

## Review: Triangles

All Triangles have $\mathbf{3}$ sides.


For $\triangle A B C$ below, the three sides are:


All Triangles have $\mathbf{3}$ interior angles.


## Review: Triangles

All Triangles have 3 vertices. Forr $\triangle A B C$ :


The angles in the Triangle can be named as follows:


## Review: Triangles

Also, notice that:

$\overline{B C}$ is opposite $\angle A$

$\overline{A B}$ is opposite $\angle B C A$

## Review: Angles in Triangles

For all triangles, the sum of the interior angles is $180^{\circ}$. So, for $\triangle A B C$,


$$
\angle A+\angle B+\angle C=180^{\circ}
$$

## Review: Angles in Triangles (Example)

Given $\triangle A B C$ below, determine the measure of $\angle C$

$$
\begin{gathered}
\angle A=60^{\circ} \\
\angle B=90^{\circ} \\
60^{\circ}+90^{\circ}+\angle C=180^{\circ} \\
150^{\circ}+\angle C=180^{\circ} \\
\angle C=180^{\circ}-150^{\circ} \\
\text { So, } \angle C=30^{\circ}
\end{gathered}
$$

## Review: Side Lengths in Triangles

For all triangles, the sum of the two side lengths must always be greater than the third side.

## Review: Side Lengths in Triangles (Example)

ks.


$$
\begin{aligned}
m \overline{A B}+m \overline{B C} & >m \overline{A C} \\
6 \mathrm{~cm}+8 \mathrm{~cm} & >10 \mathrm{~cm} \\
14 \mathrm{~cm} & >10 \mathrm{~cm}
\end{aligned}
$$

14 cm is bigger than 10 cm

## Constructing a Triangle

You can construct a Triangle if you are given the following:
Scenario 1: All three sides of the triangle
Scenario 2: Two side lengths and the angle between those sides
Scenario 3: Two angles and the side length between those angles

## Example 1: Scenario 1

Construct $\triangle \mathrm{ABC}$ according to the following information.

$$
\begin{aligned}
& m \overline{A B}=3.5 \mathrm{~cm} \\
& m \overline{B C}=4.5 \mathrm{~cm} \\
& m \overline{A C}=5 \mathrm{~cm}
\end{aligned}
$$

First, we will use $m \overline{A C}=\mathbf{5 c m}$ to be the base of $\triangle A B C$
$\stackrel{C}{A} \quad \mathrm{~cm}$

## Example 1 - Continued

Since $m \overline{A B}=\mathbf{3 . 5} \mathbf{c m}$, make an arc from point A with your compass that has a radius of 3.5 cm


Next, since $m \overline{B C}=\mathbf{4 . 5} \mathbf{c m}$, make an arc from point $C$ with your compass that has a radius of $\mathbf{4 . 5 \mathrm { cm }}$


## Example 1 - continued

Place point B where the two arcs meet.


Finally connect point $A$ to point $B$ and point $B$ to point C.


## Scenario 2: Example 2

Construct $\triangle \mathrm{ABC}$ according to the following information.

$$
\begin{aligned}
m \overline{B C} & =4.4 \mathrm{~cm} \\
m \overline{A C} & =3.7 \mathrm{~cm} \\
\angle C & =35^{\circ}
\end{aligned}
$$

First, we will use $m \overline{B C}=\mathbf{4 . 4} \mathbf{c m}$ to be the base of $\triangle A B C$


## Example 2: Continued

Next, use a protractor to construct $\angle \mathrm{C}=35^{\circ}$


Next, place point $\mathbf{A} \mathbf{3 . 7 c m}$ from point $\mathbf{C}$ on the new line that we drew.


## Example 2: Continued

Finally, connect point A to point B.


This is $\triangle \mathrm{ABC}$.

## Scenario 3: Example 3

Construct triangle ABC according to the following information:
$\mathrm{mAB}=4.8 \mathrm{~cm}$
$\angle A=20^{\circ}$
$\angle B=30^{\circ}$
Can we find the measurement of $\angle \mathrm{C}$ ? How?

## Example 3: Continued

First, we will use $m \overline{A B}=4.8 \mathrm{~cm}$ to be the base of $\triangle \mathrm{ABC}$


Next, use a protractor to construct $\angle \mathrm{A}=20^{\circ}$


Place point C where the two lines meet.


## Example 3: Continued

Finally, draw $\triangle \mathrm{ABC}$


