

Monday, September 8

Objective

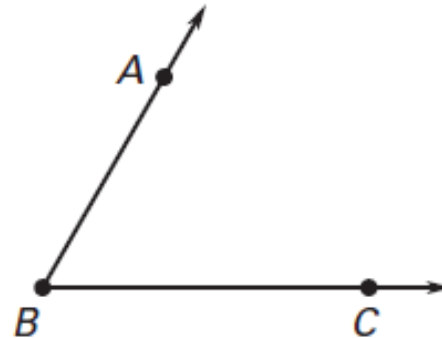
SWBAT-

Find measures of adjacent angles as well as bisected angles.

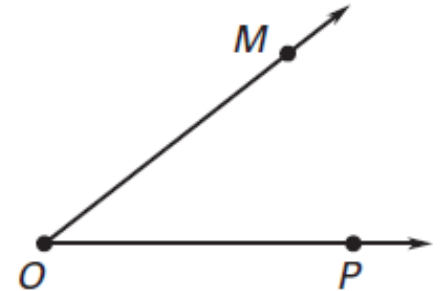
DO NOW

Write two names for the angles, then name the vertex of the angle

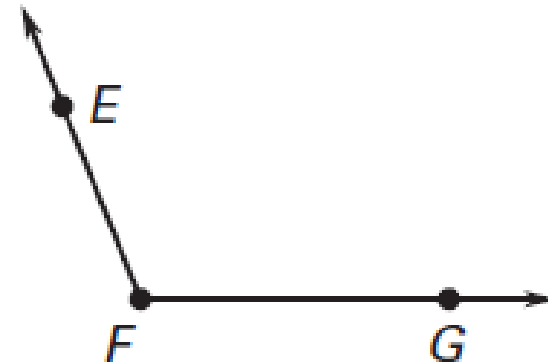
1.



2.



3.



1.4 Angle Addition Postulate

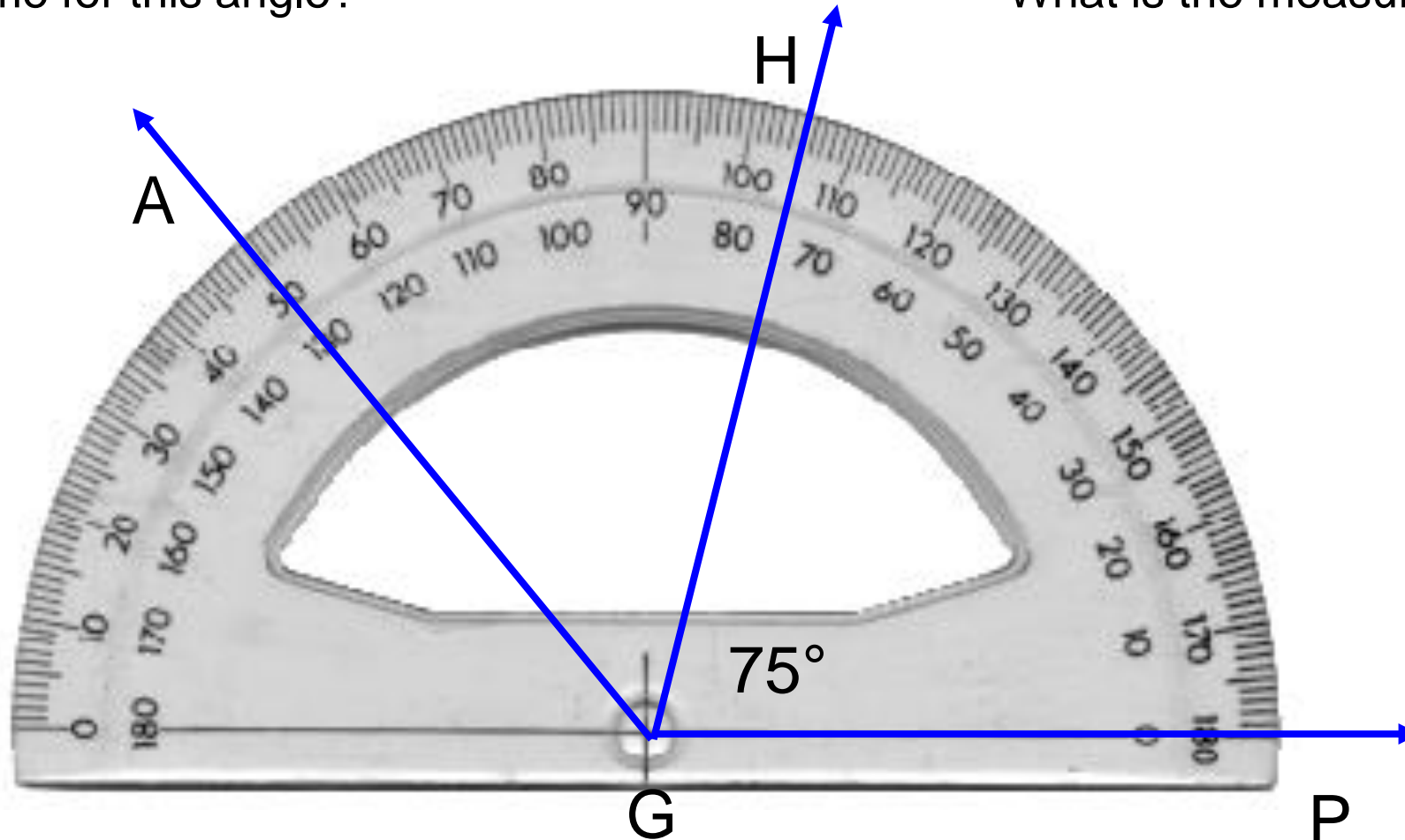
Agenda:

- **Do Now** (12 min)
 - ✓ Work and Solve
 - ✓ Review Grades
- **Introduction to New Material** (10 min)
 - ✓ Angles! Addition Postulate and Angle Bisectors
- **Guided Practice** (12 min)
 - ✓ Finding the measure of adjacent angles
- **Independent Practice** (12 min)
 - ✓ Finding measure of adjacent angles
- **Exit Ticket** (5 min)
 - ✓ Top Ten Results

1.4 Angle Addition Postulate

What is one name for this angle?

What is the measure of this angle?

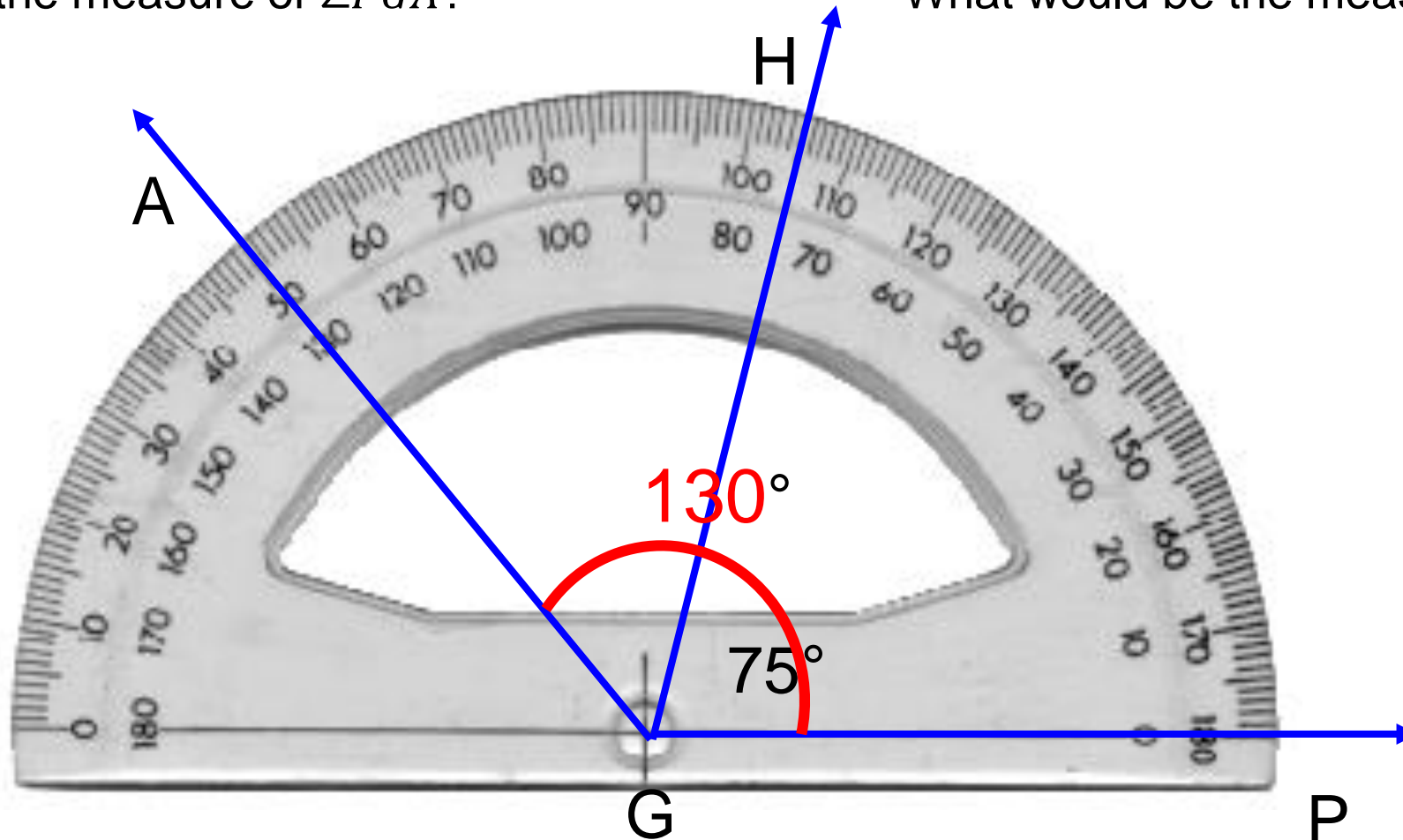


Name three different angles

1.4 Angle Addition Postulate

What would be the measure of $\angle PGA$?

What would be the measure of $\angle AGH$?

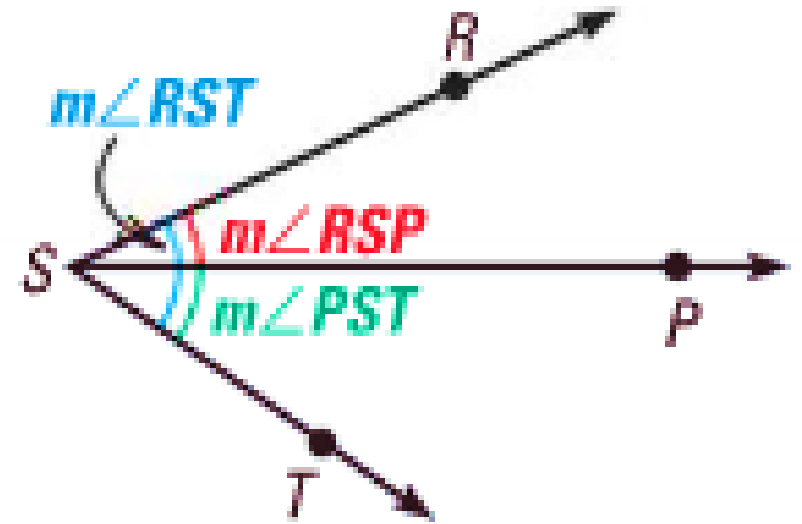


1.4 Angle Addition Postulate

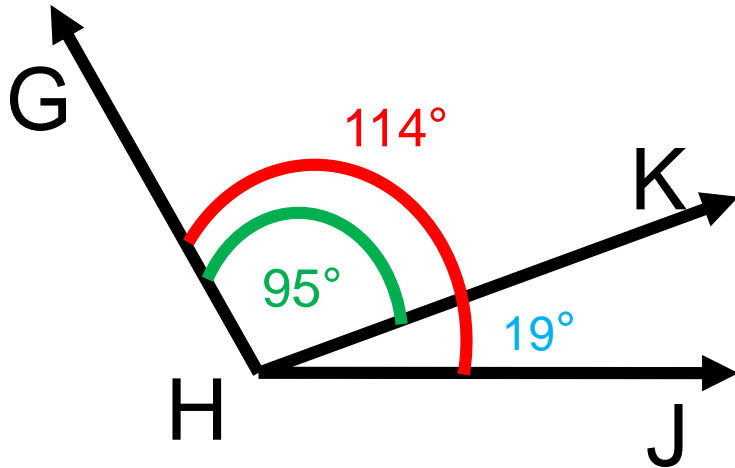
Angle Addition Postulate

If P is in the interior of $\angle RST$, then

$$m\angle RST = m\angle RSP + m\angle PST.$$



1.4 Angle Addition Postulate



Given: $m\angle GHK = 95$
 $m\angle GHJ = 114.$

Find: $m\angle KHJ.$

The Angle Addition Postulate tells us:

$$m\angle GHK + m\angle KHJ = m\angle GHJ$$

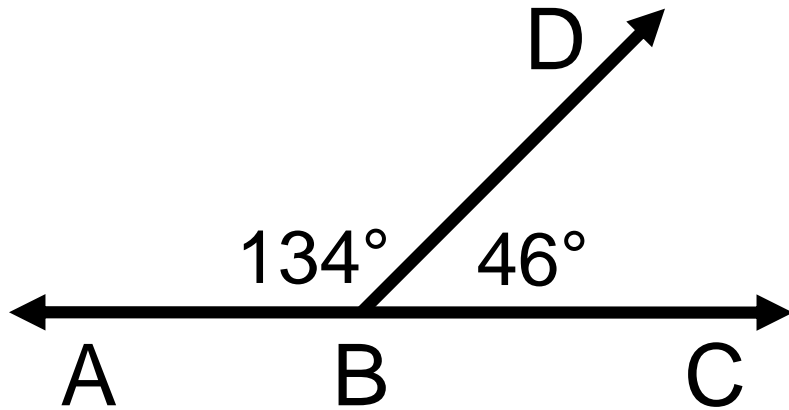
Plug in what you know.

$$\begin{array}{r} 95 + m\angle KHJ = 114 \\ -95 \qquad \qquad \qquad -95 \end{array}$$

Solve.

$$m\angle KHJ = 19.$$

1.4 Angle Addition Postulate



Given $\angle ABC$ is a straight angle, find $m\angle DBC$:

This is a special example, because the two adjacent angles together create a straight angle.

Predict what $m\angle ABD + m\angle DBC$ equals.

$\angle ABC$ is a straight angle, therefore $m\angle ABC = 180$.

$$m\angle ABD + m\angle DBC = m\angle ABC$$

$$134 + m\angle DBC = 180$$

$$\begin{array}{r} -46 \\ 134 + m\angle DBC = 180 \\ \hline m\angle DBC = 46 \end{array}$$

$$m\angle DBC = 46$$

1.4 Angle Addition Postulate

Set up an equation using the Angle Addition Postulate.

$$m\angle RSV + m\angle VST = m\angle RST$$

$$x + 5 + 3x - 9 = 68$$

Solve.

$$\begin{array}{r} 4x - 4 = 68 \\ +4 \quad +4 \end{array}$$

$$\begin{array}{r} 4x = 72 \\ \underline{4} \quad \underline{4} \end{array}$$

$$x = 18$$

Plug in what you know.

$$\begin{aligned} m\angle RSV &= x + 5 \\ m\angle RSV &= 18 + 5 = 23 \end{aligned}$$



Given:

$$m\angle RSV = x + 5$$

$$m\angle VST = 3x - 9$$

$$m\angle RST = 68$$

Find x.

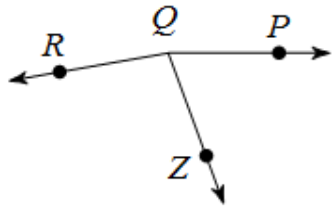
Now that you know $x = 18$, find $m\angle RSV$ and $m\angle VST$.

$$m\angle VST = 3x - 9$$

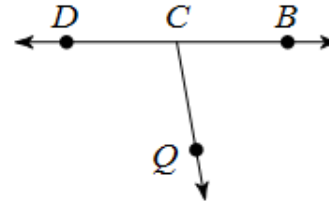
$$m\angle VST = 3(18) - 9 = 45$$

1.4 Angle Addition Postulate

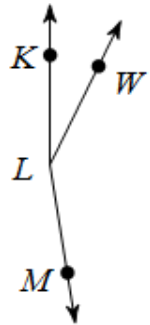
- 4) Find $m\angle PQZ$ if $m\angle ZQR = 10 + 9x$,
 $m\angle PQR = 170^\circ$, and $m\angle PQZ = 6x + 10$.



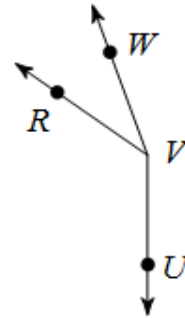
- 5) $m\angle QCD = 19x + 5$, $m\angle BCD = 180^\circ$,
and $m\angle BCQ = 15x + 5$. Find $m\angle QCD$.



- 6) $m\angle KLM = 171^\circ$, $m\angle WLM = 16x + 1$,
and $m\angle KLW = -1 + 3x$. Find x .

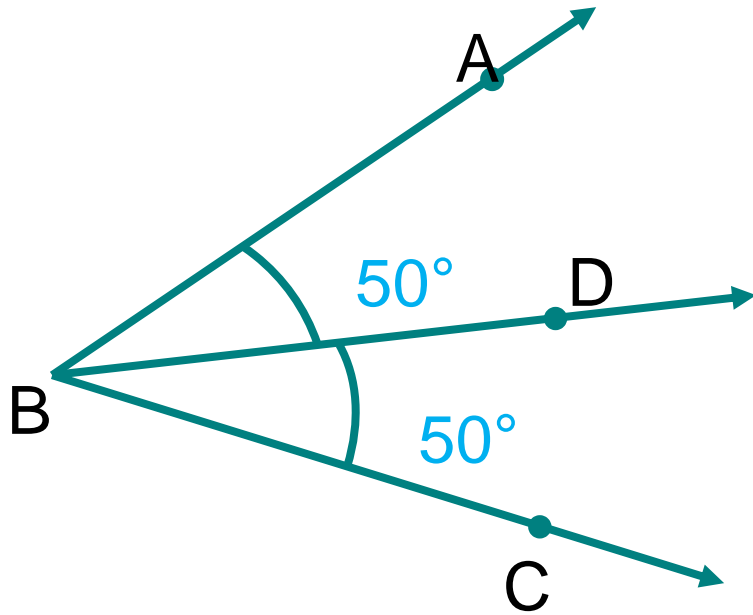


- 7) $m\angle UVW = -8 + 14x$, $m\angle RVW = 2x + 11$,
and $m\angle UVR = 125^\circ$. Find x .



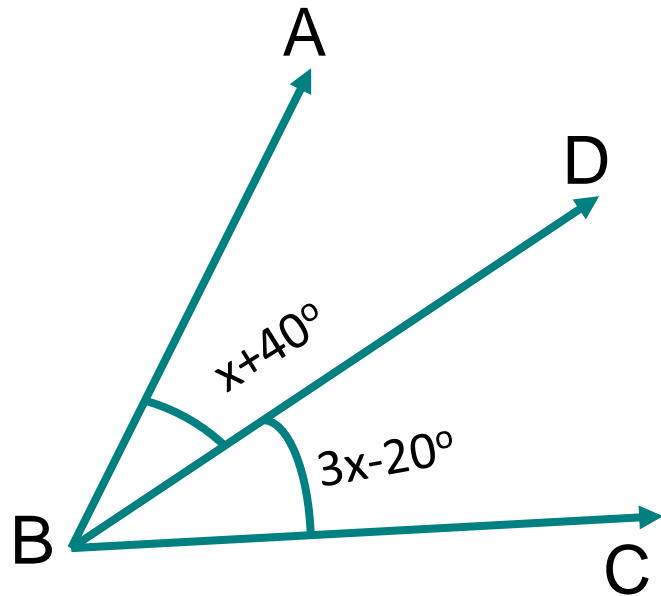
1.4 Angle Addition Postulate

An **angle bisector** is a ray that divides an angle into 2 congruent **adjacent** angles.



\overline{BD} is an angle bisector of $\angle ABC$.

1.4 Angle Addition Postulate



\overrightarrow{BD} bisects $\angle ABC$. Find $m\angle ABD$ and $m\angle ABC$

* If they are congruent, set them equal to each other, then solve!

$$\begin{array}{r} x + 40 = 3x - 20 \\ -x \qquad -x \end{array}$$

$$\begin{array}{r} 40 = 2x - 20 \\ +20 \qquad +20 \end{array}$$

$$\frac{60}{2} = \frac{2x}{2}$$

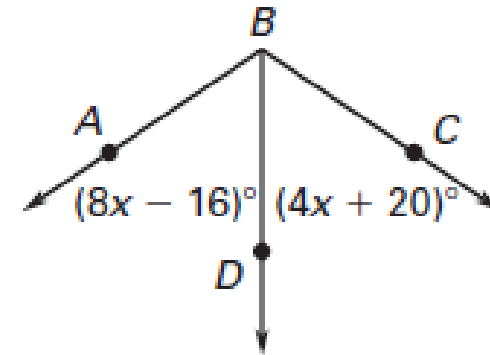
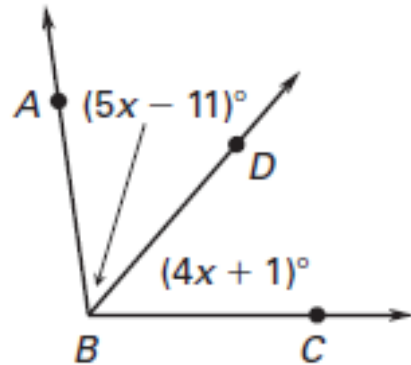
$$30 = x$$

$$\begin{aligned} m\angle ABD &= x + 40 \\ &= 30 + 40 \\ &= 70 \end{aligned}$$

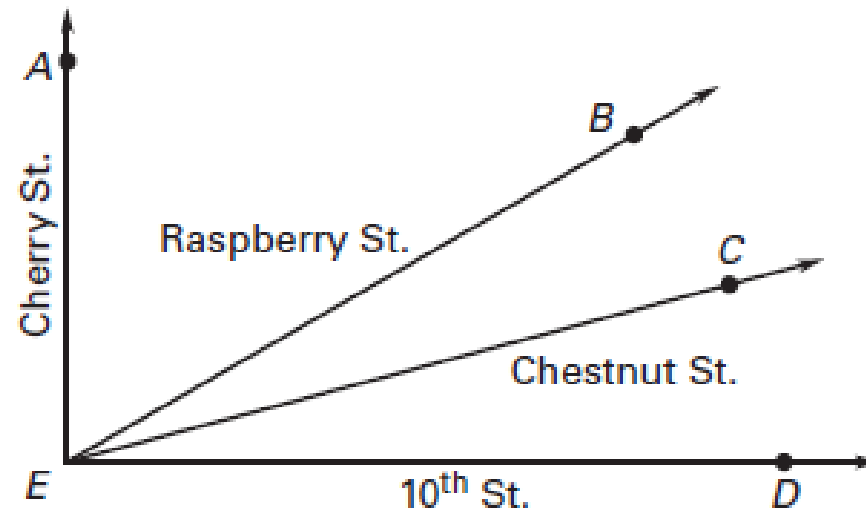
$$m\angle ABC = 140$$

1.4 Angle Addition Postulate

In the diagram, \overrightarrow{BD} bisects $\angle ABC$. Find $m\angle ABC$.

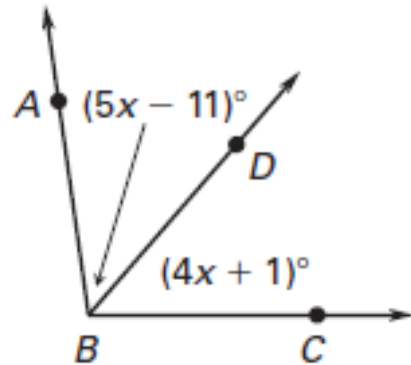


Streets The diagram shows the intersection of four streets. In the diagram, $m\angle AEB = 60^\circ$, $m\angle BEC = m\angle CED$, and $\angle AED$ is a right angle. What is the measure of $\angle CED$?



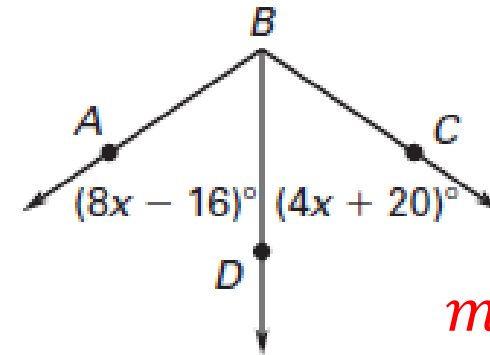
1.4 Angle Addition Postulate

In the diagram, \overrightarrow{BD} bisects $\angle ABC$. Find $m\angle ABC$.



$$x = 12$$

$$m\angle ABC = 98^\circ$$

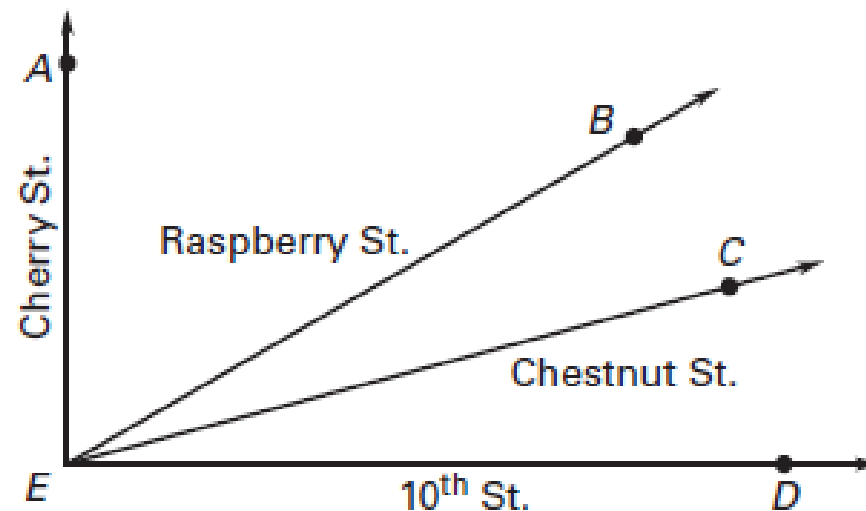


$$x = 9$$

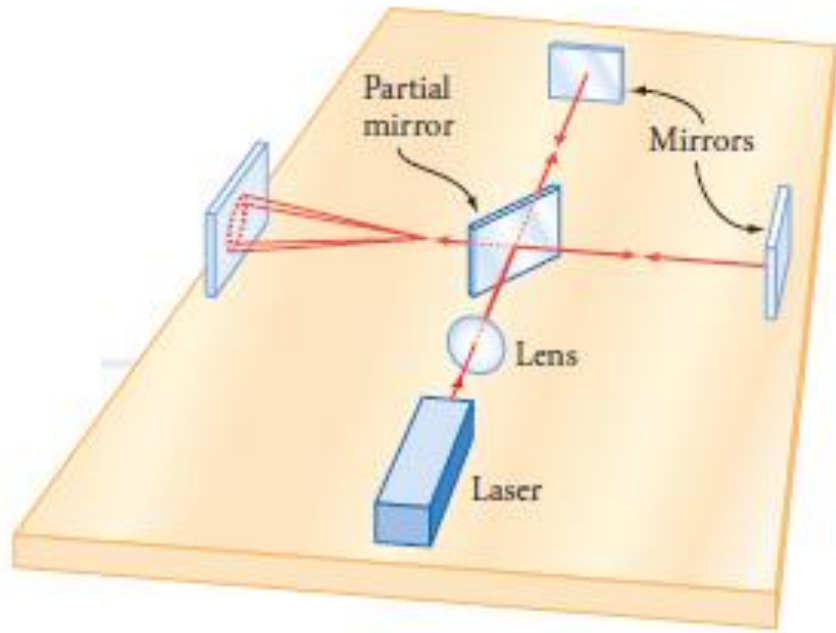
$$m\angle ABC = 112^\circ$$

Streets The diagram shows the intersection of four streets. In the diagram, $m\angle AEB = 60^\circ$, $m\angle BEC = m\angle CED$, and $\angle AED$ is a right angle. What is the measure of $\angle CED$?

$$m\angle CED = 15^\circ$$

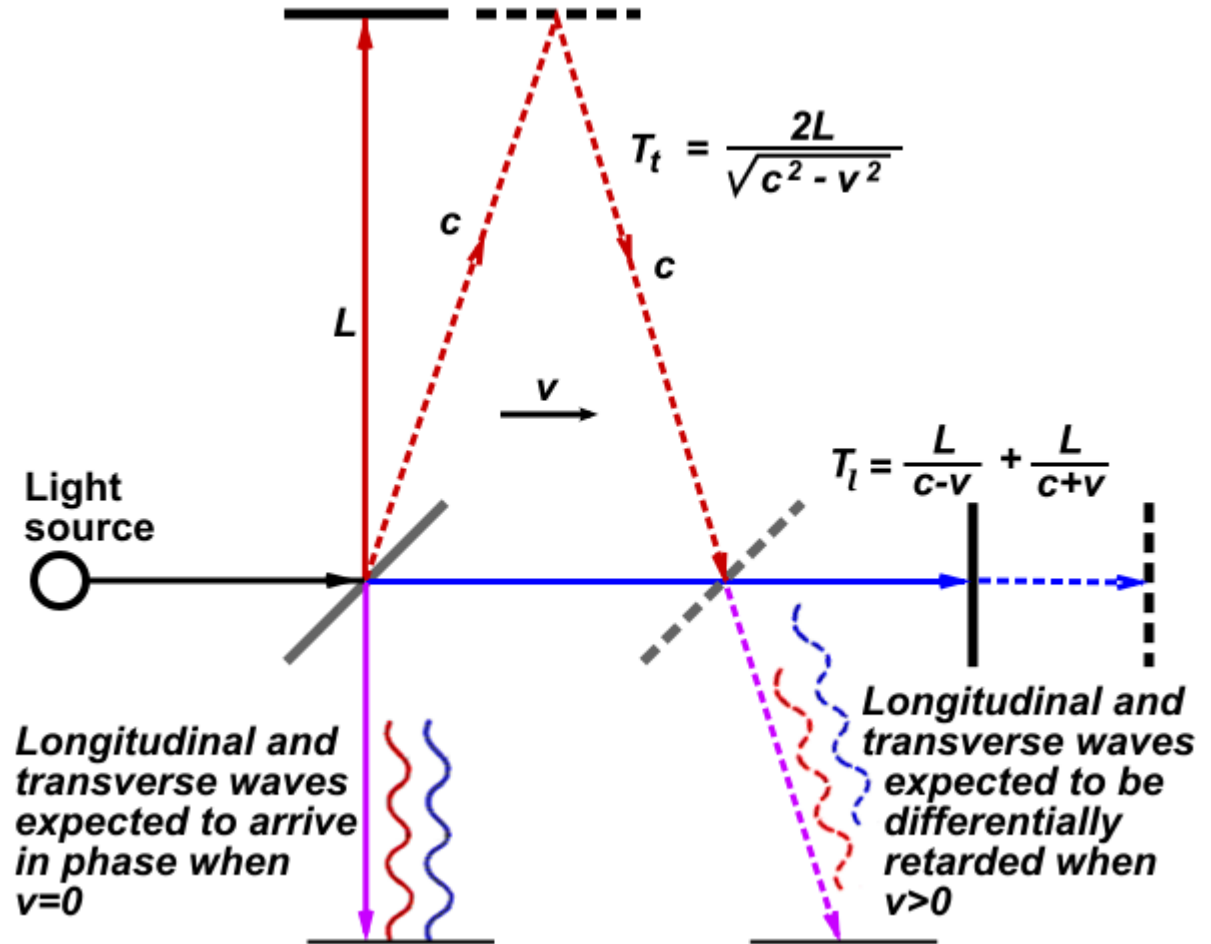
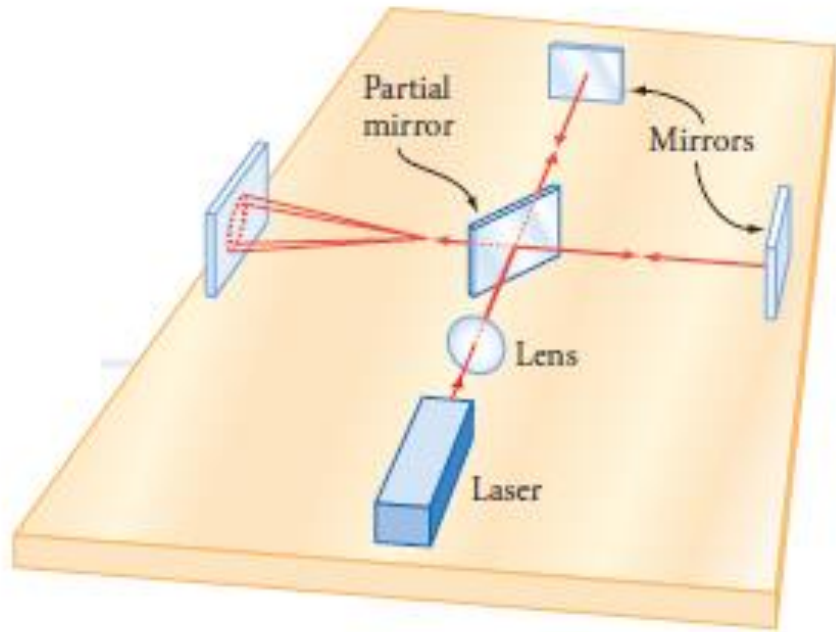


1.4 Angle Addition Postulate

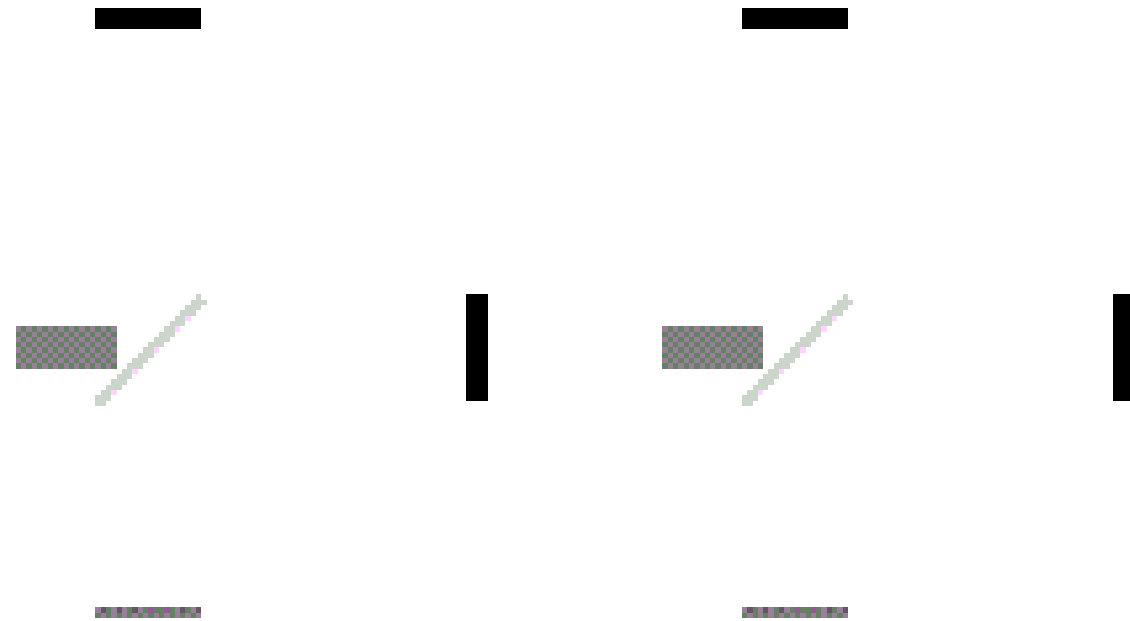
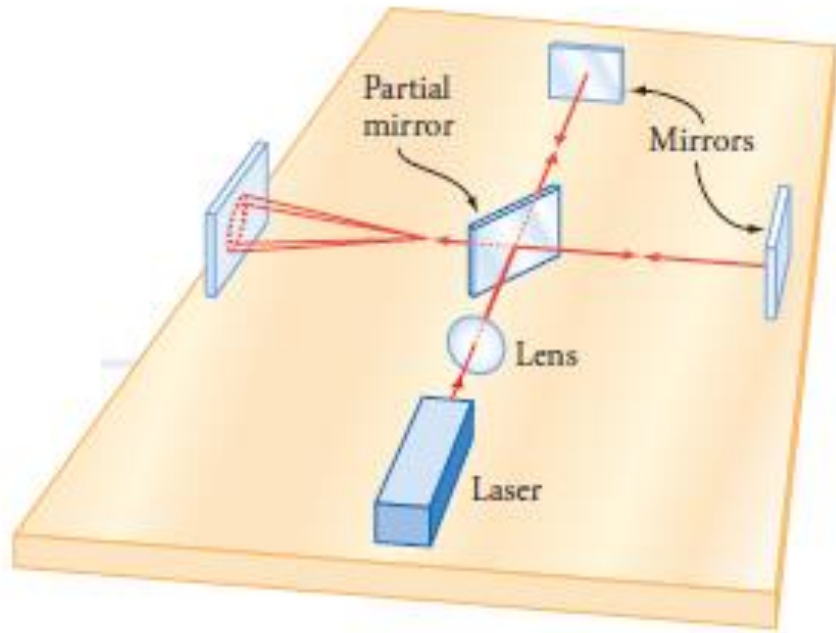


Albert A. Michelson used the concept of angle bisectors and lasers to try to find the absolute speed of the Earth through space in what is now called the “most famous failed experiment”. It had the most precise instruments at the time. The speed of light was calculated and it helped pave the way for Einstein, planting the seed to the theory of relativity

1.4 Angle Addition Postulate



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