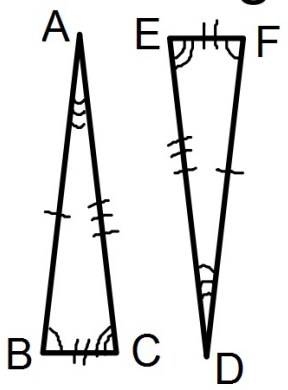
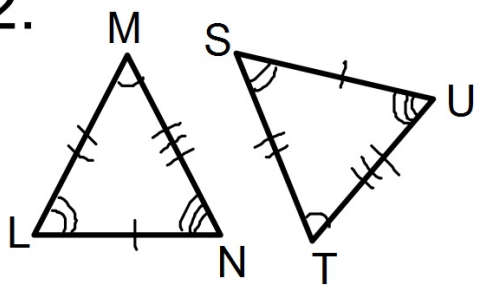
# Bellwork

Write a congruence statement for each of the following:

1. 


2. 

# What is a Proof?

Definitions

Proof: A logical argument showing a statement is true.

2 Column Proof: A t-chart that has a list of statements on the left side, and the reason for them on the right side.

Paragraph Proof: A paragraph that tells how your statements and reasons instead of using a 2 column proof.

# Essential Properties

Reflexive Property:

Real Numbers

For any a, $a = a$

Segment Lengths

For any AB, $AB = AB$

Angle Measurements

For any $\angle A$, $m\angle A = m\angle A$

# Essential Properties Cont.

Symmetric Property:

Real Numbers

For any real number a and b,

If a = b, then b = a

Segment Lengths

If AB = CD, then CD = AB

Angle Measurements

If m $\angle$A = m $\angle$B, then m $\angle$ B = m $\angle$A

# Essential Properties Cont.

Transitive Property:

Real Numbers

If a = b and b = c, then a = c

Segment Lengths

If AB = CD and CD = EF, then AB = EF

Angle Measurements

If m $\angle$A = m $\angle$B and m $\angle$B = m $\angle$C, then m $\angle$A = m $\angle$C

# Making a Two-Column Proof

| Statements | Reasons |
| --- | --- |
| What can you use?<br>Whatever you can provide a reason for.<br><br>Need to show what is being asked for. | What can you use?<br>Definitions<br>Theorems<br>Postulates<br>Properties |

# Proving Triangle Congruence

Throughout this unit we will be focusing on several methods of proving two triangles are congruent including:

1. Side-Side-Side (SSS)
   [This is the main focus of this lesson]
2. Side-Angle Side (SAS )
3. Hypotenuse Leg (HL)
4. Angle-Side-Angle (ASA)
5. Angle-Angle-Side (AAS)

# Side-Side-Side

Side-Side-Side (SSS) Congruence Postulate:

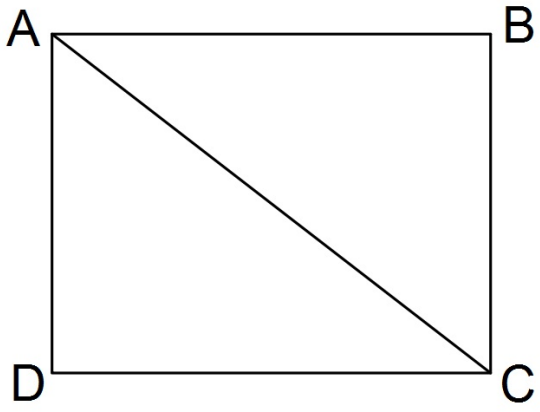
**IF** 3 sides of one triangle are congruent to 3 sides of another triangle,

**THEN** the two triangles are congruent.

# Example

1. **Given:** ABCD is a square.

   **Prove:** $\triangle ACD \cong \triangle CAB$



# Example

2. **Given:** ABD is an Isosceles Triangle
with base BD
C is the midpoint of BD

**Prove:** $\triangle ABC \cong \triangle ADC$