5, -6)$  and  $B(13, 0)$ .

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

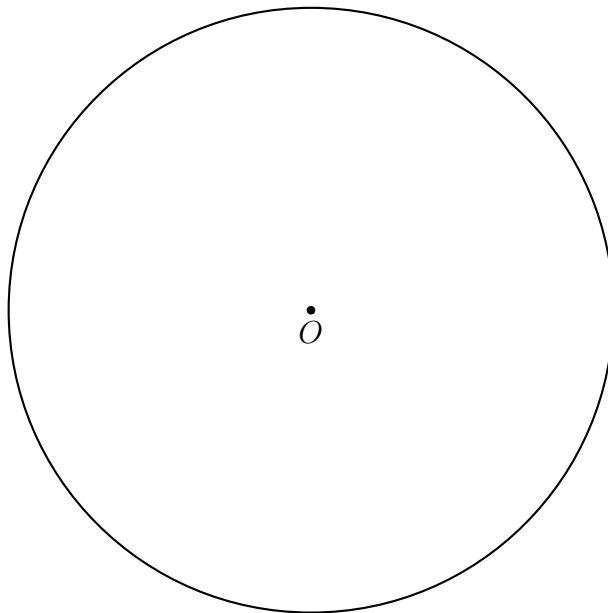
10. In the diagram below,  $\overleftrightarrow{AC}$  has endpoints with coordinates  $A(-1, 2)$  and  $C(9, -3)$ .



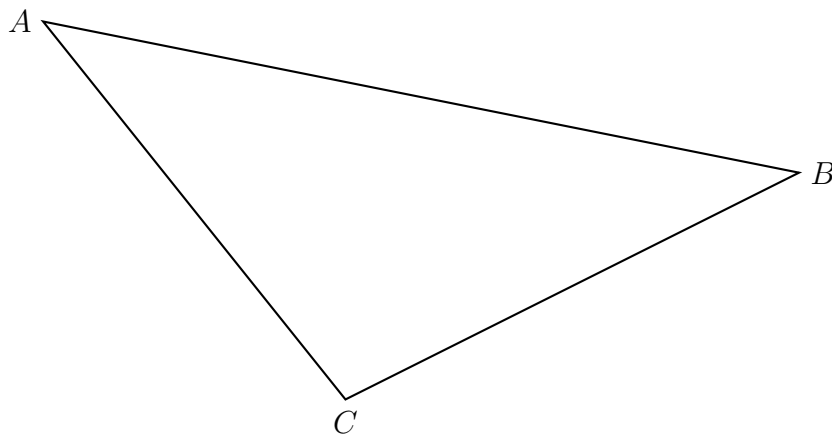
If  $B$  is a point on  $\overline{AC}$  and  $AB:BC = 2:3$ , what are the coordinates of  $B$ ?

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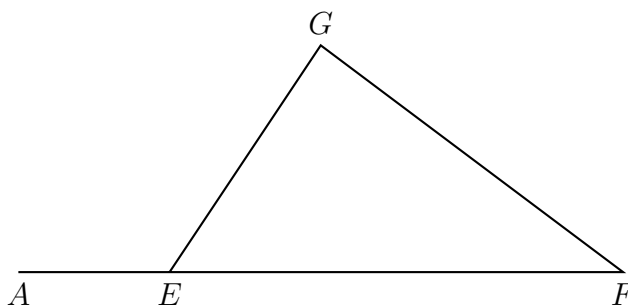
11. With a compass and straightedge, construct a hexagon inscribed in circle  $O$ . (Leave all construction marks.)



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  $m\angle A$ ?

