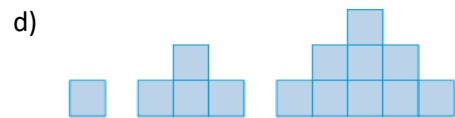
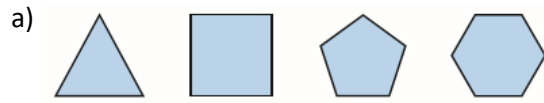


1.1 Finding and Describing Patterns

Goal: Find patterns and use them to make predictions.

Sketch the next figure that you expect in the pattern.



Describe the pattern and write the next two numbers.

a) 3, 6, 9, 12, 15, 18, _____, _____

Description of Pattern: _____

b) 1, 4, 9, 16, 25, 36, _____, _____

Description of Pattern: _____

c) 4, 12, 36, 108, _____, _____

Description of Pattern: _____

d) 5, 6, 8, 11, 15, 20, _____, _____

Description of Pattern: _____

e) 9, 4, -1, -6, _____, _____

Description of Pattern: _____

f) -9, 3, -1, $1/3$, _____, _____

Description of Pattern: _____

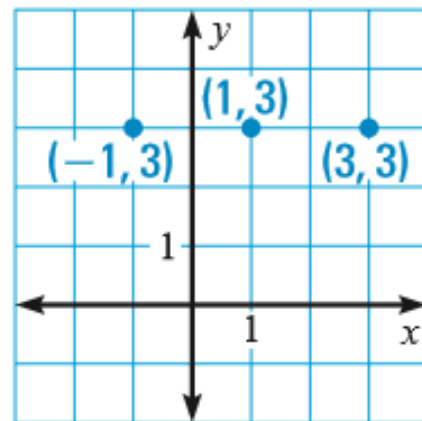
Find a pattern in the coordinates of the points. Then write the coordinates of another point in the pattern.

Pattern:

x's: _____

y's: _____

Coordinates: _____

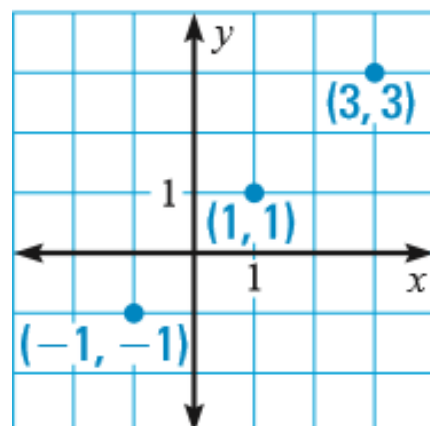


Pattern:

x's: _____

y's: _____

Coordinates: _____



1.2 Inductive Reasoning

Goal: Use inductive reasoning to make conjectures.

Conjecture: an unproven statement that is based on _____

Inductive Reasoning: looking for patterns and making _____

Complete each conjecture by first writing several examples and then completing the statement.

a) Conjecture: The sum of any two odd numbers is _____.

Examples:

b) Conjecture: The product of any two odd numbers is _____.

Examples:

c) Conjecture: The product of a positive number and a negative number is _____.

Examples:

d) Conjecture: The difference of any two odd numbers is _____.

Examples:

e) Conjecture: The square of an even number is _____.

Examples:

Just because something is true from several examples does not prove that it is true in general. To prove that a conjecture is true, you need to prove it true in _____ cases. A conjecture is considered _____ if it is not always true.

Counterexample: an example that shows that a conjecture is _____.

Show each conjecture is false by finding a counterexample.

a) Conjecture: All birds can fly.

Counterexample: _____

b) Conjecture: All high schools are in school at 9:00 AM.

Counterexample: _____

c) Conjecture: The sum of two numbers is always greater than the larger of the two numbers.

Counterexample: _____

d) Conjecture: All shapes with four sides the same length are squares.

Counterexample: _____

e) Conjecture: If the product of two numbers is even, then the numbers must be even.

Counterexample: _____

f) Conjecture: If a shape has two sides the same length, it must be a rectangle.

Counterexample: _____

g) Conjecture: All rectangles with a perimeter of 20 feet have the same area.

Counterexample: _____

1.3 Points, Lines, and Planes

Goal: Use postulates and undefined terms.

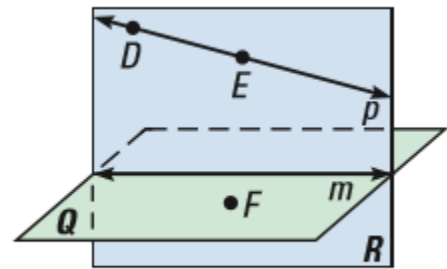
Undefined terms: terms that cannot be mathematically defined using other _____

Undefined Terms in Geometry			
Term	Definition	Picture	Label/Name
Point	_____ dimension		
Line	_____ dimension -Extends without end in _____ directions		
Plane	_____ dimensions -Extends without end in _____ directions		

Postulate: statements that are _____ without further justification.

Postulates 1 and 2			
	Words	Picture	Symbols
Postulate 1	Through any two points there is exactly _____ line		Line _____ passes through points _____ and _____
Postulate 2	Through any three points not on a line there is exactly _____ plane		Plane _____ passes through points _____, _____, and _____

Use the diagram at the right.



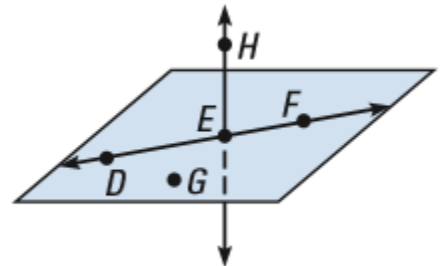
- Name three points: _____
- Name two lines: _____
- Name two planes: _____

Collinear points: points that lie on the same _____

Coplanar points: points that lie on the same _____

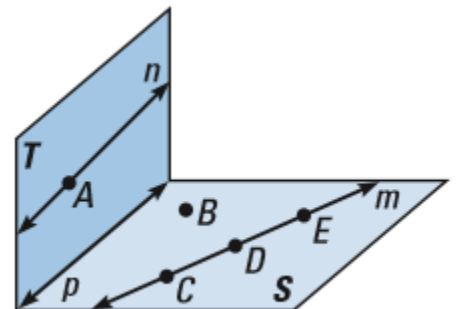
Coplanar lines: lines that lie on the same _____

Use the diagram at the right.



- Name three points that are collinear: _____
- Name four points that are coplanar: _____
- Name three points that are not collinear: _____

Use the diagram at the right.



- Name two lines: _____
- Name two planes: _____
- Name three points that are collinear: _____
- Name three points that are not collinear: _____
- Name four points that are coplanar: _____
- Name two lines that are coplanar: _____

	Definition	Picture	Symbols
Line	_____ endpoints		
Segment	_____ endpoints		
Ray	_____ endpoints		

	Picture	Line, Segment, or Ray?	How many arrowheads?	Name any endpoints.
\overleftrightarrow{JK}				
\overline{KL}				
\overrightarrow{LJ}				
\overleftarrow{LK}				

Draw \overleftrightarrow{AB} and \overleftrightarrow{AC} . Are the lines the same? Explain.

A B C
 • • •

• D

Draw \overline{AC} and \overline{BD} . Are the segments the same? Explain.

Draw \overrightarrow{CA} and \overrightarrow{CB} . Are the rays the same? Explain.

1.4 Sketching Intersections

Goal: Sketch simple figures and their intersections

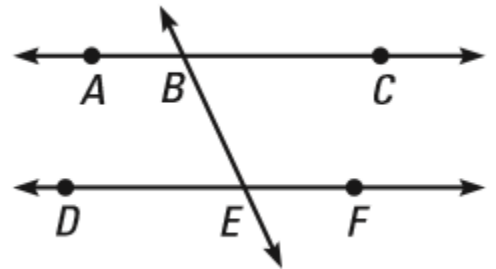
Intersect: When figures have any points _____

Intersection point: the point or points that all the figures have _____

Postulates 3 and 4			
	Words	Picture	Symbols
Postulate 3	If two lines intersect, then their intersection is a _____		Lines _____ and _____ intersect at point _____
Postulate 4	If two planes intersect, then their intersection is a _____		Planes _____ and _____ intersect at line _____

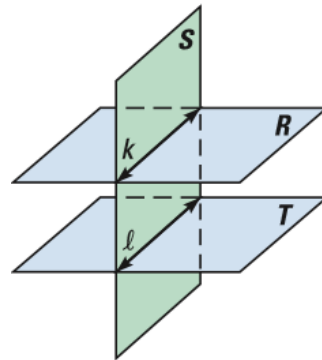
Use the diagram at the right.

- a) Name the intersection of \overleftrightarrow{AC} and \overleftrightarrow{BE} : _____
- b) Name the intersection of \overleftrightarrow{BE} and \overleftrightarrow{DF} : _____
- c) Name the intersection of \overleftrightarrow{AC} and \overleftrightarrow{DF} : _____



Use the diagram at the right.

- a) Name the intersection of planes S and R : _____
- b) Name the intersection of planes R and T : _____
- c) Name the intersection of planes T and S : _____

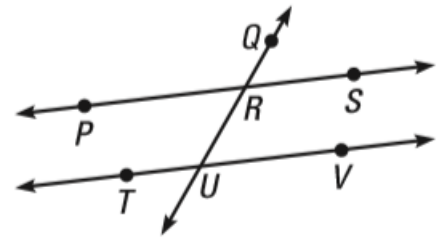


Use the diagram at the right.

a) Name the intersection of \overleftrightarrow{PS} and \overleftrightarrow{QR} : _____

b) Name the intersection of \overleftrightarrow{TV} and \overleftrightarrow{QU} : _____

c) Name the intersection of \overleftrightarrow{PS} and \overleftrightarrow{UV} : _____

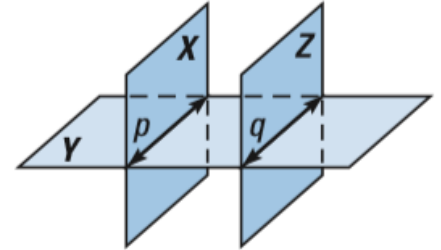


Use the diagram at the right.

a) Name the intersection of planes X and Y: _____

b) Name the intersection of planes Y and Z: _____

c) Name the intersection of planes Z and X: _____

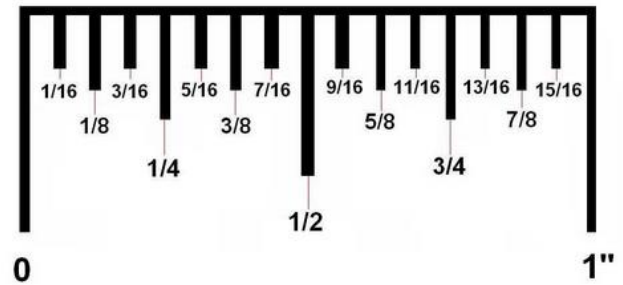


Sketching Lines and Planes	
a) A line that is in a plane	b) A line that does not intersect the plane
c) A line that intersects the plane at a point	d) Two planes that intersect in a line
e) Three lines that lie in a plane	f) Two lines that intersect a plane at the same point
g) Two planes that do not intersect	h) Three lines that intersect in a point

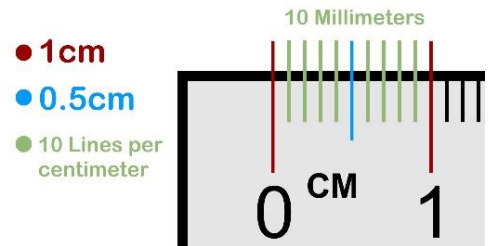
1.4.5 Measuring Segments and Angles

Goal: Use a ruler to measure segments and a protractor to measure angles.

On a ruler there are _____ tick marks between each **inch**. Always write the fraction in _____ terms.



On a ruler there are _____ tick marks between each **centimeter**. You can write your answer as a _____.



Use a ruler to accurately measure each segment in inches and in centimeters. Label all answers.

a) Inches: _____



Centimeters: _____

b) Inches: _____



Centimeters: _____

c) Inches: _____



Centimeters: _____

d) Inches: _____



Centimeters: _____

e) Inches: _____



Centimeters: _____

Measure of an angle: how many _____ an angle has

Right Angle
 Angle that makes a square corner, is 90°

Obtuse Angle
 Angle larger than a right angle, more than 90°

Acute Angle
 Angle smaller than a right angle, less than 90°

Straight Angle
 A straight line with 2 arrows Measures 180°

How To Use a Protractor

This angle is 100°

1. Place the center point of the protractor on the **vertex** of the angle.
2. Line up the **0** on the **bottom line** of the protractor with the bottom ray of the angle.
3. To find the angle measure, **look at the number** the second ray passes through.

To measure angles opening from the **left**, use the **TOP** set of numbers.

To measure angles opening from the **right**, use the **BOTTOM** set of numbers.

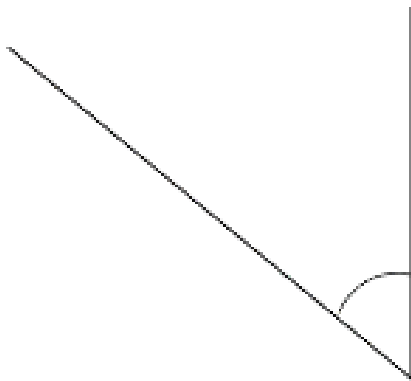
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Classify each angle.

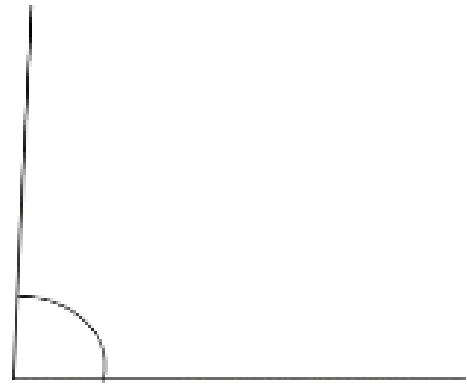
- a) $m\angle A = 130^\circ$ b) $m\angle B = 90^\circ$ c) $m\angle C = 45^\circ$
 d) $m\angle D = 90.01^\circ$ e) $m\angle E = 89.9^\circ$ f) $m\angle F = 180^\circ$

Use a protractor to find the measure of each angle.

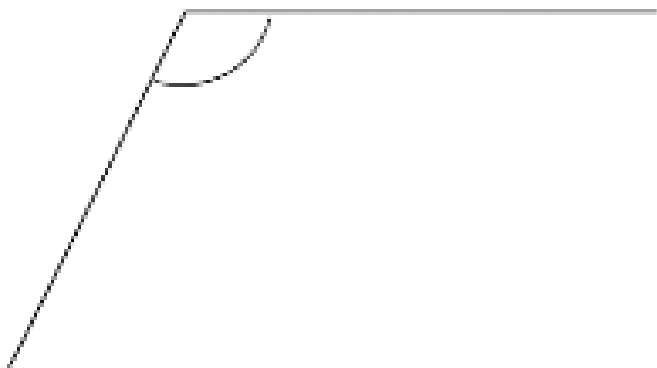
a) _____



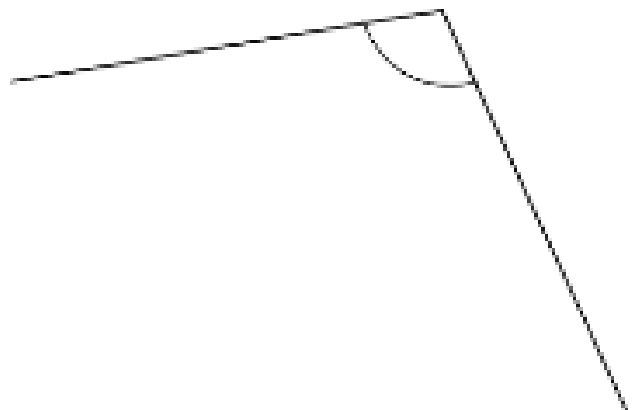
b) _____



c) _____



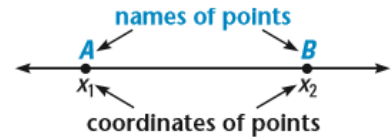
d) _____



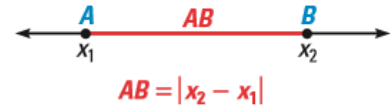
1.5 Segments and Their Measures

Goal: Use the segment addition postulate to find lengths.

Coordinate: the real _____ that corresponds to a point on a number line



Distance: the _____ of the difference of the coordinates A and B written as _____



Length: the same as the _____

Between: when _____ coordinates lie on a line, one of them is between the other two

Segment Addition Postulate	If B is between A and C, then _____	
	If $AC = AB + BC$, then B is between _____ and _____	

Draw a sketch of the three collinear points. Then write the Segment Addition Postulate for the points.

a) X is between Y and Z

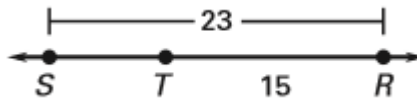
b) A is between R and D

Find each length.

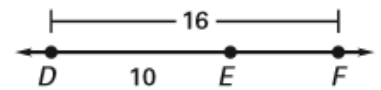
a) $AC =$ _____



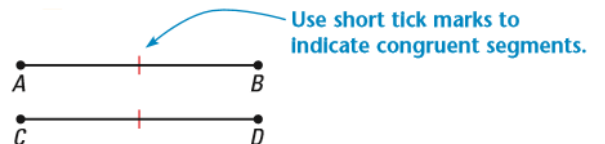
b) $ST =$ _____



c) $EF =$ _____



Congruent Segments: segments that have the same _____

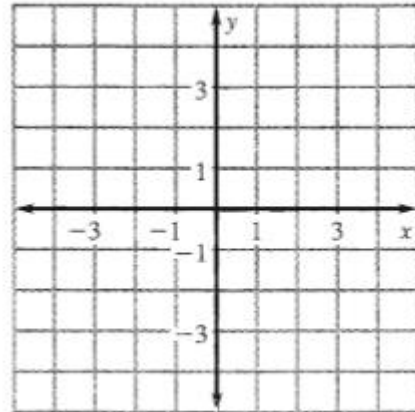
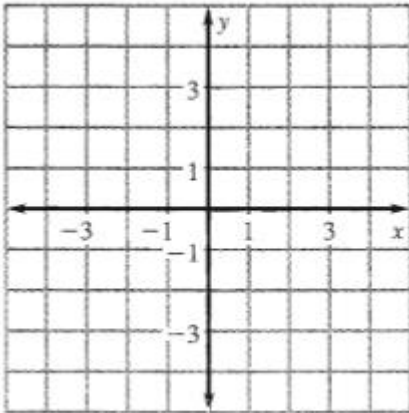


Words	Symbols
The length of AB is _____ to the length of CD	
Segment \overline{AB} is _____ to segment \overline{CD}	

Plot the points in the coordinate plane. Then decide whether AB and CD are congruent.

a) A(-2, 3) B(3, 3) C(-3, 4) D(-3, -1)

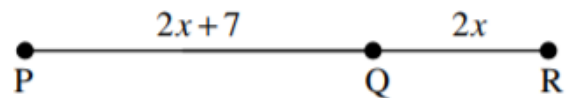
b) A(0, 5) B(0, -1) C(5, 0) D(-1, 0)



Use the Segment Addition Postulate to write and solve an equation for x. Then find the lengths.

a) Let $PR = 47$

Equation: _____



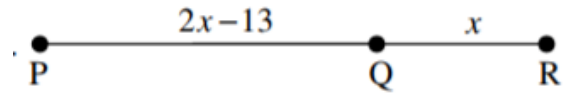
x = _____

PQ = _____

QR = _____

b) Let $PR = 26$

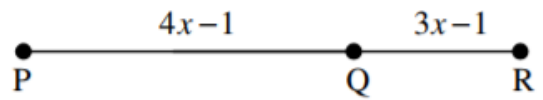
Equation: _____



$x =$ _____ $PQ =$ _____ $QR =$ _____

c) Let $PR = 40$

Equation: _____



$x =$ _____ $PQ =$ _____ $QR =$ _____

d) Let $RG = 7x + 3$, $GQ = 3x + 13$, and $RQ = 56$. Find the value of x and the indicated lengths.

Equation: _____



$x =$ _____ $RG =$ _____ $GQ =$ _____

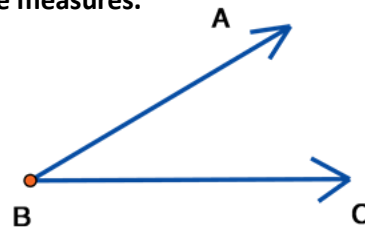
1.6 Angles and Their Measures

Goal: Measure and classify angles. Add angle measures.

Angle: two rays that have the same _____

Sides: the two _____ of the angle

Vertex: the _____ of the angle



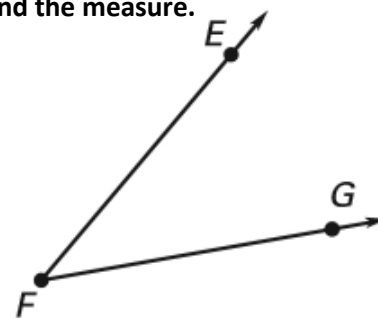
Name the angle, vertex, and sides of each angle. Then use a protractor to find the measure.

a) Angle names: _____

Vertex: _____

Sides: _____

Measure: _____

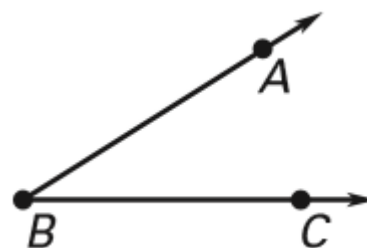


b) Angle names: _____

Vertex: _____

Sides: _____

Measure: _____

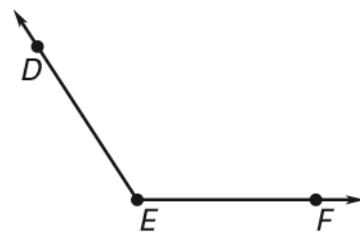


c) Angle names: _____

Vertex: _____

Sides: _____

Measure: _____



d) Angle names: _____

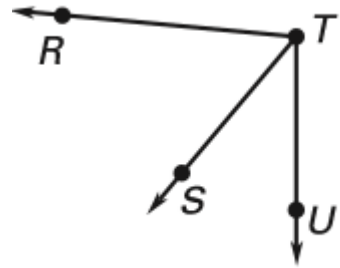
Vertex: _____

Sides: _____

Measure: _____



a) Name all the angles in the figure.

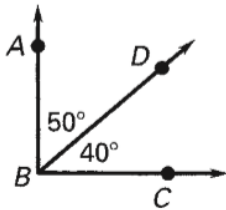


b) Why should you not name any of the angles $\angle T$?

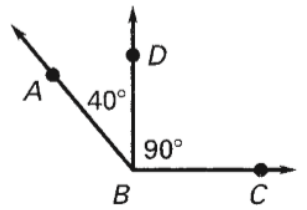
<p>Angle Addition Postulate</p>	<p>If P is in the interior of $\angle RST$, then _____ + _____ = _____</p>	
--	---	--

Find the measure of $\angle ABC$.

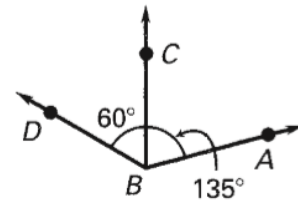
a) $m\angle ABC =$ _____



b) $m\angle ABC =$ _____



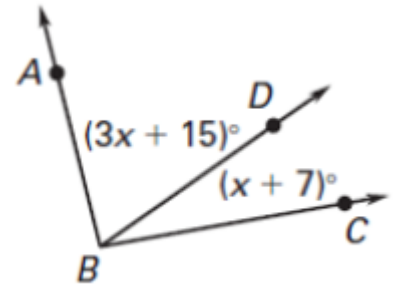
c) $m\angle ABC =$ _____



Use the angle addition postulate to write and solve an equation for x. Find the angle measures.

a) Let $m\angle ABC = 94^\circ$

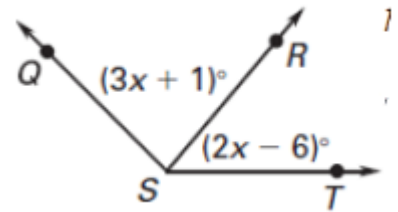
Equation: _____



x = _____ $m\angle ABD =$ _____ $m\angle DBC =$ _____

b) Let $m\angle QST = 135^\circ$

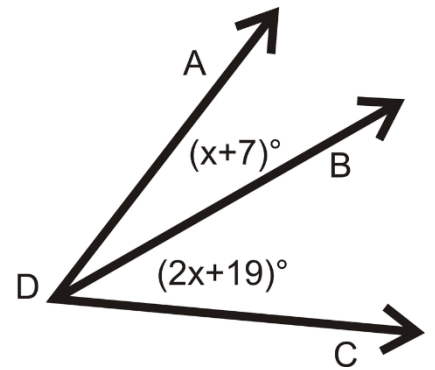
Equation: _____



$x =$ _____ $m\angle QSR =$ _____ $m\angle RST =$ _____

c) Let $m\angle ADC = 71^\circ$

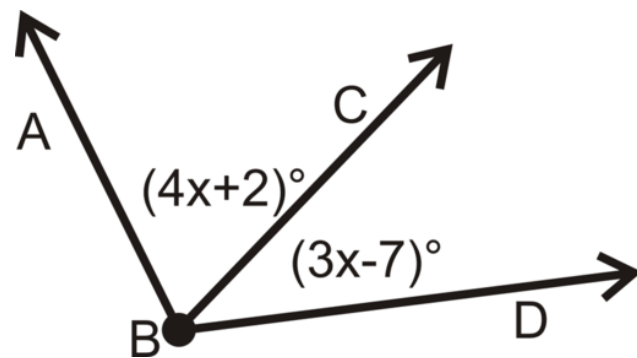
Equation: _____



$x =$ _____ $m\angle ADB =$ _____ $m\angle BDC =$ _____

d) Let $m\angle ABD = 121^\circ$

Equation: _____



$x =$ _____ $m\angle ABC =$ _____ $m\angle CBD =$ _____