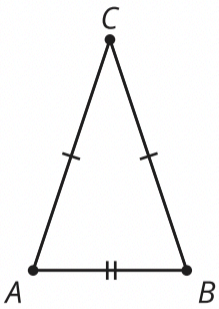
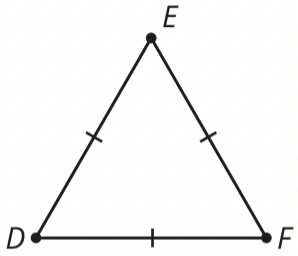
Name: _____ Date: _____

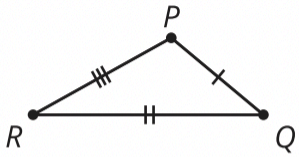
**Geometry Summer Work**

Directions: Do your best to complete all problems. Show all work. You may use a calculator, tracing paper, a compass, straightedge, and protractor. This will count for your first quiz grade of the year. Due on the first full day of class Wednesday September 4.

1. Label each diagram with its triangle type (equilateral, isosceles, scalene).

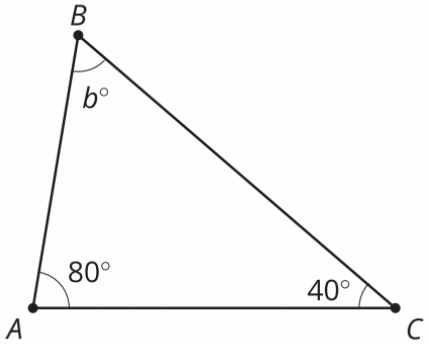


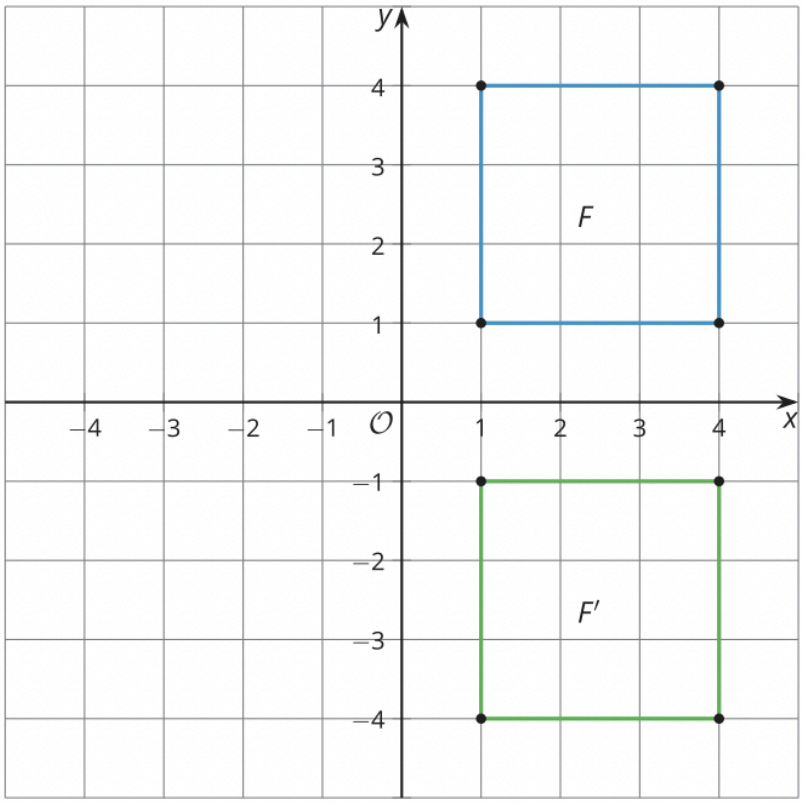




2. Draw a rectangle. Explain how you know your shape is a rectangle.

3. What is the measure of angle $B$?



4. Select **all** transformations that take figure $F$ to figure $F'$.




A. Reflect figure $F$ across the $x$-axis.

B. Reflect figure $F$ across the $y$-axis.

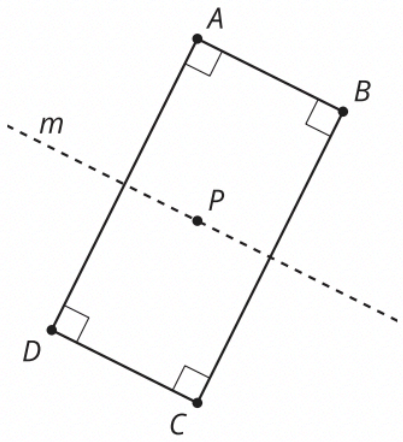
C. Rotate figure $F$ 90 degrees clockwise around the origin.

D. Rotate figure $F$ 180 degrees counterclockwise around the origin.

E. Translate figure $F$ so that $(4, 1)$ goes to $(4, -1)$.

F. Translate figure $F$ so that $(1, 4)$ goes to $(1, -1)$.

5. Select **all** transformations that take rectangle $ABCD$ onto itself.




A. Rotate by 90 degrees clockwise using center $P$.

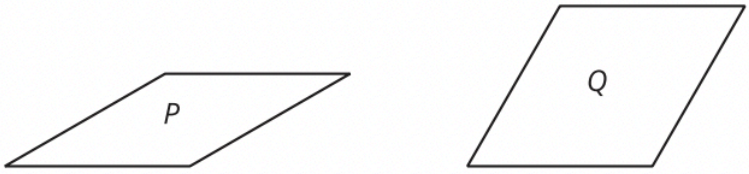
B. Rotate by 180 degrees clockwise using center $P$.

C. Reflect across line $m$.

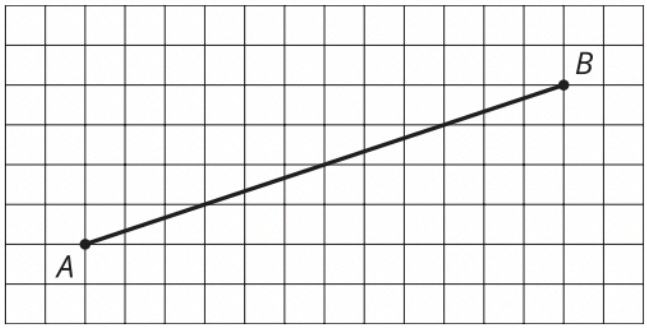
D. Reflect across diagonal $AC$.

E. Translate by the directed line segment from $A$ to $B$.

6. Is there a rigid transformation taking Rhombus $P$ to Rhombus $Q$? Explain how you know.

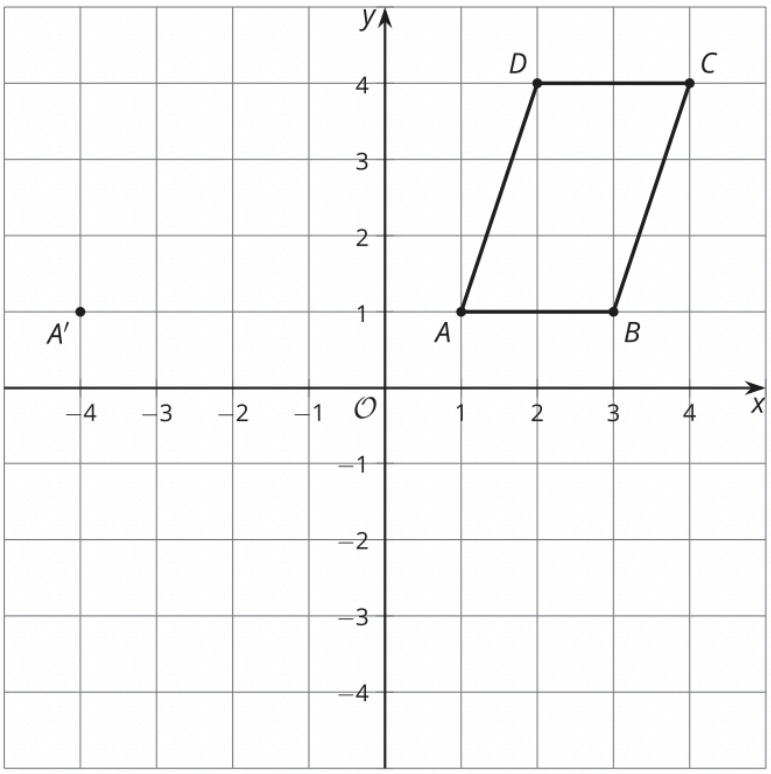


7. Bisect segment $AB$ by plotting the midpoint.




8. a. Draw the image of quadrilateral $ABCD$ after a translation that takes $A$ to $A'$. Label the image $A'B'C'D'$.

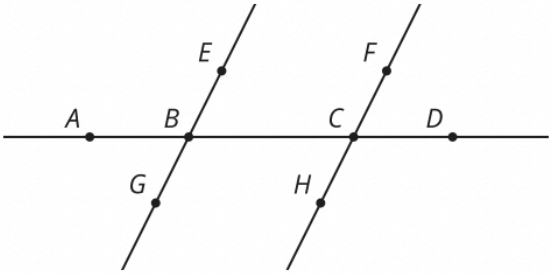
   b. Draw the image of quadrilateral $ABCD$ after a rotation 90 degrees clockwise around the origin. Label the image $A''B''C''D''$.




9. Lines $EG$ and $FH$ are parallel.

   a. Name all the angles congruent to angle $ABE$.

   b. Write an equation that represents the relationship between angle $FCD$ and angle $HCD$.



10. *Hint: Draw this out!

Triangle $A'B'C'$ is a reflection of triangle $ABC$ across line $\ell$. Select **all** statements that must be true.

A. Line $\ell$ bisects segment $AB$.

B. Line $\ell$ bisects segment $CC'$.

C. Angle $ABC$ is 60 degrees.

D. Line $BB'$ is perpendicular to line $\ell$.

E. Angle $ABC$ is congruent to angle $A'B'C'$.

F. Triangles $ABC$ and $A'B'C'$ are congruent.

G. Segment $BC$ is congruent to segment $B'C'$.

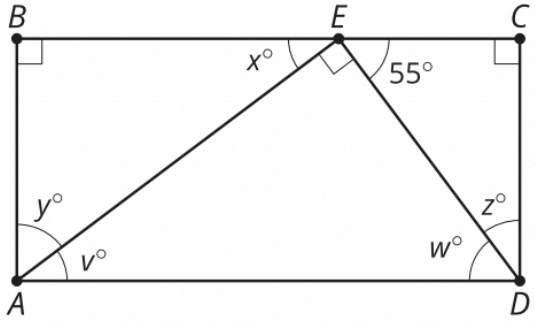
H. The distance from point $A$ to line $\ell$ is the same as the distance from point $A'$ to line $\ell$.

11.

In parallelogram $ABCD$, the measure of angle $A$ is $99°$. Explain why the measure of adjacent angle $B$ must be $81°$.

12.

Find the values of $v$, $w$, $x$, $y$, and $z$.



13.

In triangle $ABC$, the measure of angle $A$ is $90^\circ$. The length of $AB$ is 1 unit. The length of $AC$ is 8 units. Find the length of $BC$.

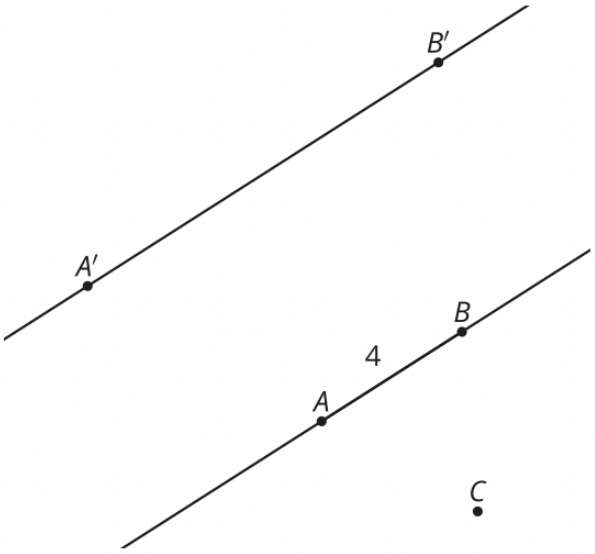
14.

Find the value of $x$ that makes the equation true. Explain or show your reasoning.

$\frac{12}{x} = \frac{8}{6}$

15.

Dilating point $A$ using center $C$ and scale factor 2.5 gives image $A'$. Dilating point $B$ using center $C$ and scale factor 2.5 gives image $B'$.



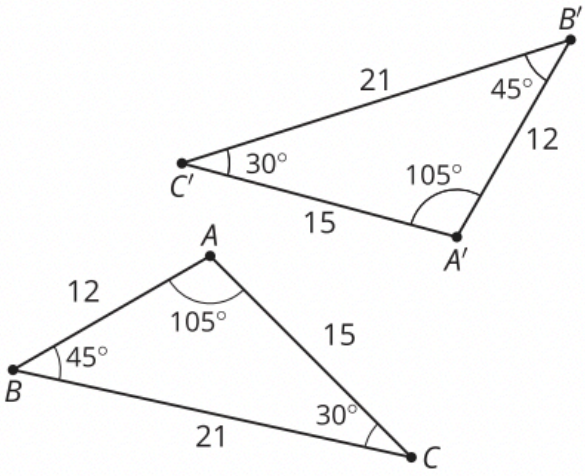

a. What can you say about line $AB$ and line $A'B'$?

b. What is the length of segment $A'B'$?

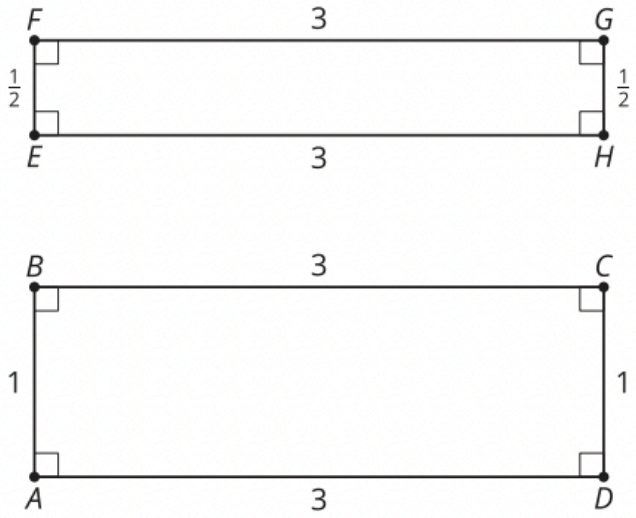
16.

For each pair of figures, state whether they are similar or not similar. Show or explain how you know.

a.

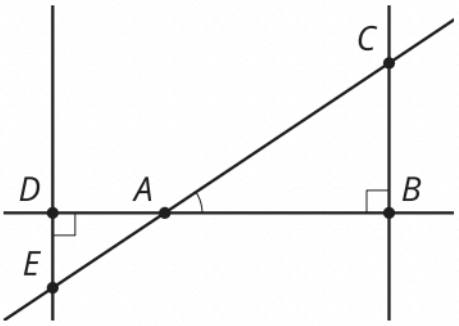



b.



17.

Which angle is complementary to angle $BAC$?




A. angle $ACB$

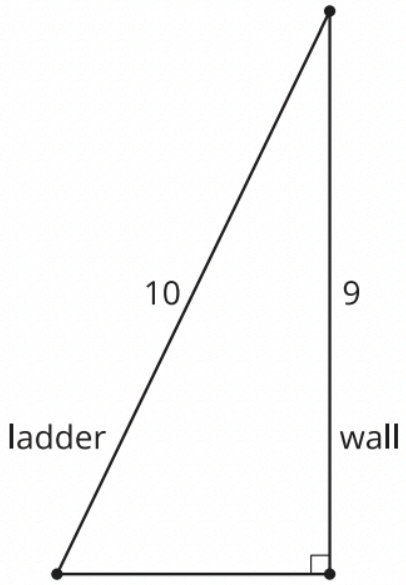
B. angle $CAD$

C. angle $CBA$

D. angle $DAE$

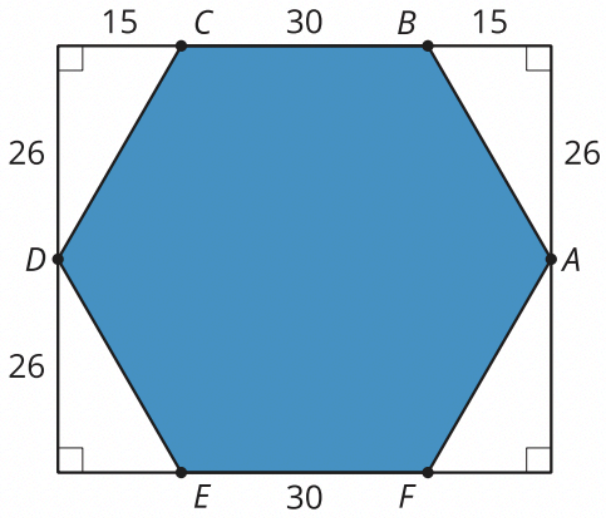
18.

A 10-foot tall ladder is placed against a wall so that the top of the ladder is 9 feet above the ground. How far is the base of the ladder from the base of the wall along the ground? Explain or show your reasoning.



19.

What is the area of regular hexagon $ABCDEF$? Explain or show your reasoning.




20.

Select **all** quantities that equal $\pi$.

A. the circumference of a circle of radius 1

B. the circumference of a circle of diameter 1

C. the diameter of a circle of radius 1

D. the diameter of a circle of circumference 1

E. the area of a circle of radius 1

F. the area of a circle of diameter 1

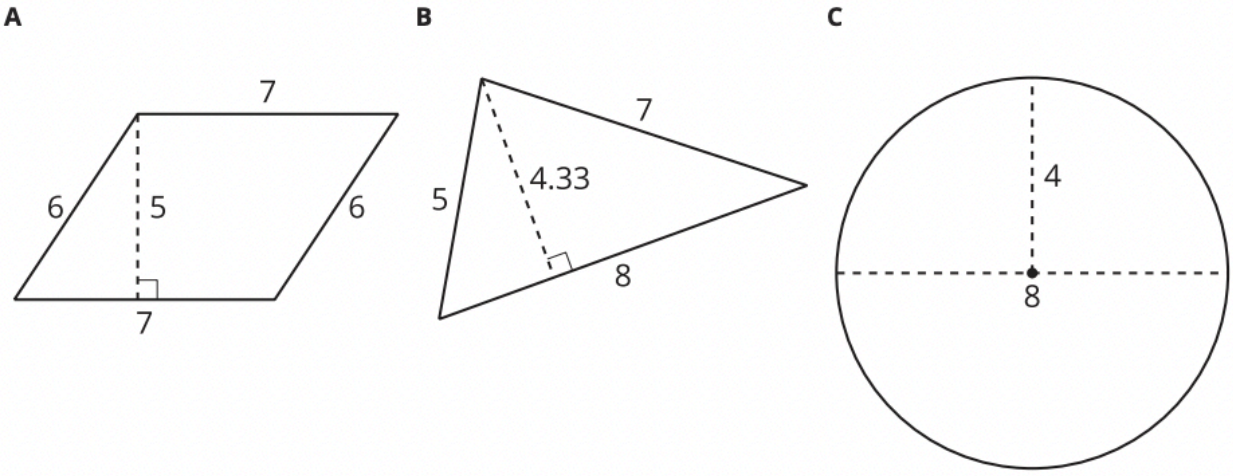
**Hint: Area = π•r$^2$ and Circumference=π•d**

21.

Solve each equation.

$\frac{x}{7} = 0.4$ $\frac{7}{y} = 0.4$

22.

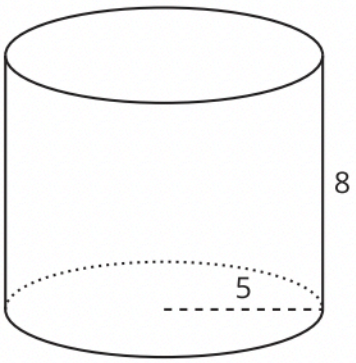



Find the area of each shape. All measurements are in meters.

Hint: Triangle area = (½)•B•h Parallelogram area = B•h

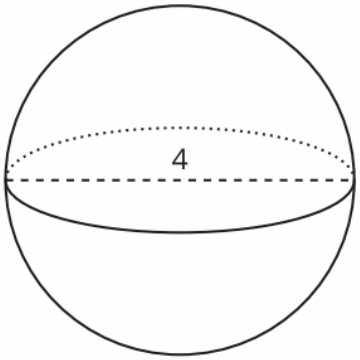
23.

Find the volume of the cylinder. Explain or show your reasoning. All measurements are in centimeters.




24.

The volume formula for a sphere is $V = \frac{4}{3}\pi r^3$ where $r$ is the length of the sphere's radius. Find the volume of the sphere in the image. Measurements are in inches.



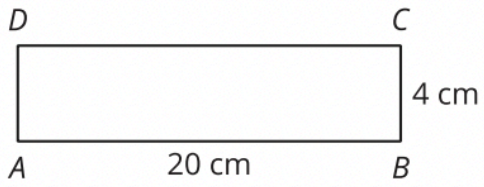

25.

a. A square has area 225 square meters. What is the length of a side of the square?

b. A cube has volume 64 cubic feet. What is the length of an edge of the cube?

26.

This rectangle has area 80 square centimeters.

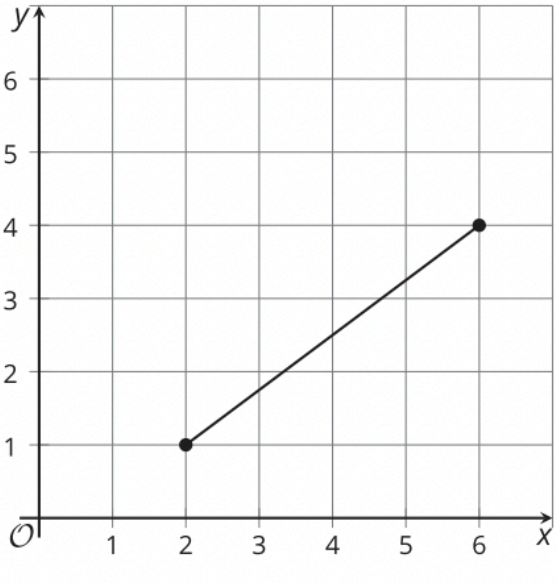



The rectangle is dilated using $A$ as a center and a scale factor of $\frac{1}{2}$. What is the area of the image?

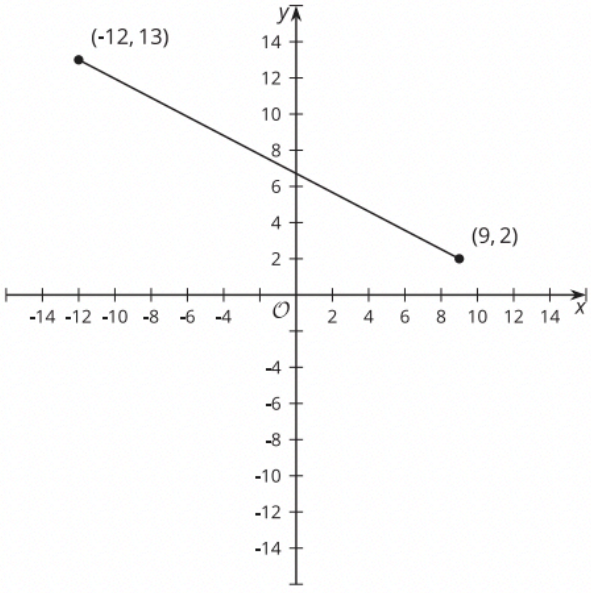
27.

Two line segments are graphed.

**A**




**B**




Calculate the length of each line segment.

*Hint: Think about making a right triangle with these segments where the segments are the hypotenuse.

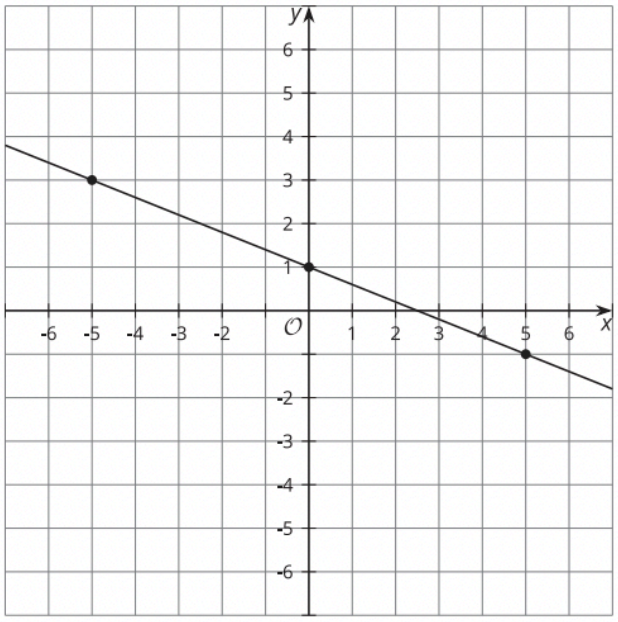
28.

Find the slope of each line.

a. $y = \frac{2}{3}x + 10$

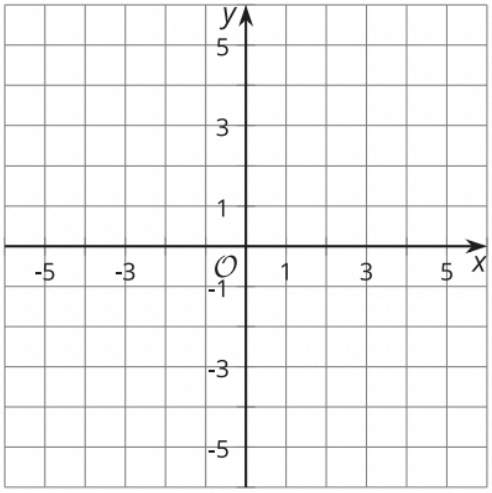
b. $6x + 2y = 5$

c. the line in the image




29.

Graph the line that represents the equation $y = -\frac{1}{2}x + 1$.



30.

Rewrite each expression using the distributive property.

a. $(x-4)(x+6)$

b. $(x+7)(x+7)$

c. $(x-3)^2$

31.

Rewrite each expression in factored form.

a. $x^2-3x-10$

b. $x^2+6x+9$

32.

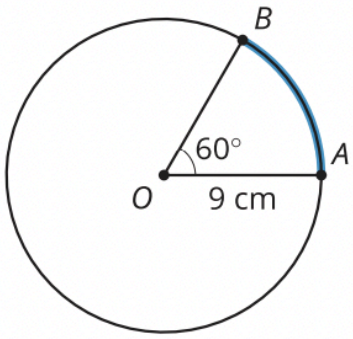
The radius of a circle measures 12 centimeters.

a. What is the circumference of the circle?

b. What is the area of the circle?

33. *Hint: think about what fraction of the circle is being taken up by the highlighted arc.

Find the length of the highlighted arc from $A$ to $B$.




34. *Hint: think about what fraction of the circle is being taken up by the shaded region.

Find the area of the shaded region of the circle. The radius is given in inches.