

Chapter 1 Foundations of Geometry

CA Standards:

1.0 Students demonstrate understanding by identifying and giving examples of undefined terms, axioms, theorems, and inductive and deductive reasoning.

8.0 Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.

16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line.

22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

Undefined term point line plane collinear coplanar segment endpoint ray
Opposite rays postulate coordinate distance length congruent segments construction
Between midpoint bisect segment bisector angle vertex interior angle exterior angle
Measure degree acute angle right angle obtuse angle straight angle congruent angles
Angle bisector adjacent angles linear pair complementary angles supplementary angles
Vertical angles perimeter area base height diameter radius circumference pi
Coordinate plane leg hypotenuse transformation preimage image reflection translation

Sec 1.1 Understanding Points, lines, and Planes.

CA std: 1.0

The most basic figures in geometry are undefined terms, which cannot be defined by using other figures. The undefined terms point, lines, and a plane are the building blocks of geometry.

Point

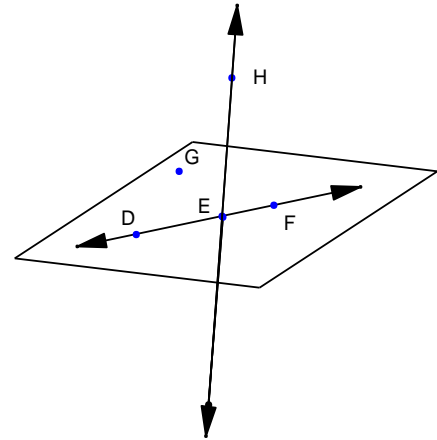
Line

Plane

Collinear Points:

Coplanar Points:

- Ex 1** a) Name 3 collinear points
b) Name 4 coplanar points
c) Name 3 non-collinear points



Line Segment

Ray

- Ex 2** step-by-step: Draw 3 non-collinear points J, K, L.
Draw \overrightarrow{JK} , \overrightarrow{KL} , and \overrightarrow{LJ} .

Ex 3 Draw 4 noncollinear points $A, B, C,$ and $D.$

Draw $\overline{AB}, \overline{BC}, \overline{CD}, \overline{DA}, \overline{BD}, \overline{AC}.$

Postulate (axiom) :

Examples:

Through any two points there is exactly _____.

Through any three noncollinear points, there is exactly _____ containing them.

If two points lie in a plane, then the line containing those points lies in the plane.

If two lines intersect, then they intersect in exactly _____.

If two planes intersect, then they intersect in exactly _____.

Summary:

In this Section, I learned the about the building blocks for geometry (3 undefined terms) which are _____, _____, and _____.

Collinear points are...

Coplanar points are...

Postulate is...

To label a geometric figure means to...

To label points we use _____.

You need _____ points to label a line.

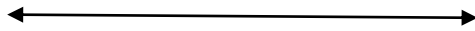
You need _____ points to label a plane.

Sec 1.2 Measuring and Constructing Segments.

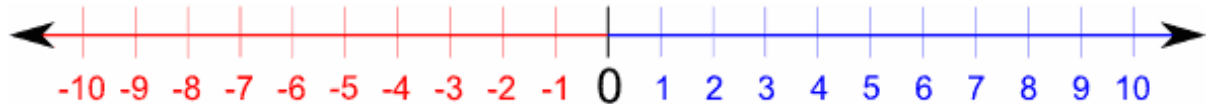
CA std: 16.0

A ruler can be used to measure the distance between 2 points. A point corresponds to one number in the ruler. This number is called a coordinate.

The distance between any two points is

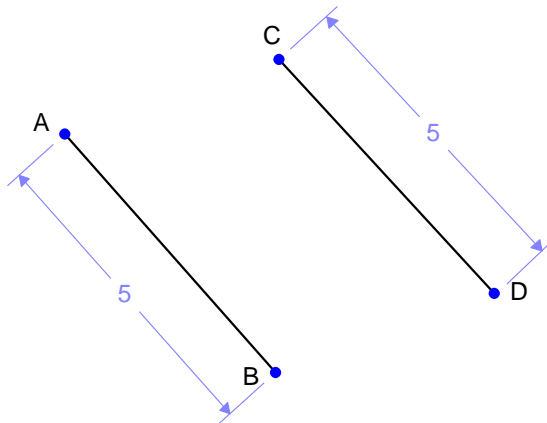


Ex 1 Find the length of the following segments

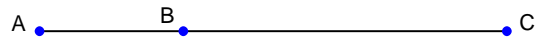


MP = _____ PT = _____ MT = _____

Congruent Segments are...



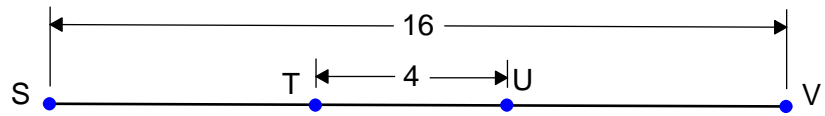
Segment Addition Postulate



Ex 2 Using the Segment Addition Postulate, find the length of the following

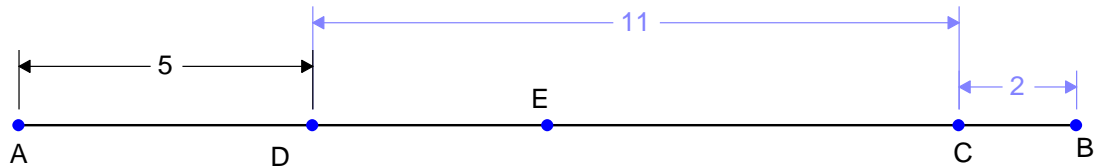
TV=_____

SU=_____



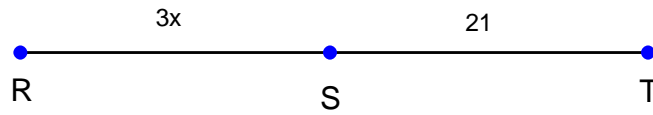
Ex 3 Knowing that $\overline{AE} \cong \overline{BE}$, Find the following.

Find DE=_____ EC=_____

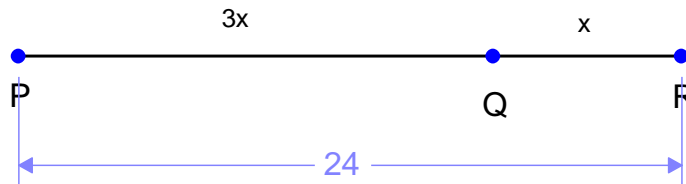


Midpoint

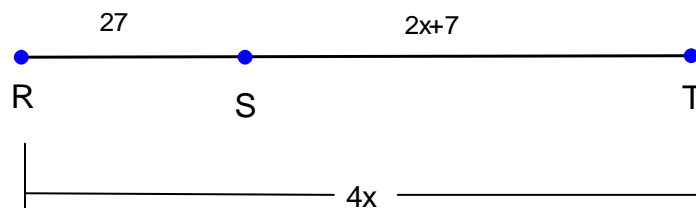
Ex 4 S is the midpoint of \overline{RT} . Find $RT = \underline{\hspace{2cm}}$



Ex 5 Q is between P and R. Find $PQ = \underline{\hspace{2cm}}$



Ex 6 Find $RT = \underline{\hspace{2cm}}$



Sketch, draw and construct a segment congruent to \overline{MN}

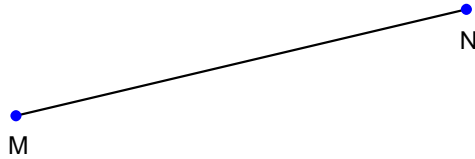
Draw a segment, name it \overline{MN} (*label it*)

Draw a segment congruent to \overline{MN} and name it \overline{GH} (*label it*)

Find the midpoint of \overline{GH}

Draw a line through its midpoint.

Guess what that line is called?



Summary:

In this section, I learned about...

congruent = _____

congruent segments have the same _____

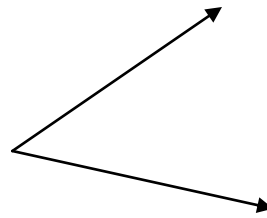
The midpoint of a segment is...

Sec 1.3 Measuring and Constructing Angles

CA std: 16.0

An **Angle**

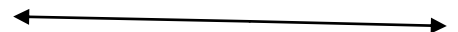
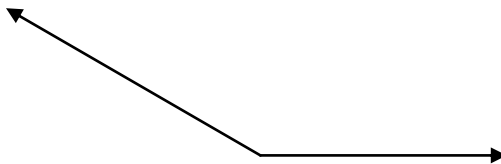
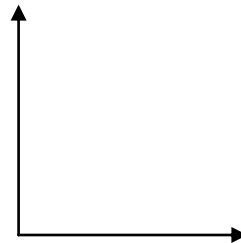
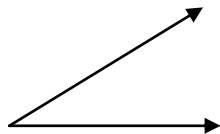
Names:



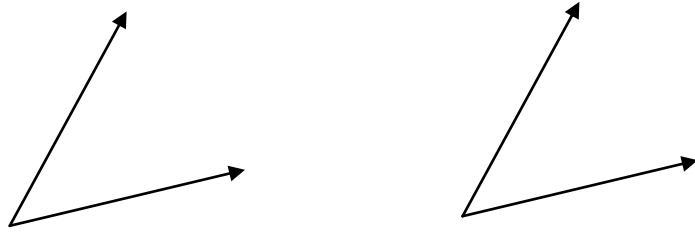
We measure angles in _____. You can use a _____ to measure angles.

Measuring angles:

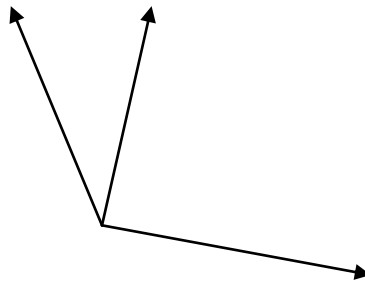
Classifying angles:



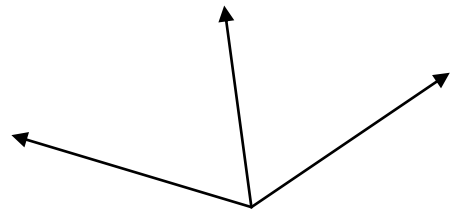
Congruent Angles:



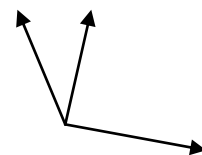
Adjacent angles



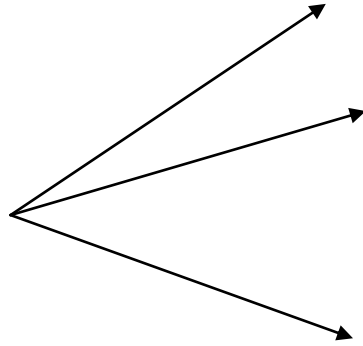
Adjacent and Congruent



Angle Addition Postulate

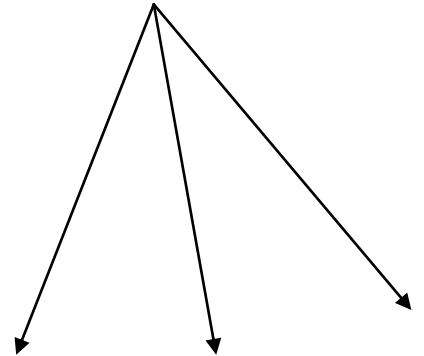


Ex 1 Name all possible angles and use the angle addition to find the measure of the following angle.

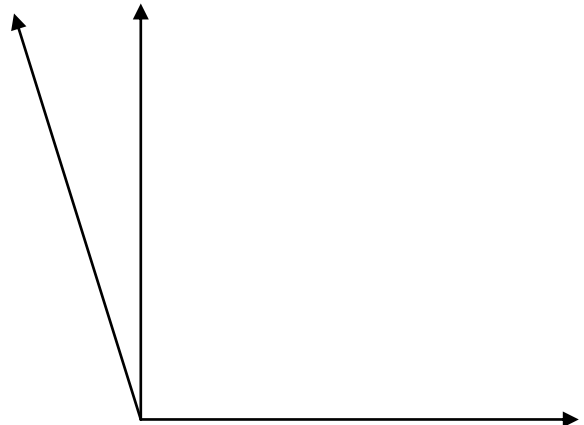


$m\angle TMR =$ _____

Ex 2 \overrightarrow{BD} bisects $\angle ABC$. $m\angle ABD = (6x + 3)^\circ$ and $m\angle DBC = (8x - 7)^\circ$. Find $m\angle ABD$ and $m\angle ABC$.



Ex 3 T is in the interior of $\angle BMA$. If $m\angle BMT = (6x + 30)^\circ$, $m\angle TMA = (4x - 20)^\circ$ and $m\angle BMA = (2x + 90)^\circ$. Find $m\angle BMA$



Construct an angle congruent to $\angle A$

Construct the bisector of $\angle A$

Summary:

In this section, we learned about _____

The tool to measure angles is called a _____ and they are measured in _____.

Types of angles are _____, _____, _____.

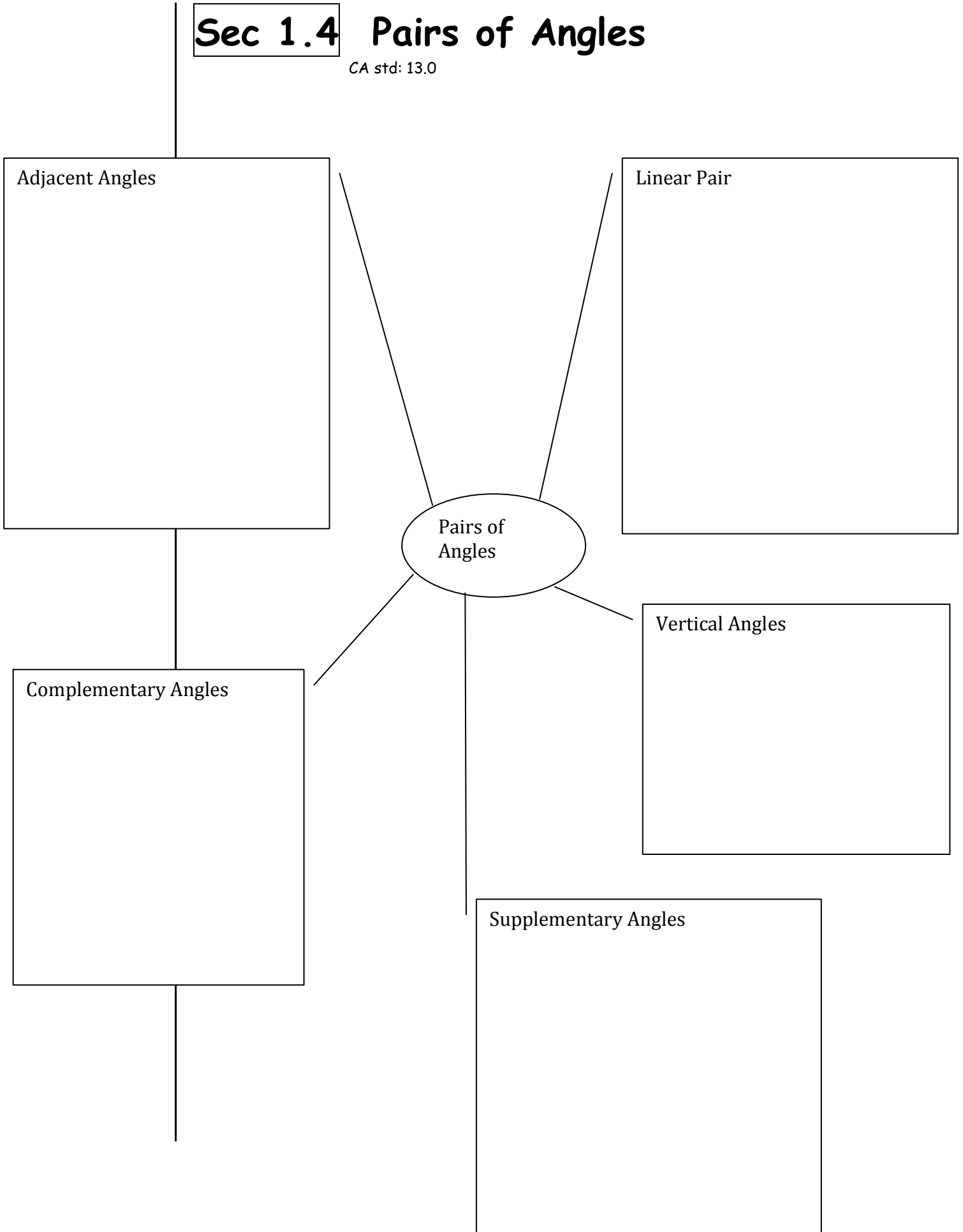
Angles that measured the same are called _____.

Angles that are next to each other and shared a ray are said to be _____.

What do you called a line, ray or segment that cuts a angle into two congruent angles? _____

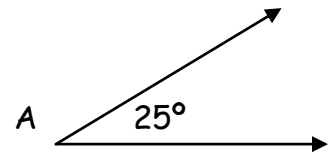
Sec 1.4 Pairs of Angles

CA std: 13.0

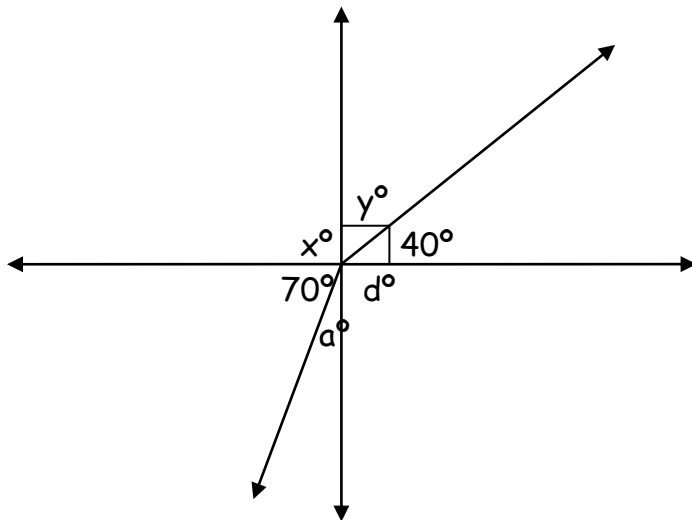


Ex 1 a) What is the complement of angle A ?

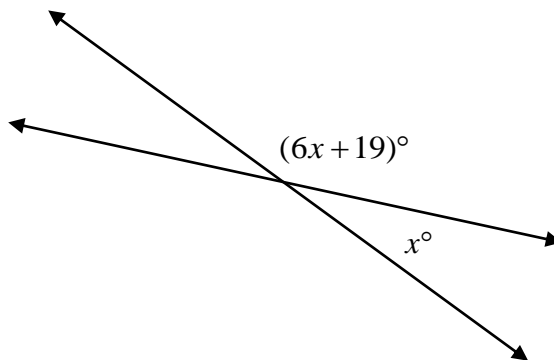
b) What is the supplement of angle A



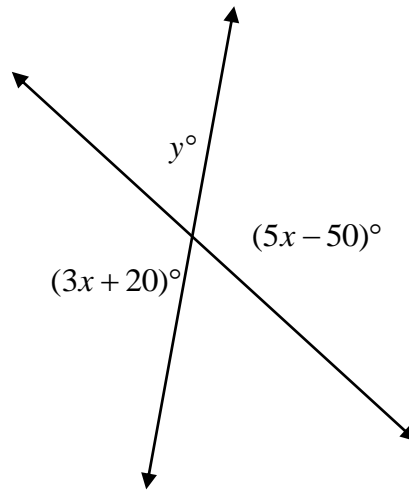
Ex 2 Find the value of the variables.



Ex 3 Find the value of x.



Ex 4 Find the value of x and y .



Summary:

Linear pairs add up to _____

Complementary Angles are two angles that add up to _____

Supplementary Angles are two angles that add up to _____

Vertical angles are two angles that are _____

Vertical angles look like ...

Do complementary angles have to be adjacent? _____ supplementary? _____ linear pairs? _____

Vertical? _____

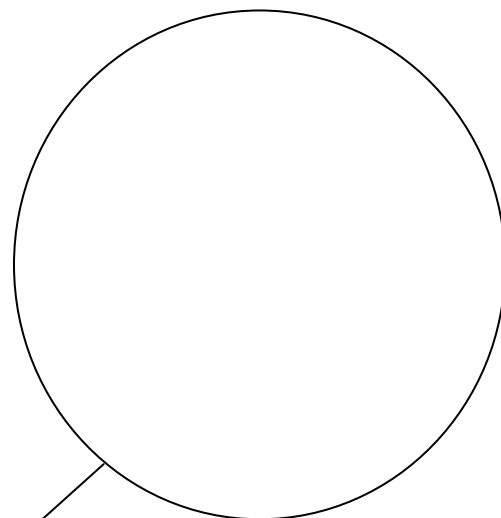
Sec 1.5

Using Formulas in Geometry.

CA std: 8.0

Perimeter

Area



Formulas

