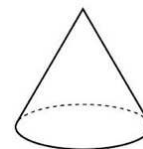
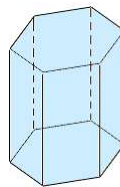


I. *Vocabulary* – match each word on the left to its definition on the right.

Word	Letter	Definition
Acute angle		A. Meeting at a point
Angle bisector		B. An angle with a measure greater than 90° and less than 180°
Congruent		C. Angle with a measure of greater than 0° and less than 90°
Endpoint		D. An angle with a measure of 90°
Intersecting		E. The point at the beginning or end of a segment
Line		F. Two points on a line and all the points in between them
Line segment		G. A point on a segment that is equidistant from both endpoints
Midpoint of a segment		H. Having the same size and shape
Obtuse angle		I. Two lines that intersect and form a right angle at the point of intersection
Parallel		J. A one dimensional figure extending in two directions forever
Perpendicular		K. Two angles that share a vertex and no sides and that are formed by intersecting lines
Point		L. A location in space (zero dimensions)
Right angle		M. A line, segment or ray that cuts an angle into two congruent angles.
Side		N. Angles with a sum of 180°
Supplementary angles		O. The point where two lines, rays, or segments meet.
Vertex		P. Two lines in the same plane that never intersect.
Vertical angles		Q. One of the line segments that makes up a polygon.

Match each word on the left to its diagram on the right.

1. Trapezoid



2. Parallelogram

3. Rectangle

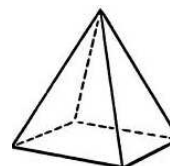
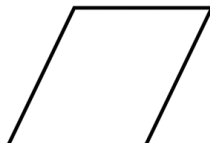
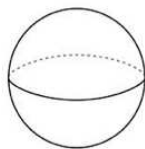
4. Prism

5. Cylinder

6. Cone

7. Pyramid

8. Sphere



II – Drawing – for each description or symbolic statement, draw a figure.

1. Acute angle RED with angle bisector \overrightarrow{ER}	2. \overline{TO} with midpoint M
3. $\overline{CD} \perp \overline{FG}$	4. $\overline{MN} \parallel \overline{PQ}$
5. Vertical angles $\angle ABC$ and $\angle DBE$	6. Supplementary angles $\angle GHJ$ and $\angle JHK$

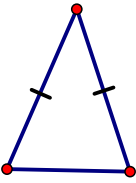
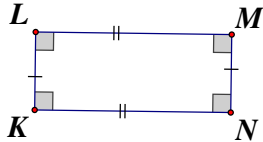
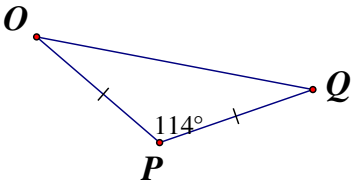
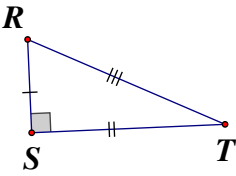
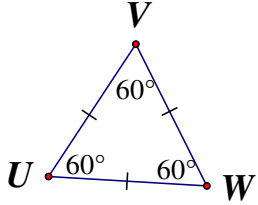
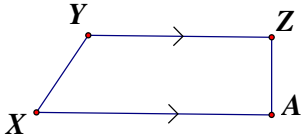
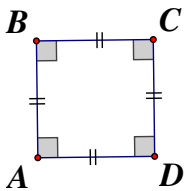
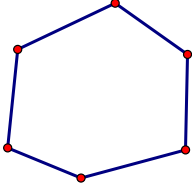
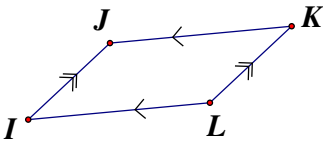
III – Midpoint and Distance – find the length and the midpoint of both segments below.

1. Endpoint (-5, 6) and endpoint (-5, 10)	2. Endpoint (-1, -3) and endpoint (-1, 14)
---	--

IV -- For each of the following symbolic or written statement, draw a labeled diagram to match.

1. Parallelogram FROG	2. Isosceles $\triangle NMK$ with base \overline{NM}
3. Trapezoid HGFT with $\overline{HG} \perp \overline{TF}$	4. Right $\triangle FGH$ with hypotenuse \overline{GH}

V – Classifying Polygons -- Classify and name each of the polygons below. Use the most specific classification possible. (Remember that polygons are named by stating the letters of their vertices in order.)

1. 	2. 	3. 
4. 	5. 	6. 
7. 	8. 	9. 

VI -- Determine whether the three side lengths given could form a triangle. Write yes or no.

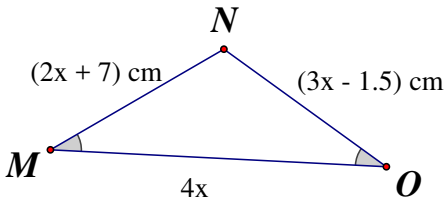
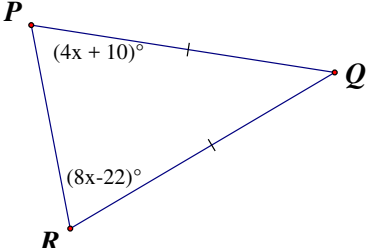
1. 4 miles, 5 miles, 6 miles

3. 2 in, 2 in, 2 in

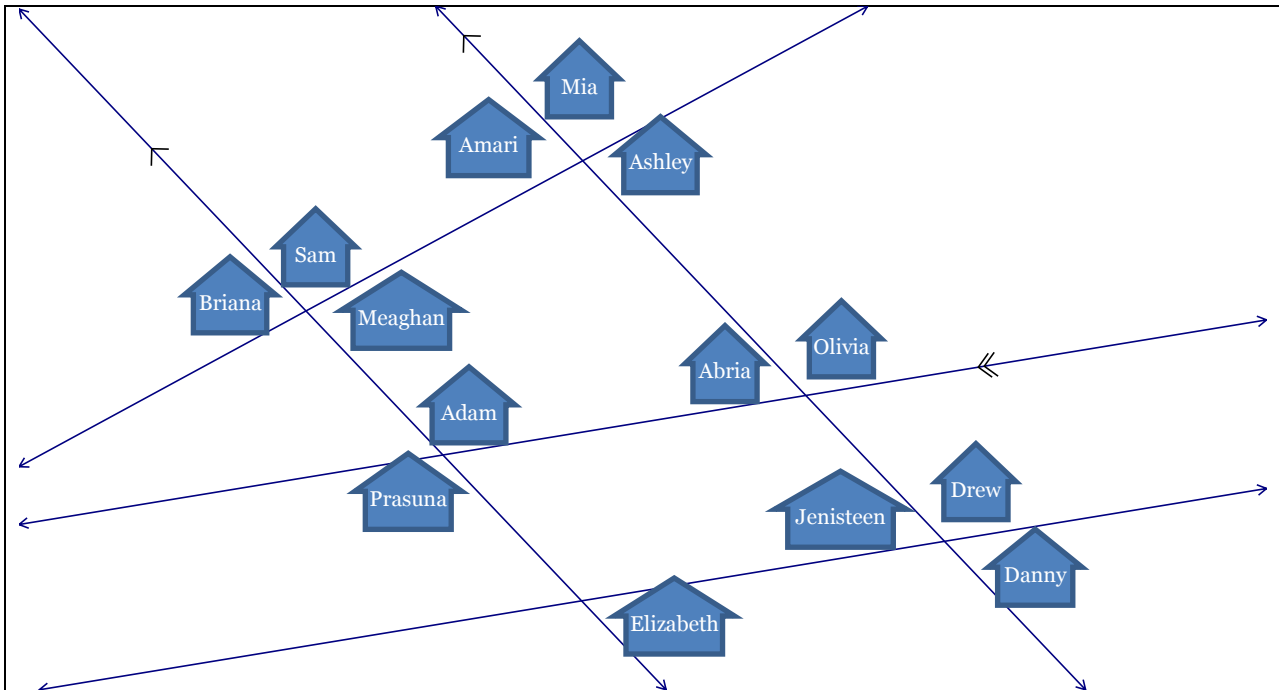
2. 8 km, 5 km, 1 km

4. 6 cm, 5 cm, 2 cm

VII – Algebra – Solve for x

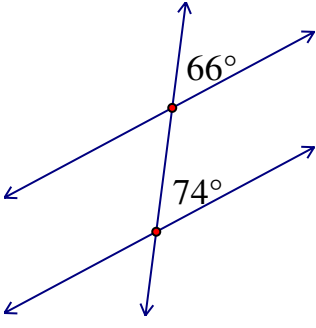
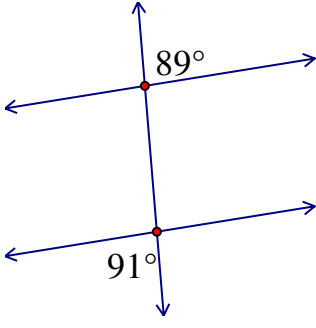
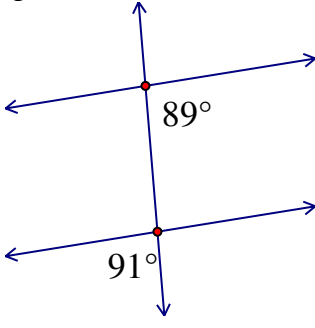
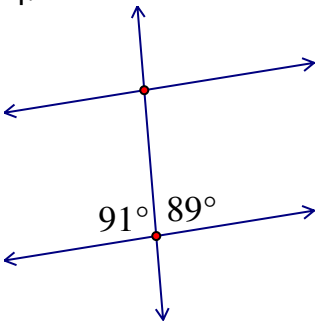
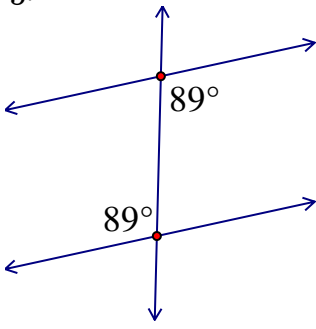
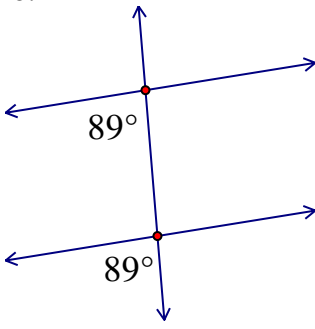
<p>1.</p> 	<p>2.</p> 
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VIII – Parallel line vocabulary

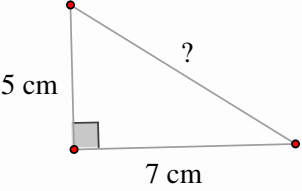
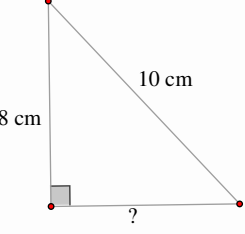
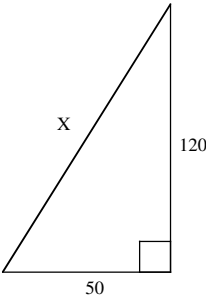
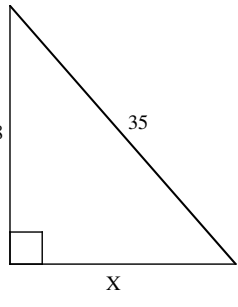


1. Jenisteen and _____ have houses that are corresponding angles.
2. Prasuna and _____ have houses that are alternate exterior angles.
3. Danny and _____ have houses that are vertical angles.
4. Adam and _____ have houses that are consecutive interior angles.
5. Ashley and _____ have houses that are alternate interior angles.
6. Amari and _____ have houses that are alternate interior angles.

IX -- Use the angle measures to determine whether or not each pair of lines is parallel, not parallel, or cannot be determined.

<p>1.</p> 	<p>2.</p> 	<p>3.</p> 
<p>4.</p> 	<p>5.</p> 	<p>6.</p> 

X – Pythagorean Theorem

<p>1.</p> 	<p>2.</p> 
<p>3.</p> 	<p>4.</p> 

XI – Proportions – Solve these problems.

1. $\frac{x}{15} = \frac{45}{75}$

2. $\frac{12}{5x} = \frac{4}{7}$

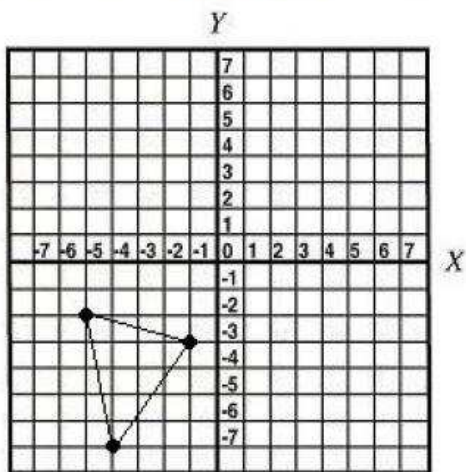
3. If 5 boxes cost \$7.50, how much will 2 boxes cost?

4. A flagpole casts a shadow that is 27 feet long. A person standing nearby casts a shadow 8 feet long. If the person is 6 feet tall, how tall is the flagpole?

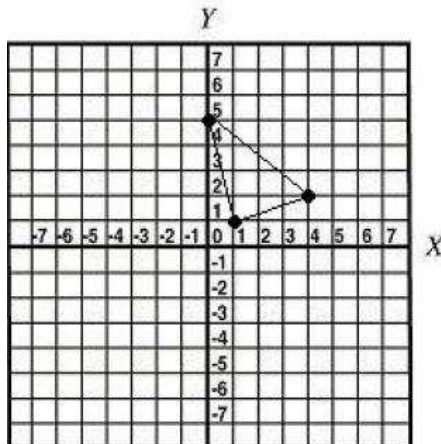
5. The Smiths paid \$80 for 480 square feet of wallpaper. They need an additional 120 square feet. How much will the additional wallpaper cost?

XII – Transformations

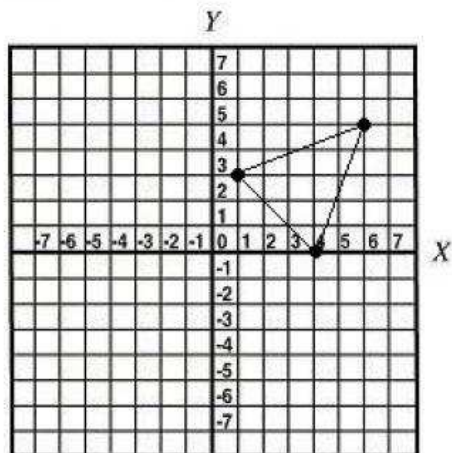
1. Rotate 180° around $(0,0)$ clockwise.



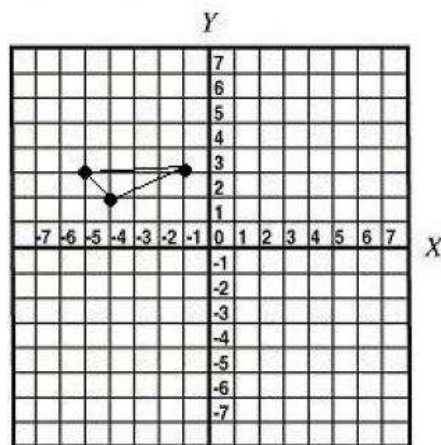
2. Reflect over x axis.



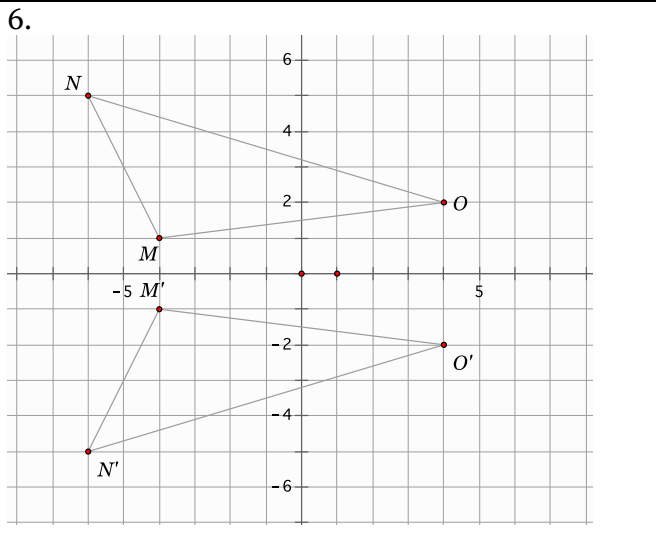
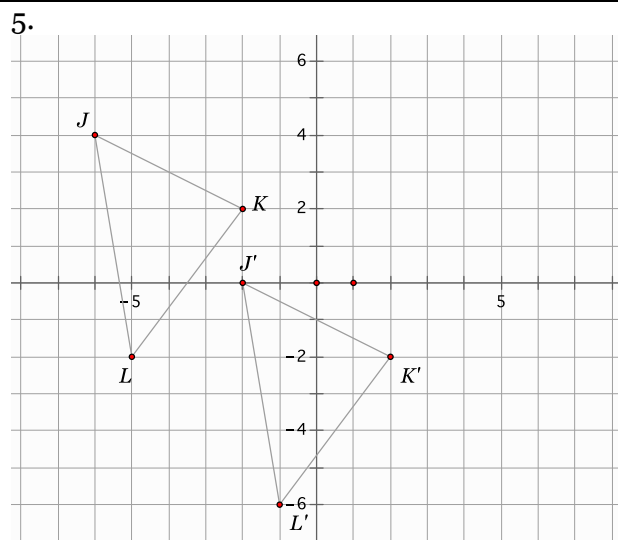
3. Translate 4 units to left.



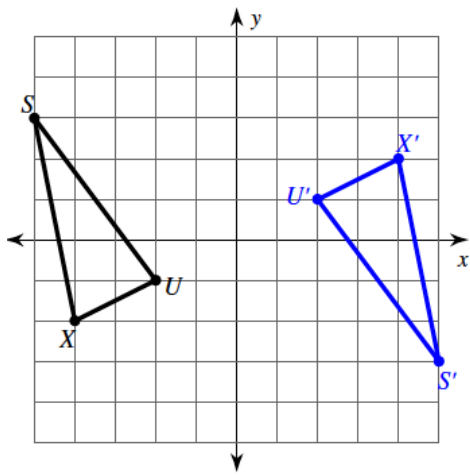
4. Reflect over x axis



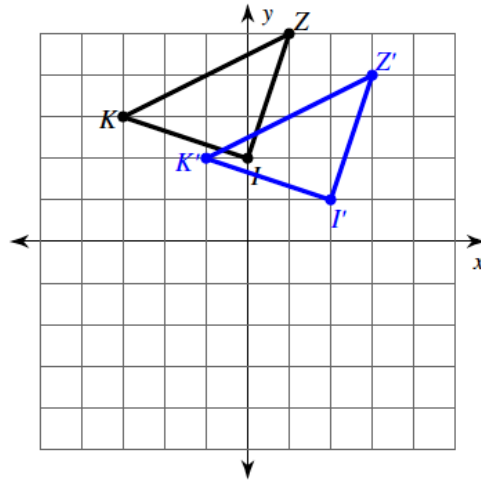
Identify the transformation performed below:



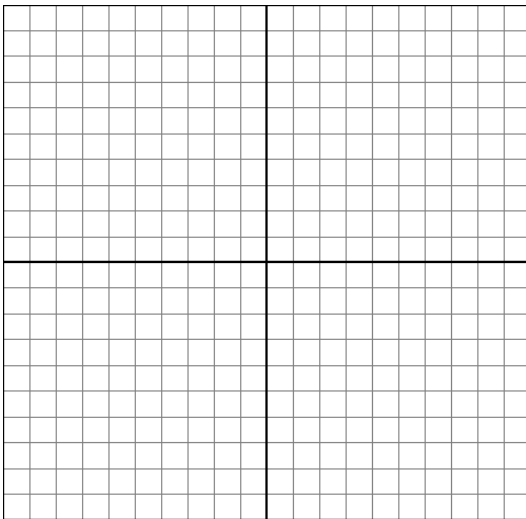
7.



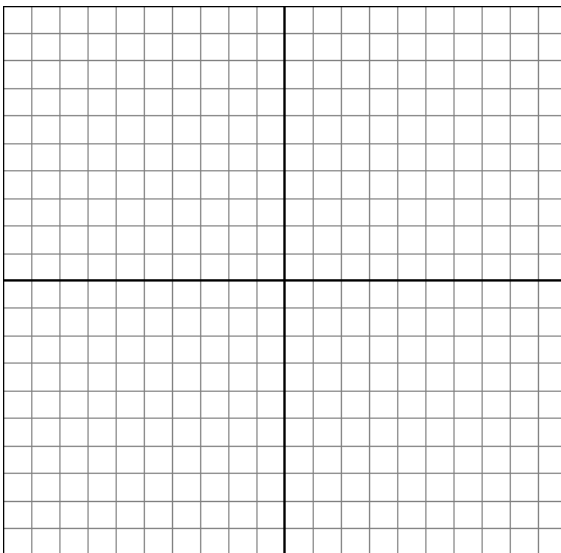
8.



9. Draw quadrilateral JKLM with vertices $J(-5,3)$, $K(-4,5)$, $L(-3,3)$ and $M(-4,1)$. Then find the coordinates of the vertices of the image after the translation $(x, y) \rightarrow (x + 6, y - 2)$.



10. Draw parallelogram ABCD with vertices $A(-3,3)$, $B(2,3)$, $C(4,1)$ and $D(-1,1)$. Then find the coordinates of the vertices of the image after a reflection across the x-axis, and draw the image.

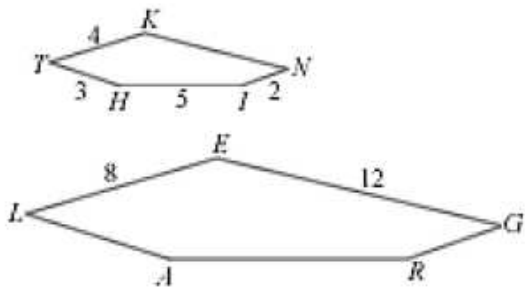


XIII – Similar Figures – Find the missing measures of these similar figures.

1.

THINK ~ LARGE

Find AL , RA , RG , and KN .



$AL =$

$RA =$

$RG =$

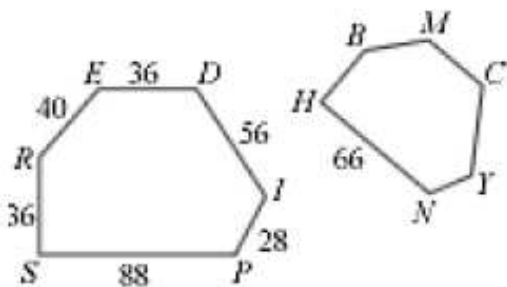
$KN =$

Work Space

2.

SPIDER ~ HNYCMB

Find NY , YC , CM , and MB .



$NY =$

$YC =$

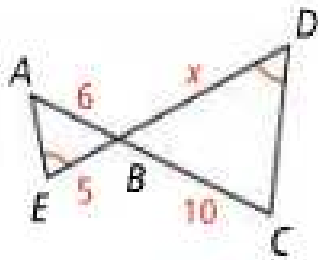
$CM =$

$MB =$

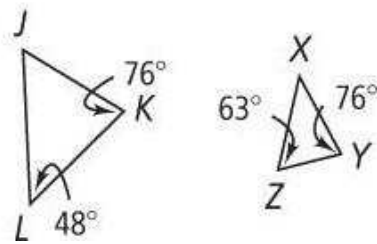
Work Space

Are these triangles similar?

3.

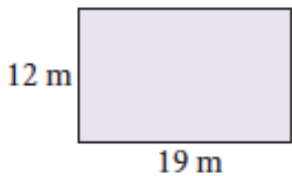


4.



XIV – Area and Volume

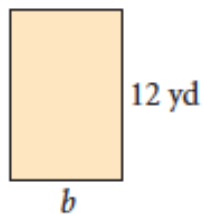
Find the area and perimeter of the rectangle.



A =

P =

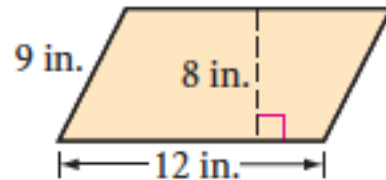
Area = 96 yd², find the base and the Perimeter of the rectangle.



b =

P =

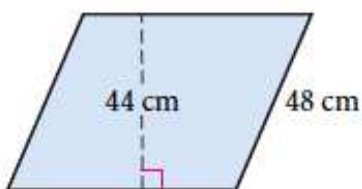
Find the area and perimeter of the parallelogram.



A =

P =

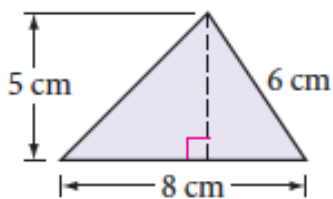
Area = 2508 cm². Find the base and the perimeter of the parallelogram.



b =

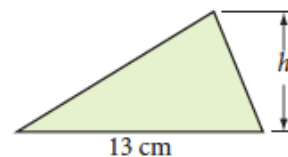
P =

Find the area of the triangle.



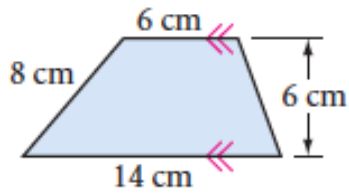
A =

Area = 39 cm², find the height of the triangle.



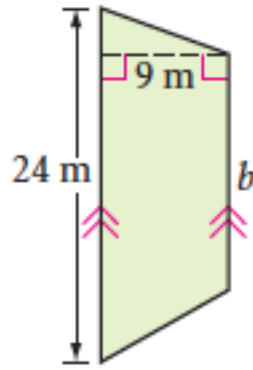
h =

Find the area of the trapezoid.



A =

Area = 180 m^2 . Find the length of the missing base.



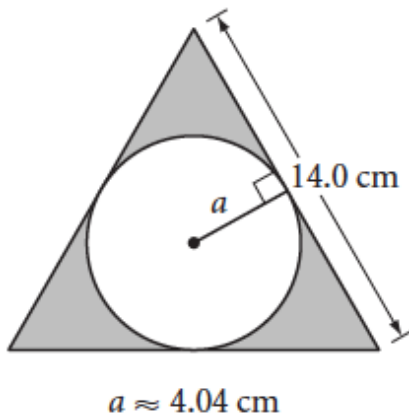
b =

If the circumference of a circle is 12π in, find the radius and the area.

r =

A =

Find the area of the circle, the area of the triangle, and the area of the shaded region. Use 3.14 for pi and round to the nearest tenth of a centimeter.

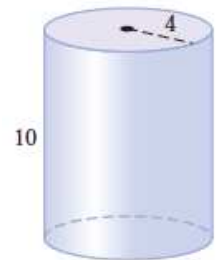


A (circle) =

A (triangle) =

A(shaded region) =

Find the lateral surface area, surface area, and volume of the right circular cylinder. All the measures on the diagram are in centimeters. Show your work.

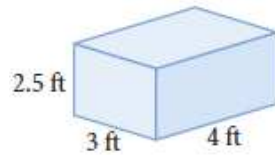


LA =

SA =

V =

Find lateral surface area, surface area, and volume of the rectangular prism. Show your work.

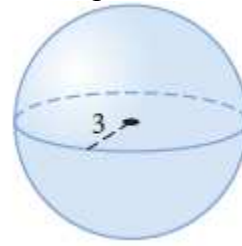


LA =

SA =

V =

Find the surface area and volume of the sphere. Leave your answers in terms of pi.



SA =

V =

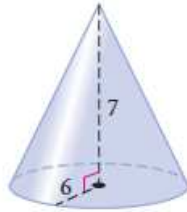
Find the total surface area and volume of the combined shape below.

SA =



V =

Find the slant height (ℓ), lateral surface area, surface area, and volume of the right circular cone. All measures are in centimeters. Leave your answer in terms of pi. (Hint: use the Pythagorean theorem to find the slant height.)



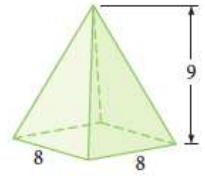
$\ell =$

LA =

SA =

V =

Find the slant height (ℓ), lateral surface area, surface area, and volume of the right square pyramid. All measures are in centimeters. (Hint: use the Pythagorean theorem to find the slant height.)



$\ell =$

LA =

SA =

V =

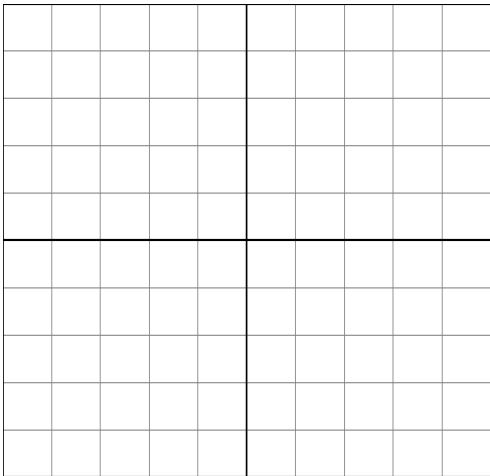
XV – Lines

1. Find the slopes of the two lines. Then, determine whether each pair of lines is parallel, perpendicular, or neither. Justify your answer.

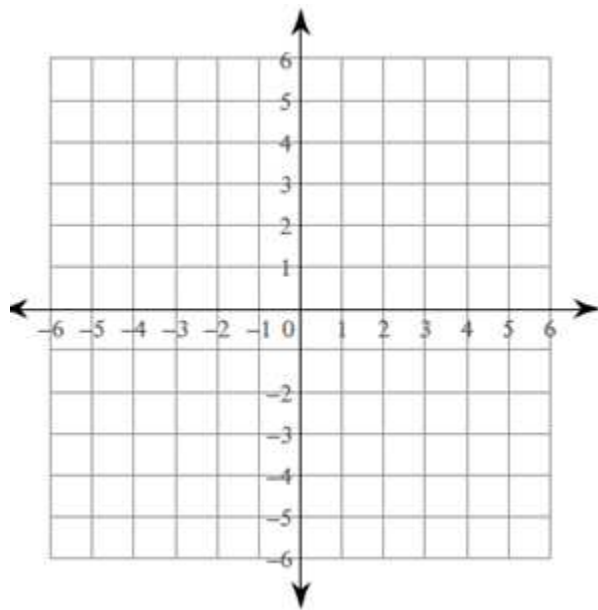
$$2x - 3y = 12 \text{ and } 4 = -3x - 2y$$

2. Graph the following lines on the grid. Then tell if they are parallel or perpendicular:

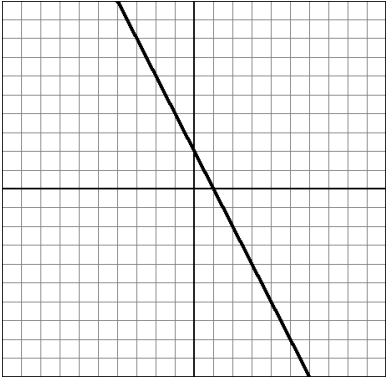
$$y = 4 \text{ and } x = -2$$



3. Graph the line on the coordinate plane: $y = -\frac{1}{3}x - 1$

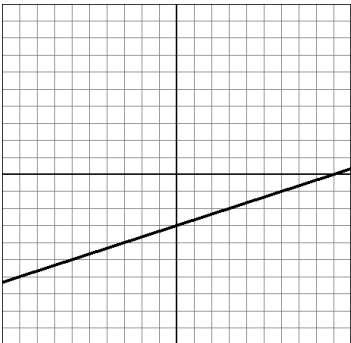


4. a. Write the equation for the following line:



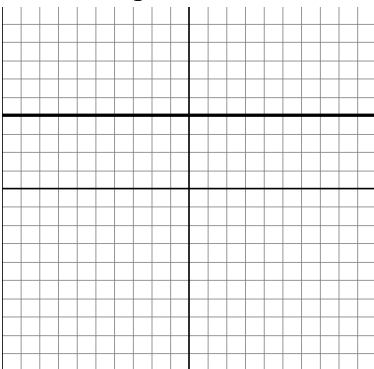
b. Write an equation for a line perpendicular to the line in part a.

5. a. Write the equation for the following line:



b. Write the equation for the line perpendicular to the line from part a.

6. a. Write the equation for the following line:



b. Write an equation for a line parallel to the line above that goes through the point (2,2)

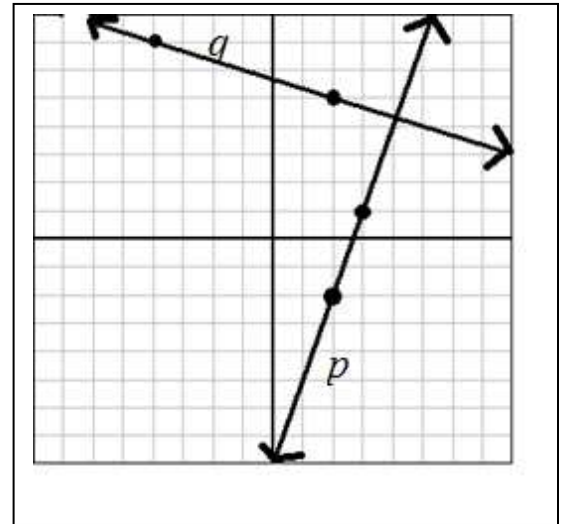
7. Use lines p and q shown to the right to answer the questions.

a. What is the slope of each line? (Use the points shown to find your answers.)

slope of line p = _____

slope of line q = _____

b. Are the lines perpendicular? How do you know?



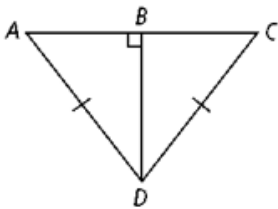
8. Determine the slope of the line through the given points:

a. A(3, 4) and B (-9, 12)

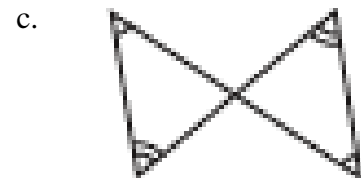
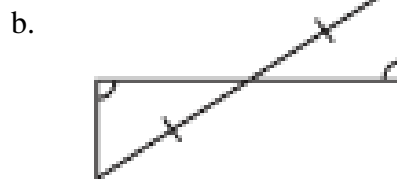
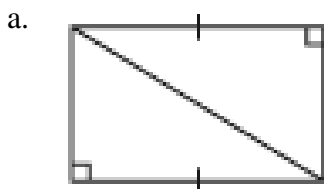
b. C(-4, -5) and D (10, 12)

XVI – Triangle Congruence

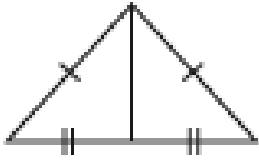
1. Are the following triangles congruent? Why? If so, write the congruence statement.



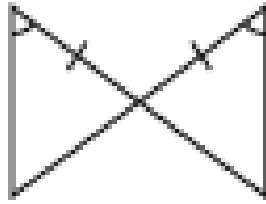
2. Are these triangles congruent? Why?



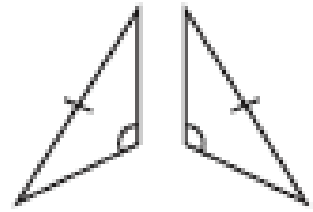
d.



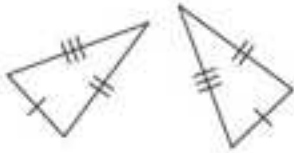
e.



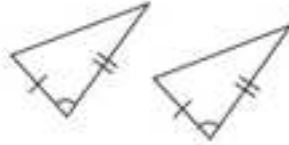
f.



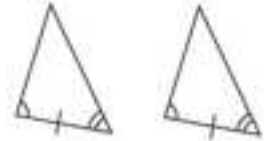
g.



h.



i.



3. $\triangle CGI \cong \triangle MPR$.

a. Draw a picture of this situation.

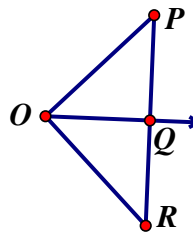
b. If $m\angle C = 27$ and $m\angle G = 63$, what is $m\angle R$?

c. If $PR = 6$ cm, what do you know about $\triangle CGI$?

XVII – Proof

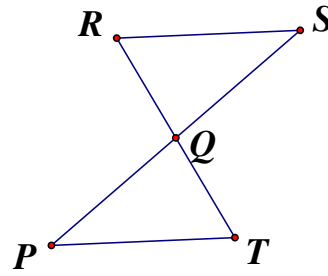
Directions: Fill in each of the missing steps (statements or reasons) in the proofs below.

1. Given: \overline{OQ} bisects $\angle ROP$; $\angle R \cong \angle P$
 Prove: $\triangle ROQ \cong \triangle POQ$



Statement	Reason
1. \overline{OQ} bisects $\angle ROP$	1.
2.	2. Definition of bisects
3. $\angle R \cong \angle P$	3.
4.	4. Same Side (Reflexive property)
5. $\triangle ROQ \cong \triangle POQ$	5.

2. Given: $\angle S \cong \angle T$; Q is the midpoint of \overline{SP}
 Prove: $\overline{RS} \cong \overline{PT}$;



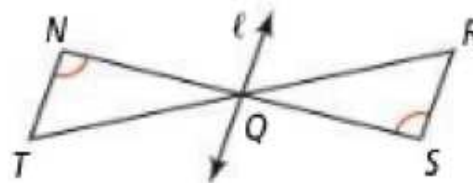
Statement	Reason
1. $\angle S \cong \angle T$	1. Given
2. Q is the midpoint of \overline{SP}	2. Given
3.	3. Definition of midpoint
4.	4.
5. $\triangle RSQ \cong \triangle TPQ$	5.
6. $\overline{RS} \cong \overline{PT}$	6.

3.

Developing Proof Complete the two-column proof by filling in the blanks.

Given: $\angle N \cong \angle S$,
 line ℓ bisects \overline{TR} at Q

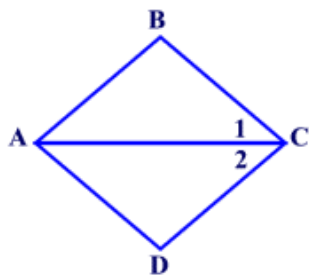
Prove: $\triangle NQT \cong \triangle SQR$



Statements	Reasons
1) $\angle N \cong \angle S$	1) Given
2) $\angle NQT \cong \angle SQR$	2) a. <u>?</u>
3) Line ℓ bisects \overline{TR} at Q.	3) b. <u>?</u>
4) c. <u>?</u>	4) Definition of bisect
5) $\triangle NQT \cong \triangle SQR$	5) d. <u>?</u>

Directions: Find all of the mistakes in the proofs below.

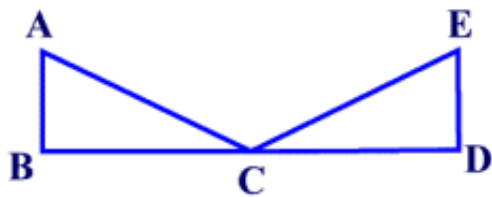
4.



Given: $\overline{BC} \cong \overline{CD}$
 \overline{AC} bisects $\angle BCD$
 Prove: $\triangle ABC \cong \triangle ADC$

Statement	Reason
1. $\overline{BC} \cong \overline{CD}$;	1. Given
2. \overline{AC} bisects $\angle BCD$	2. Given
3. $\overline{AC} \cong \overline{AC}$	3. Same Side (Reflexive Property)
4. $\triangle ABC \cong \triangle ADC$	4. SAA
5. $\angle 1 \cong \angle 2$	5. CPCTC

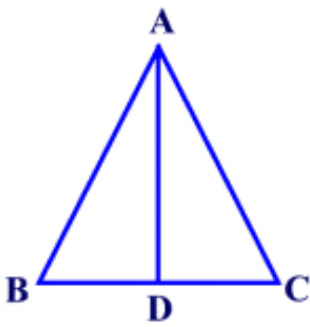
5.



Given: $\overline{AB} \cong \overline{ED}$
 C is midpoint \overline{BD}
 $\overline{AB} \perp \overline{BD}$; $\overline{ED} \perp \overline{BD}$
 Prove: $\triangle ABC \cong \triangle EDC$

Statement	Reason
1. $\overline{AB} \cong \overline{ED}$	1. Same Side (Reflexive Property)
2. C is the midpoint of \overline{BD}	2. Given
3. $\overline{BC} \cong \overline{DC}$	3. Given
4. $\overline{AB} \perp \overline{BD}$, $\overline{ED} \perp \overline{BD}$	4. Given
5. $\angle B, \angle E$ are right angles	5. Definition perpendicular lines
6. $\angle B \cong \angle E$	6. All right angles are congruent
7. $\triangle ABC \cong \triangle EDC$	7. SAS

6. RE-ARRANGE THIS PROOF INTO THE CORRECT ORDER



Given: $\overline{AB} \cong \overline{AC}$

\overline{AD} bisects \overline{BC}

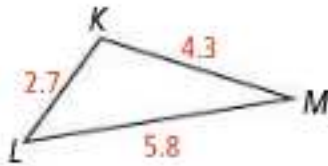
Prove: $\triangle ABD \cong \triangle ACD$

Statement	Reason
1. $\triangle ABD \cong \triangle ACD$	1. SSS
2. $\overline{AB} \cong \overline{AC}$	2. Given
3. $\overline{BD} \cong \overline{DC}$	3. Definition midpoint
4. \overline{AD} bisects \overline{BC}	4. Given
5. $\overline{AD} \cong \overline{AD}$	5. Same Side (Reflexive Property)

XVIII – Triangle Inequalities

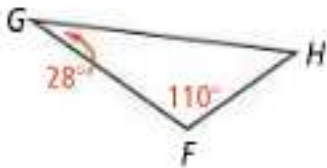
1. List the angles in order from *smallest* to *largest*.

a.



b. $\triangle ABC$, where $AB = 8$,
 $BC = 5$, and $CA = 7$

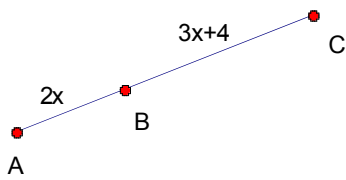
2. List the sides in order from *smallest* to *largest*.



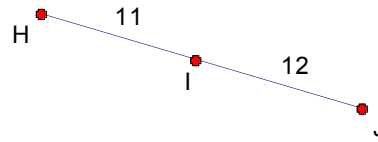
3. Find the longest side of triangle ABC, with $m\angle A = 70$, $m\angle B = 2x - 10$, and $m\angle C = 3x + 20$

XIX – Algebra disguised as geometry- Set up an equation, then find the missing variable.

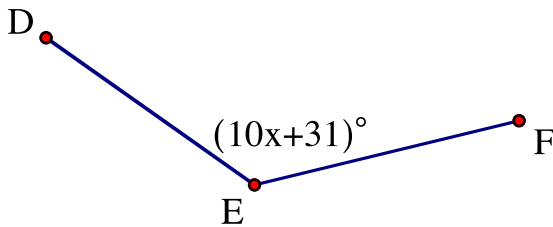
1. $\overline{AC} = 44$



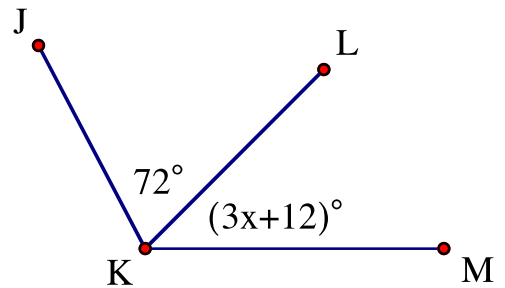
2. $\overline{HJ} = 6x - 7$



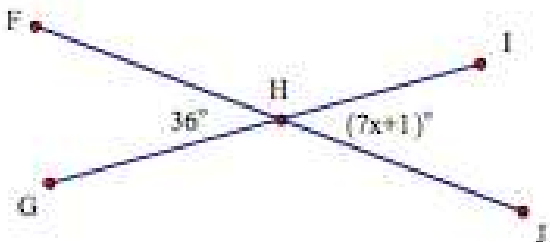
3. $\angle DEF = 111^\circ$



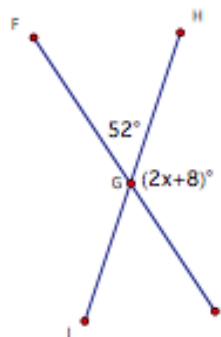
4. $\angle JKM = 117^\circ$ Find the measure of $\angle LKM$.



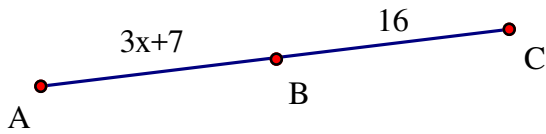
5.



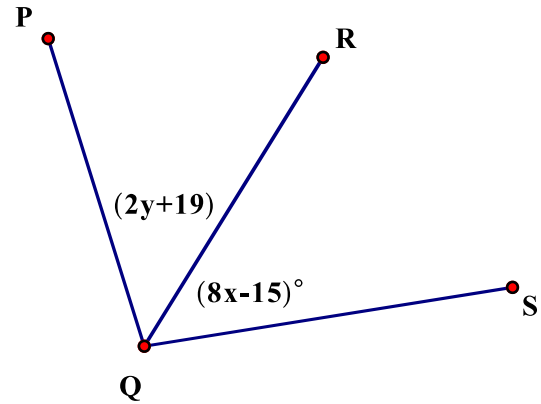
6.



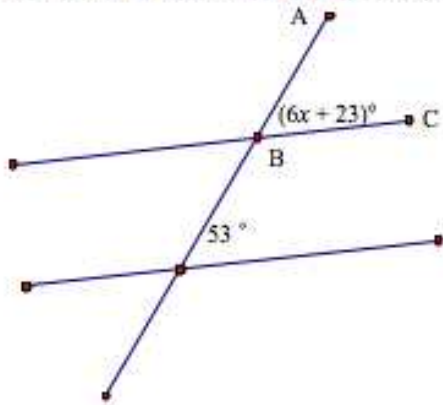
7. B is the midpoint of \overline{AC} . Find x .



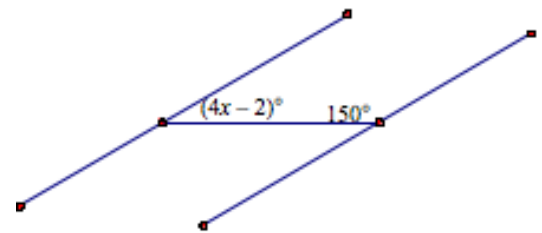
8. Suppose \overline{RQ} bisects $\angle PQS$ and $\angle PQS = 98^\circ$.



9. Solve for x and then find the measure of $\angle ABC$.



10.



XX -- Polygon Sum

1. Regular Octagon (8-gon)

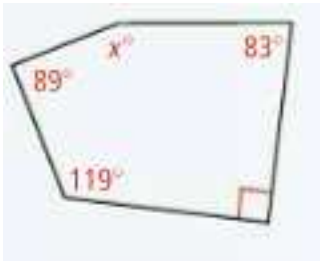
- a. What is the *sum* of the *interior* angles?

- b. What is the measure of *one* interior angle?

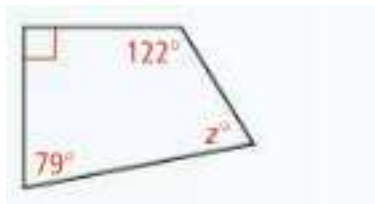
- c. What is the *sum* of the *exterior* angles?

- d. What is the measure of *one* exterior angle?

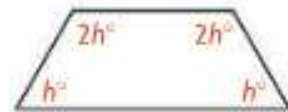
2.



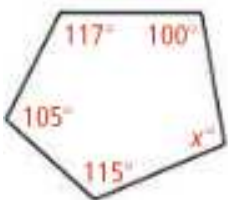
3.



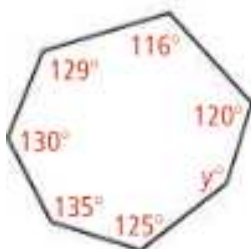
4.



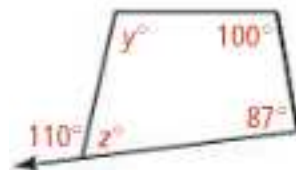
5.



6.



7.



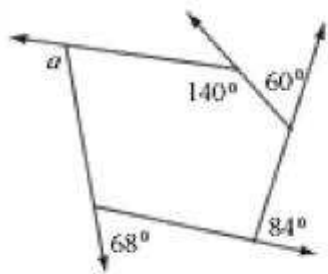
8. What is the sum of the **interior** angle measures of a polygon with...

a. 15 sides

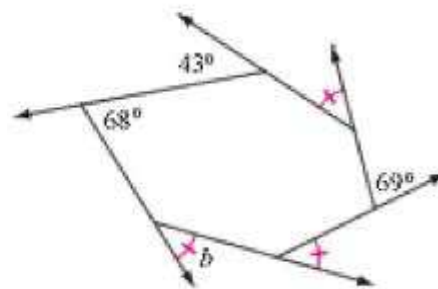
b. 50 sides

9. What is the sum of the measures of the **exterior** angles of a decagon?

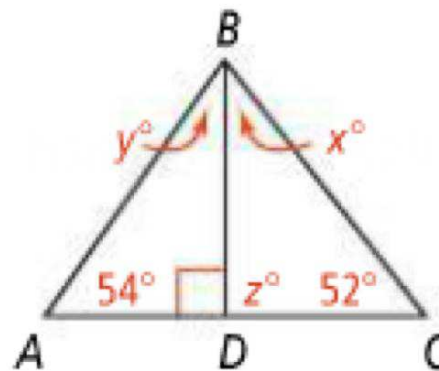
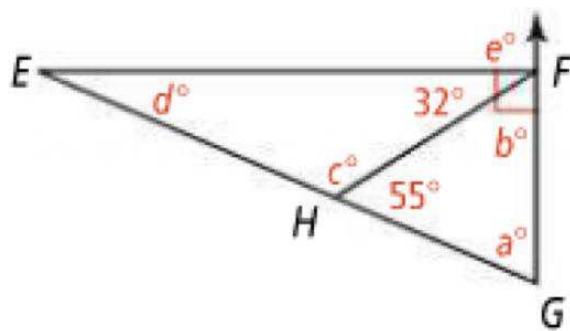
10.



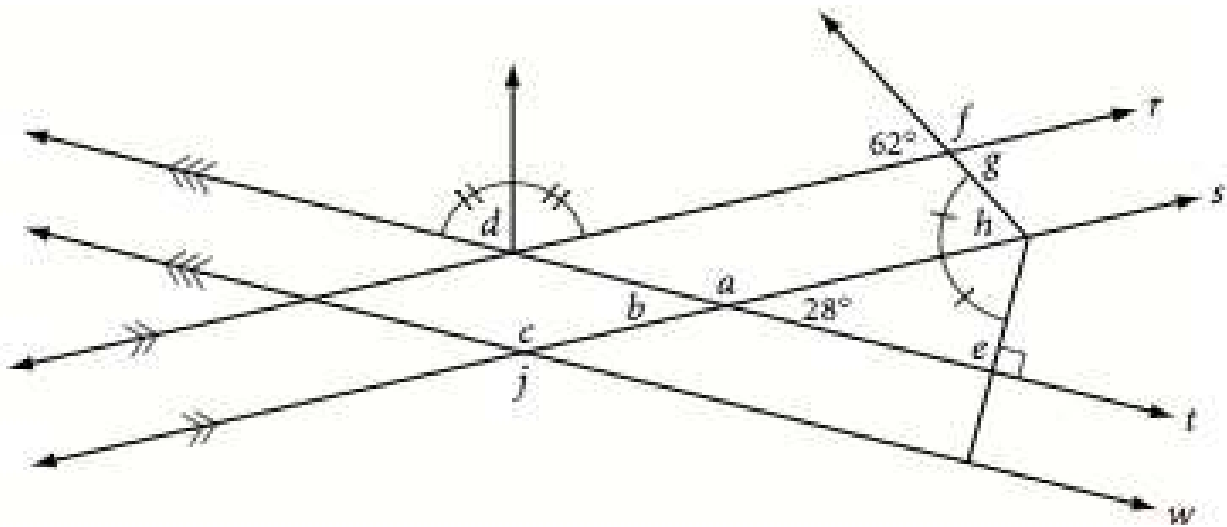
11.



12. Find the missing angles.



13. Find the missing angles.



$a = \underline{\hspace{2cm}}$

$b = \underline{\hspace{2cm}}$

$c = \underline{\hspace{2cm}}$

$d = \underline{\hspace{2cm}}$

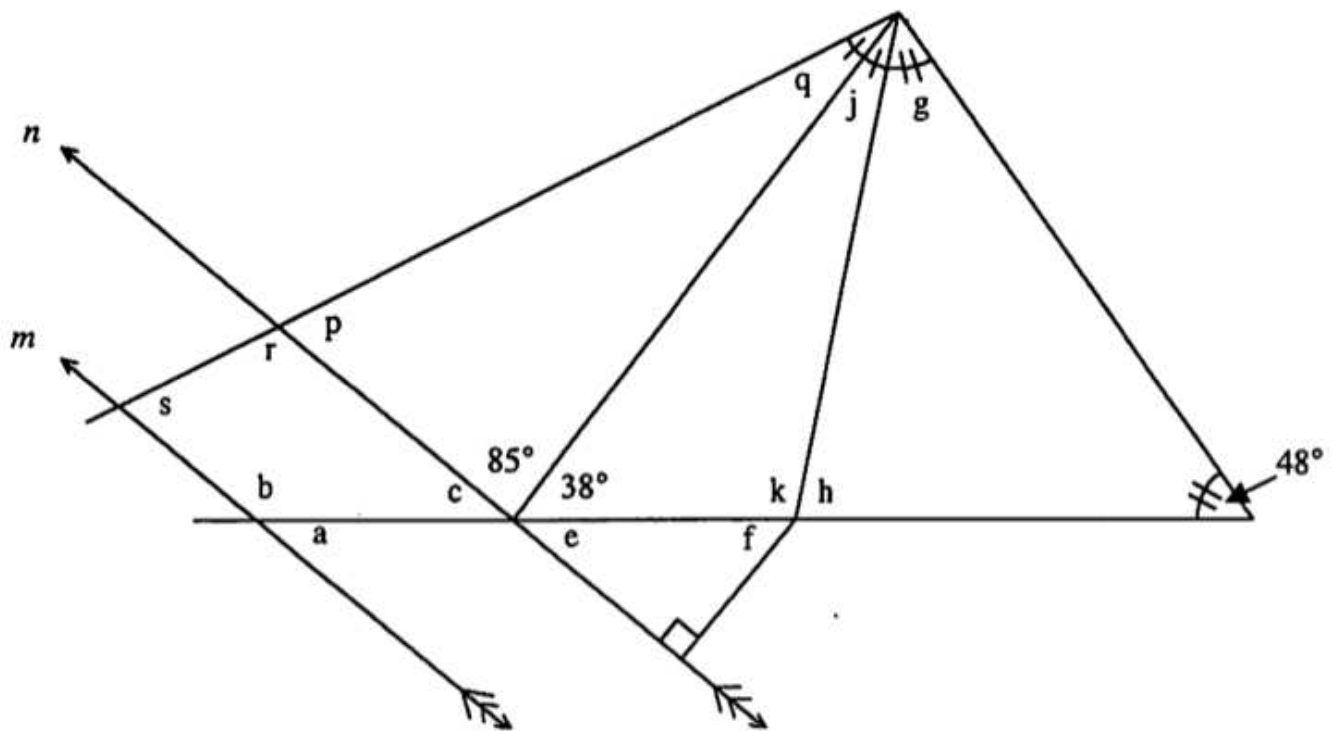
$e = \underline{\hspace{2cm}}$

$f = \underline{\hspace{2cm}}$

$g = \underline{\hspace{2cm}}$

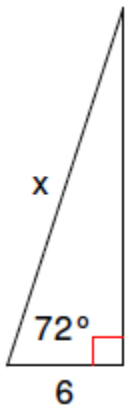
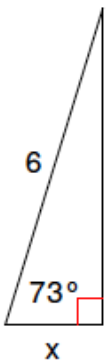
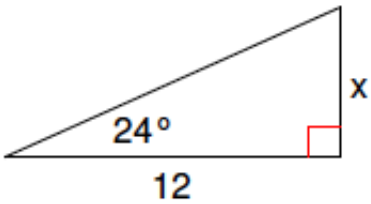
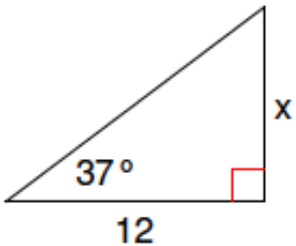
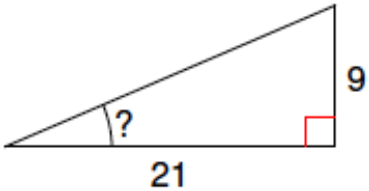
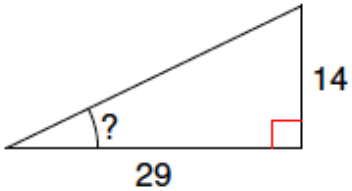
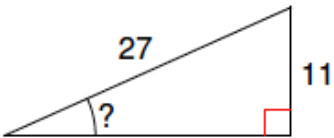
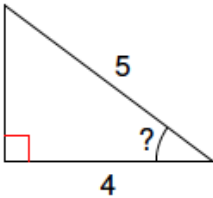
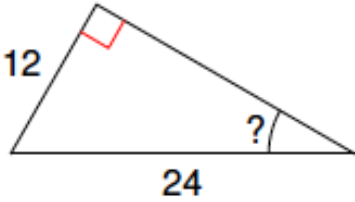
$h = \underline{\hspace{2cm}}$

$j = \underline{\hspace{2cm}}$

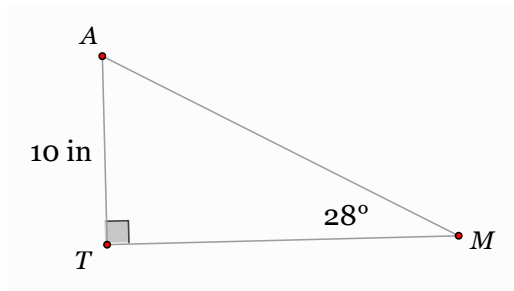


XXI – Right Triangle Trigonometry

- a) Write a true equation using sine, cosine, or tangent.
- b) Solve the equation.

<p>1.</p>  <p>A right-angled triangle with a right angle at the bottom right. The angle at the bottom left is 72°. The horizontal leg (adjacent) is labeled 6. The hypotenuse is labeled x.</p>	<p>2.</p>  <p>A right-angled triangle with a right angle at the bottom right. The angle at the bottom left is 73°. The hypotenuse is labeled 6. The horizontal leg (adjacent) is labeled x.</p>	<p>3.</p>  <p>A right-angled triangle with a right angle at the bottom right. The angle at the bottom left is 24°. The horizontal leg (adjacent) is labeled 12. The vertical leg (opposite) is labeled x.</p>
<p>4.</p>  <p>A right-angled triangle with a right angle at the bottom right. The angle at the bottom left is 37°. The horizontal leg (adjacent) is labeled 12. The vertical leg (opposite) is labeled x.</p>	<p>5.</p>  <p>A right-angled triangle with a right angle at the bottom right. The angle at the bottom left is labeled with a question mark $?$. The horizontal leg (adjacent) is labeled 21. The vertical leg (opposite) is labeled 9.</p>	<p>6.</p>  <p>A right-angled triangle with a right angle at the bottom right. The angle at the bottom left is labeled with a question mark $?$. The horizontal leg (adjacent) is labeled 29. The vertical leg (opposite) is labeled 14.</p>
<p>7.</p>  <p>A right-angled triangle with a right angle at the bottom right. The hypotenuse is labeled 27. The vertical leg (opposite) is labeled 11. The angle at the bottom left is labeled with a question mark $?$.</p>	<p>8.</p>  <p>A right-angled triangle with a right angle at the bottom left. The hypotenuse is labeled 5. The horizontal leg (adjacent) is labeled 4. The angle at the bottom right is labeled with a question mark $?$.</p>	<p>9.</p>  <p>A right-angled triangle with a right angle at the top vertex. The hypotenuse is labeled 12. The horizontal leg (adjacent) is labeled 24. The angle at the bottom right is labeled with a question mark $?$.</p>

10. Tamara drew the triangle pictured at right and measured one side and one angle as shown in the diagram.



a. Which leg is opposite $\angle M$? Which leg is adjacent to it?

b. Write a trigonometry equation (use sine, cosine, or tangent) that you could use to solve for the length of \overline{AM} .

c. Solve the equation you wrote in part b. Show your work.

d. Use the Pythagorean theorem and your results from part c to find the length of \overline{TM} .

e. Ryan argues that he could have used trigonometry to find the length of \overline{TM} without knowing the length of \overline{AM} . Is he right? If so, explain how to do it. If not, explain why he is wrong.