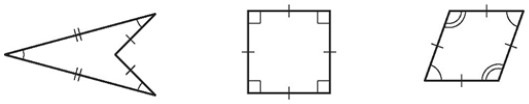
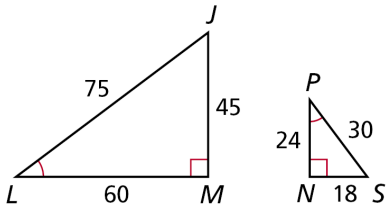
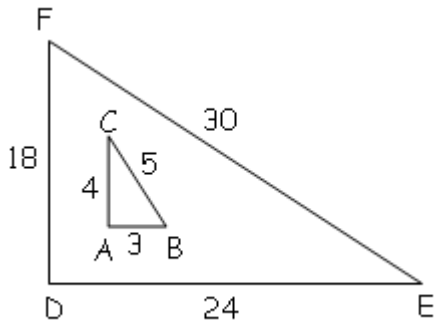
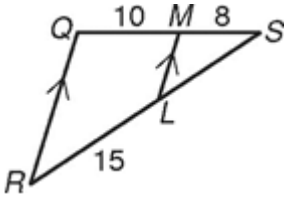
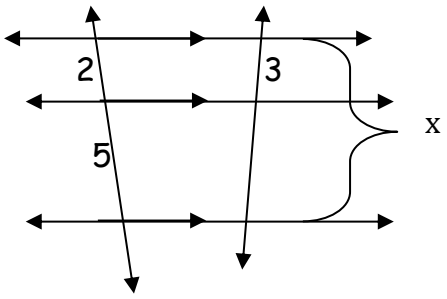
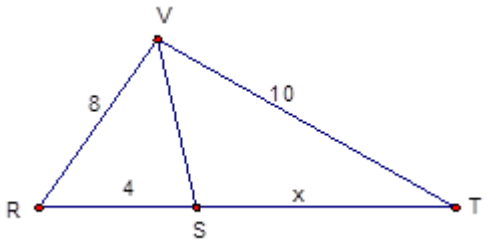
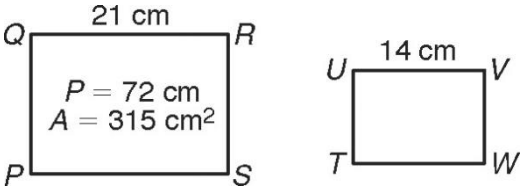
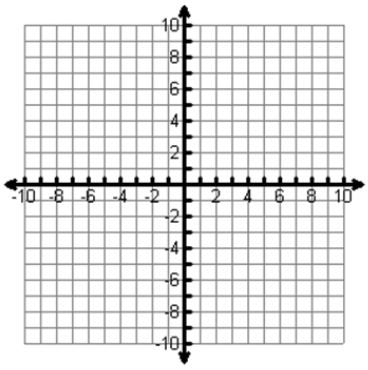
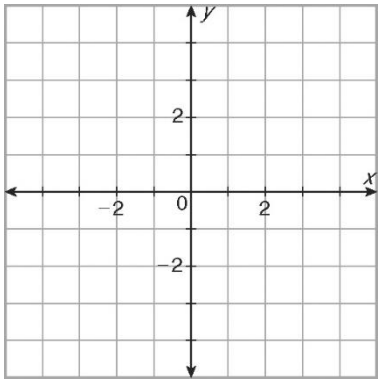
Chapter 7: Similarity

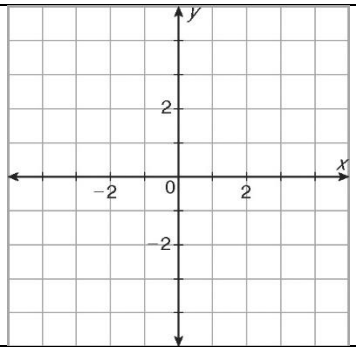
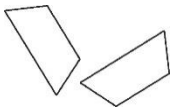
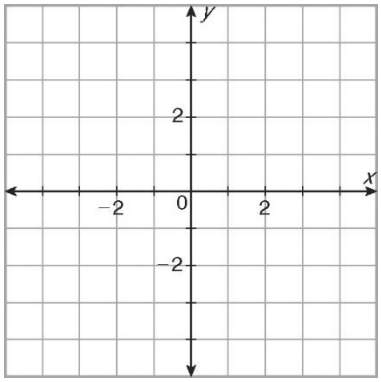
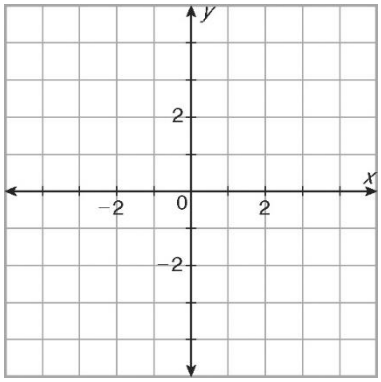
What I Need to Know	Example
6.1 Properties of Polygons	
Classify polygons based on their angles and sides.	<table><tr><th>Number of Sides</th><th>Name of Polygon</th></tr><tr><td>3</td><td></td></tr><tr><td>4</td><td></td></tr><tr><td>5</td><td></td></tr><tr><td>6</td><td></td></tr><tr><td>7</td><td></td></tr><tr><td>8</td><td></td></tr><tr><td>9</td><td></td></tr><tr><td>10</td><td></td></tr><tr><td>12</td><td></td></tr><tr><td>15</td><td></td></tr><tr><td>n</td><td></td></tr></table>
Determine if the polygon is regular, irregular, concave, or convex.	
Calculate the sum of the interior angles of a polygon.	Find the sum of the interior angles of a regular convex 15-gon.
Calculate the sum of the exterior angles of a polygon.	Find the sum of the exterior angles of a regular convex 15-gon
What I Need to Know	Example
7.1 Ratios in Similar Polygons	
Determine if polygons are similar and write a similarity statement.	Determine if polygons are similar and write a similarity statement. 

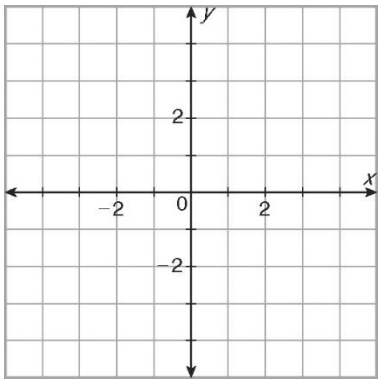
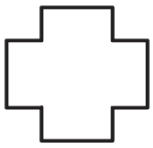
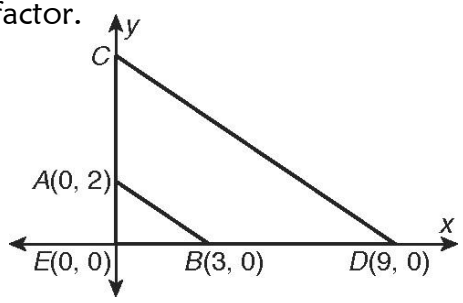
What I Need to Know	Example
7.2 Ratio and Proportion	
Write and Simplify Ratios and Proportions.	Solve for x. $\frac{7}{x+4}=\frac{8}{x}$
7.3 Triangle Similarity AA, SSS, SAS	
Identify the postulate used to show triangles are similar.	Determine if the polygons are similar. If so, state the theorem and similarity statement. 
Find the side lengths of similar triangles.	$\Delta ABC \sim \Delta XYZ$. If AB = 4 in., BC = 12 in., AC = 20 in., and XY = 14 in., find XZ.
7.4 Applying Properties of Similar Triangles	
Use the Triangle Proportionality Theorem to solve for missing segments.	Solve for side LS. 

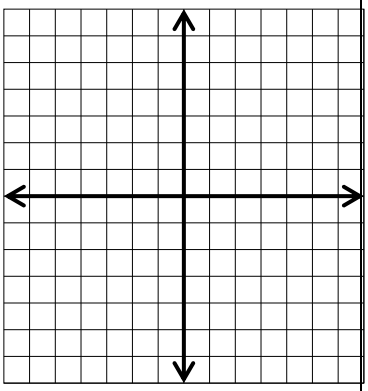
Use the Two Transversal Proportionality Corollary to find missing segments.	Find x. 
Use the Angle Bisector Theorem to find lengths of segments	Given $\angle RVS \cong \angle SVT$, find ST 
7.5 Using Proportional Relationships	
Use ratios to make indirect measurements Use scale drawings to solve problems.	$\square PQRS \sim \square TUVW$. Find the perimeter and area of $\square TUVW$. 
7.6 Dilations and similarity in the coordinate plane	
Find points in a coordinate plane that partition a segment porportionally.	Given A(-2, -6) and B(1, 3) a) Find point P such that P divides the segment from A to B in the ration 1:5 b) Find point Q such that Q divides the segment from A to B in the ratio 2:4 

Chapter 9: Transformations

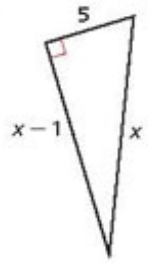
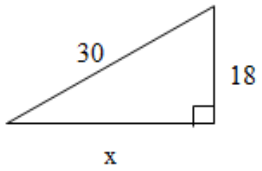
What I Need to Know	Example
9.1 Reflections	
Identify a Reflection	Is it a reflection? If so, draw the line of reflection. 
Reflect a figure over the y-axis	Reflect the points P (1, 5), Q (3, 0), R (2, -2) over the y-axis.
Reflect a figure over the x-axis	Reflect the points P (1, 5), Q (3, 0), R (2, -2) over the x-axis.
Reflect a figure over y=x	Reflect the points P (1, 5), Q (3, 0), R (2, -2) over y=x. 
9.2 Translations	
Identify a translation	Is it a translation? 
Translate a figure along a vector.	

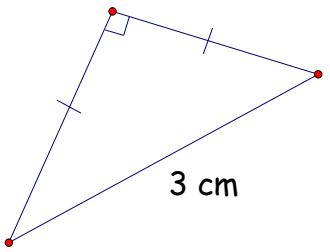
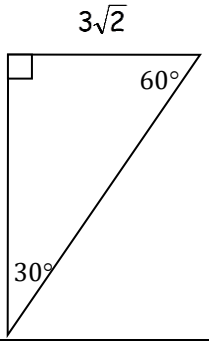
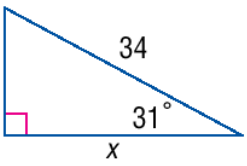
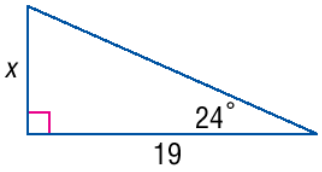
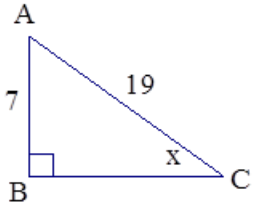
	Translate the points P (1, 5), Q (3, 0), R (2, -2) along the vector <-3, 
Find the translation vector given the pre-image and image.	Which vector translates the point A (-2, -5) to point A′ (3, -7)?
What I Need to Know	Example
9.3 Rotations	
Identify a rotation	 
Rotate a figure 90° about the origin.	Rotate the points P (1, 5), Q (3, 0), R (2, -2) 90° about the origin. 
Rotate a figure 180° about the origin.	Rotate the points P (1, 5), Q (3, 0), R (2, -2) 180° about the origin. 

What I Need to Know	Example
9.4 Composition of Transformations	
Draw the result of a composition of transformations.	Point P(1, 5) was mapped to point P″(3, -2) first by a reflection over the y-axis and then by what translation vector? 
9.5 Symmetry	
Identify if a figure has line symmetry.	 
Identify if a figure has rotational symmetry. If so, give the angle of rotational symmetry and the order of symmetry.	 
Identify if a figure has plane symmetry, symmetry about an axis, or none.	 
7.6 Dilations	
Find the scale factor and coordinates of similar triangles.	Given that triangle *AEB* is similar to triangle *CED*, find the coordinates of *C* and the scale factor. 

Dilate a triangle in the coordinate plane with a given scale factor.	Triangle *EFG* has vertices *E*(0, 0), *F*(3, 6), and *G*(3, -3). Find the coordinates of the image, after a dilation about the point (0,-3) with a scale factor $\frac{1}{3}$. How does this differ from having a scale factor of 3? 

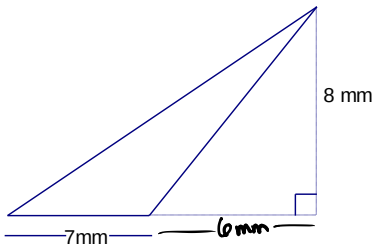
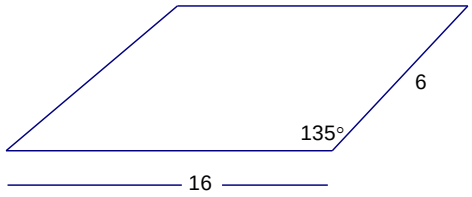
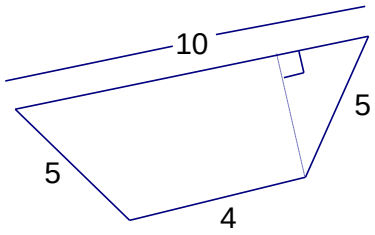
Chapter 8: Right Triangles

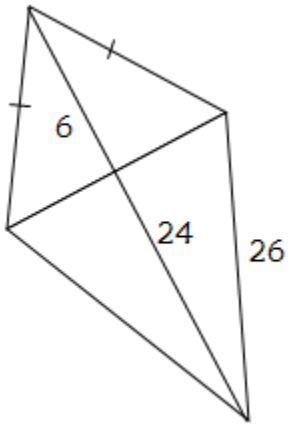
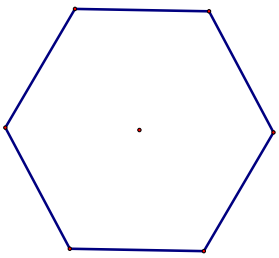
What I Need to Know	Example
5.7 Pythagorean Theorem	
Use the Pythagorean theorem and its converse to solve problems.	Find the value of x. 
Identify and use the Pythagorean Triples to solve triangles.	Find the value of x. 
Use the Pythagorean Inequality Theorem to classify triangles.	Tell if the measures can be side lengths of a right triangle. If so, classify the triangle as acute, obtuse, or right. 7, 10, and 12

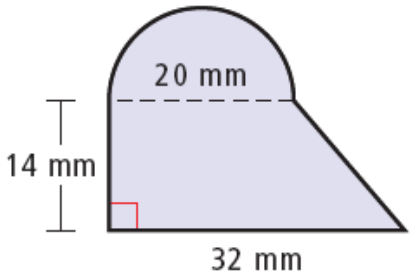
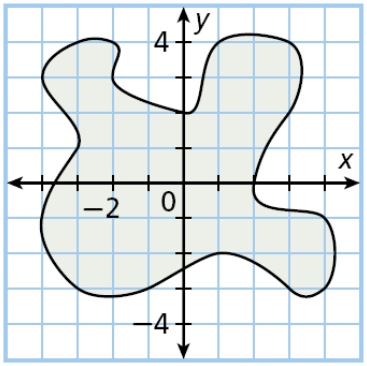
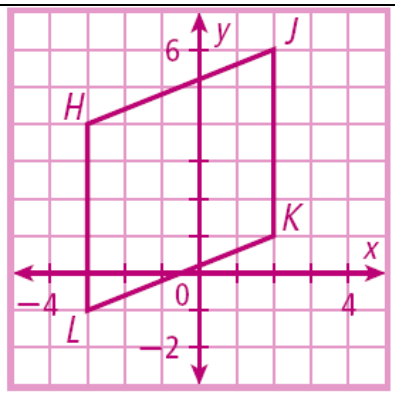
What I Need to Know	Example
5.8 Special Right Triangles	
Find side lengths of a 45º –45º– 90º triangle.	Find the missing side lenghts. 
Find side lengths of a 30º–60º – 90º triangle.	Find the perimeter of the triangle. 
8.2 Trigonometric Ratios	
Use trig ratios to find side lengths of a right triangle.	Find x.  
8.3 Solve Right Triangles	
Use a calculator to find an angle measure, given a trigonometric ratio.	Find x. 

What I Need to Know	Example
8.4 Angle of Elevation & Depression	
Solve real world problems using trigonometry.	The Seattle Space Needle casts a 67-meter shadow. If the angle of elevation from the tip of the shadow to the top of the Space Needle is 70°, how tall is the Space Needle? Round to the nearest meter.

Chapter 10: Perimeter & Area

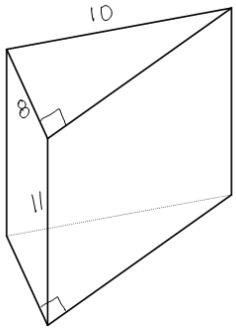
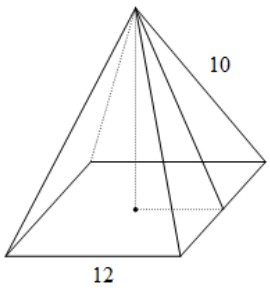
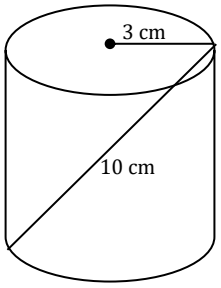
What I Need to Know	Example
10.1 Area of a Triangle, Parallelogram, Trapezoid, Rhombus, and Kite	
Find the area of a triangle.	
Find the area of a parallelogram.	
Find the area of a trapezoid.	

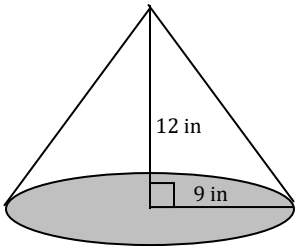
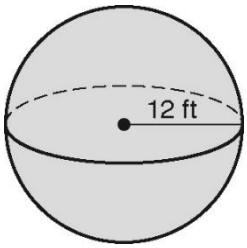
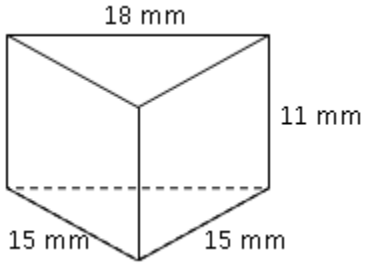
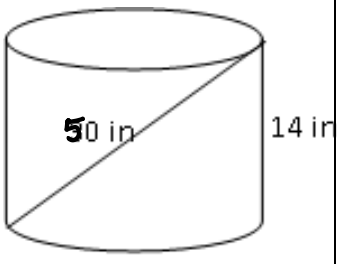
Find the area of a kite.	
Find the area of a rhombus.	Find the area of a rhombus that has a perimeter of 100 and longer diagonal of 48.
10.2 Area of Regular Polygons and Circles	
Find the area of a regular polygon.	Find the area of the regular hexagon with a side length of 12. 
Find the area/circumference of a circle given the circumference/area.	If the area of a circle is 64π cm^2 find the circumference of the circle.

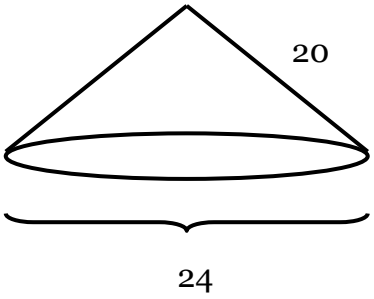
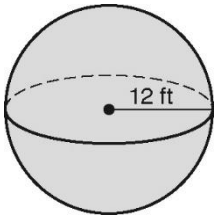
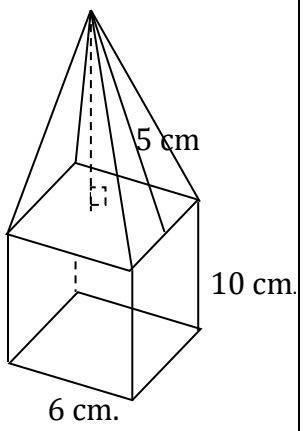
10.3 Area of Composite Figures	
Find the area of composite figures.	Find the area of the shaded region. 
10.4 Perimeter and Area in the Coordinate Plane	
Estimate the area of irregular shapes in the coordinate plane.	Find the area of the irregular figure. 
Find perimeter and area of a polygon in the coordinate plane.	
10.5 Effects of Changing Dimensions	
Describe the effects of changing one dimension.	The base of a triangle is cut in half. Describe the effect on the area of the triangle.
Describe the effects of changing dimensions proportionally.	The base and height of a triangle are 10 m and 12 m. They are both multiplied by 3. Describe the effect on the area.

Describe the effects of changing the area.	A square has a side length of 5 cm. If the area is tripled, what happens to the side length?

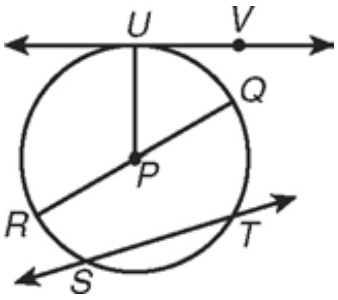
Chapter 11: Surface Area & Volume

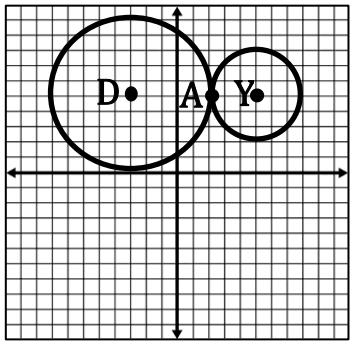
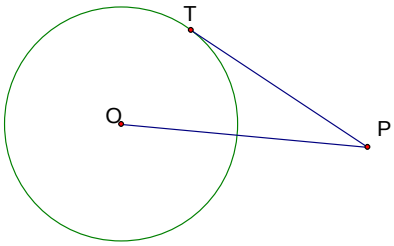
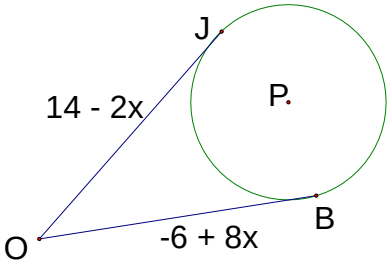
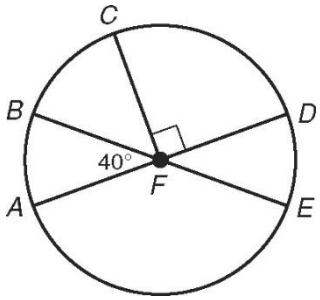
What I Need to Know	Example
Surface Area of Prisms, Pyramids, Cylinders, Cones, and Spheres	
Find the lateral and total surface area of a prism.	Find the total surface area. 
Find the lateral and total surface area of a pyramid.	Find the total surface area of the regular pyramid. 
Find the lateral and total surface area of a cylinder.	

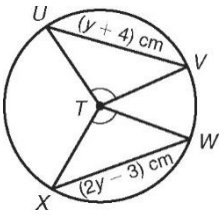
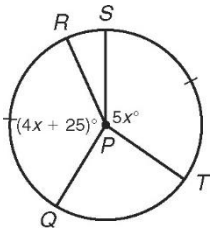
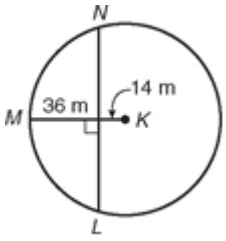
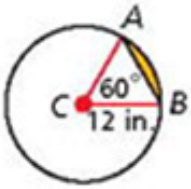
Find the lateral and total surface area of a cone.	
Find the surface area of a sphere.	
Volume of Prisms, Pyramids, Cylinders, and Cones	
Find the volume of a prism.	
Find the volume of a pyramid.	A rectangular pyramid with length 11 m, width 18m, and height 23 m.
Find the volume of a cylinder.	

Find the volume of a cone.	
Find the volume of a sphere.	
Surface Area & Volume of a Composite Figure	
Find the surface area and volume of composite figure.	

Chapter 12: Circles

What I Need to Know	Example
12.1 Lines that Intersect Circles	
Basic Vocab	Name the following: Circle: _____ Radius: _____ Diameter: _____ Chord: _____ Secant: _____ Tangent: _____ Point of Tangency: _____ 

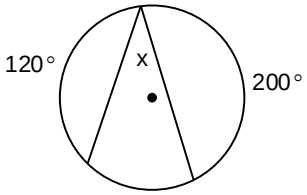
Write equation of tangent lines	 Radius of ⊙D Radius of ⊙Y Point of Tangency Equation of Tangent Line
Tangent-Radius Relationship	$\overline{TP}$ is tangent to ⊙O. If TP = 24 and the radius of the circle is 18, find the measure of OP. 
Tangent – Tangent Relationship	$\overline{JO}$ and $\overline{OB}$ are tangent to ⊙O. Find the measure of OJ. 
12.2 Arcs and Chords	
Arcs and their Measures	Given ⊙D, name the following: Minor arc: _____ Major arc: _____ Semi-circle: _____ Addition Postulate: _____  Find the measure of the following: mBC_____ mADC_____ m∡DFE_____

Congruent Central Angles ⇕ Congruent Arcs ⇕ Congruent Chords	$\angle UTV \cong \angle XTW$. Find WX  mQR = mST . Find m$\angle QPR$ 
Chord – Radius/Diameter Relationship	Given ⊙K , find LN. 
12.3 Sector Area and Arc Length	
Arc Length of a Circle	Find the arc length of a circle that has a measure of 30˚ and a diameter of 10 cm.
Sector of a Circle	Find the area of the sector of a circle that has a measure of 30˚ and a diameter of 10 cm.
Area of a Segment	Find the area of the segment. 

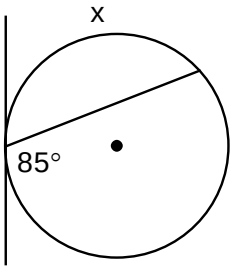
12.4 Inscribed Angles and 12.5 Angle Relationships in Circles

Angles that are ON the circle

a) Find x.

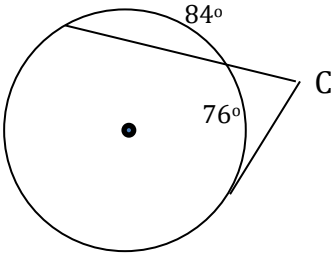


b) Find x.

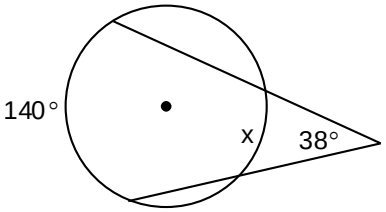


Angles that are OUTSIDE the circle

a) Find m∠ C

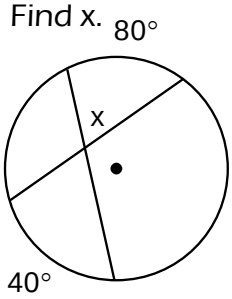


b) Find x.

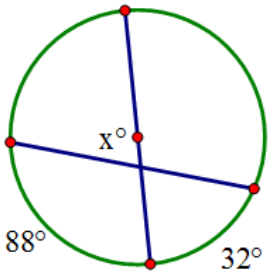


Angles that are INSIDE the circle

a) Find x.



b) Find x.



12.7 Circles in the Coordinate Plane

General Equation of a Circle

1) Write the equation of a circle that has a center at (3, -4) and a radius of 5.

2) What is the center and radius of a circle that has an equation of $(x + 16)^2 + (y - 11)^2 = 300$.

3) Write the equation of a circle that has a diameter with endpoints (2, 10) and (-4, 12).