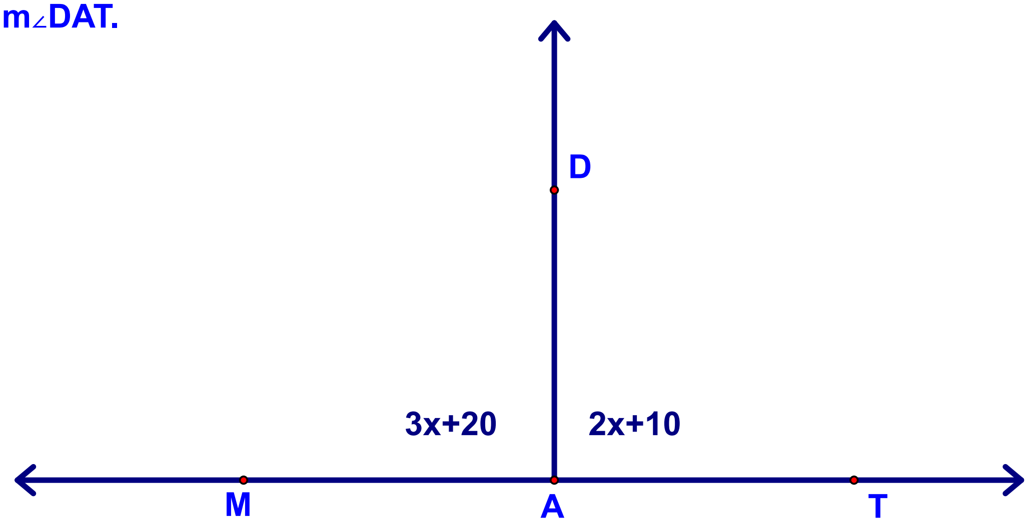
Collinearity, Between, and Assumptions - Lesson 1-3

Here's a warmup!

Find m∠DAT.

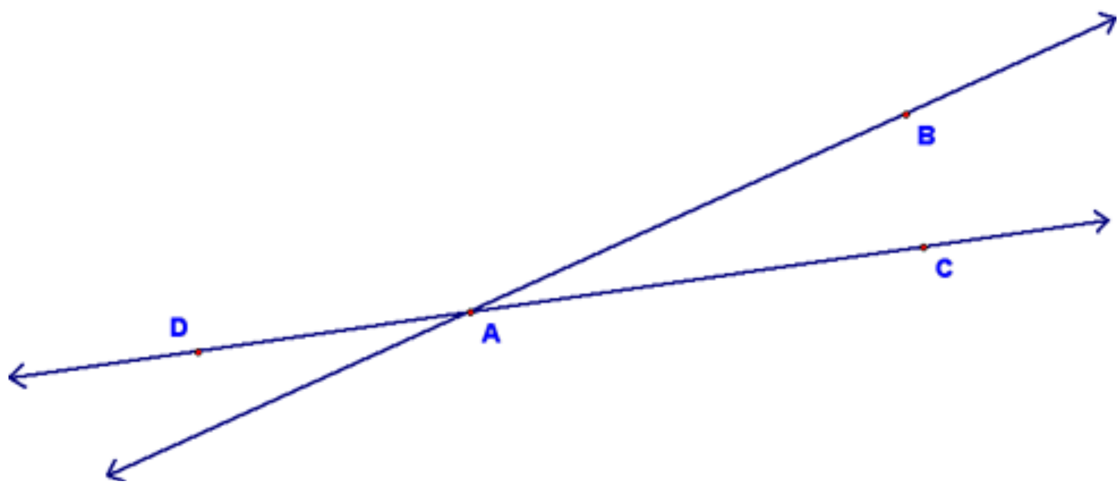


Let's begin today by covering the concept of collinear and noncollinear points. We'll also talk about what it means for a point to be between two other points.

Collinear points **are points that lie on the same line.**

Noncollinear points **are points that do not lie on the same line.**

In order for a point to be between two other points, all three must be collinear.



Now, there are only two possibilities given three points...one that determines a triangle and one that doesn't. This should allow you to determine a range of values for the length of third side of a triangle given the length of the other two:

For any three points, there are only two possibilities:

1. **They are collinear (one point is between the other two and two of the distances add up to the third).**

2. **They are noncollinear (the three points determine a triangle).**

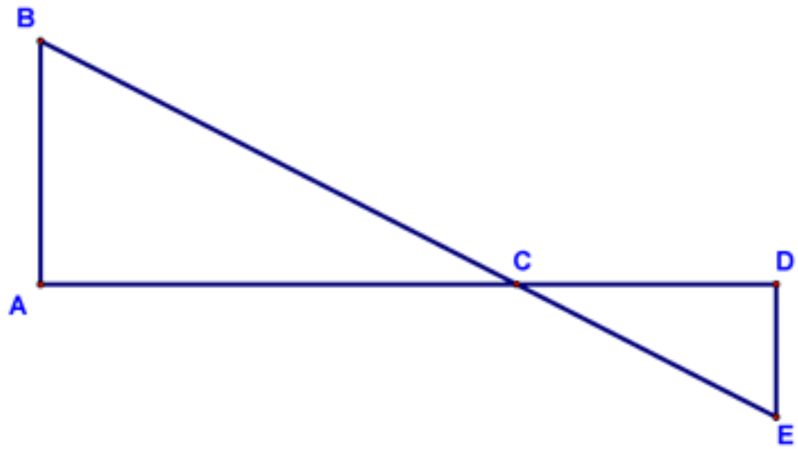
Given this, what can we say about the sum of the lengths of any two sides of a triangle?

Here are the things we can assume from a diagram and those we can't:

How to Interpret a Diagram

You should assume:	You should not assume:
Straight lines and angles	Right angles
Collinearity of points	Congruent segments
Betweeness of points	Congruent angles
Relative positions of points	Relative sizes of segments and angles

And here's an example:



Some things we can assume:	*Some things we can not assume:*
$\overleftrightarrow{ACD}$ & $\overleftrightarrow{BCE}$ are straight lines.	$\angle BAC$ is a right angle.
$\angle ACD$ & $\angle BCE$ are straight angles.	$\overline{CD} \cong \overline{DE}$.
C, D, E are noncollinear.	$\angle B \cong \angle E$.
C is between B & E.	$\angle CDE$ is an obtuse angle.
E is to the right of A.	$\overline{BC}$ is longer than $\overline{CE}$.