

Geometry / Special Angles
Mathematics and Millennials – 6th

Review of Angles

There are (4) Basic Single Angles:
Acute, Right, Obtuse, Straight

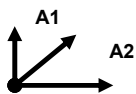
There are (3) Basic Pairs of Angles:
Complementary, Supplementary, Vertical

Special Angles: Interior & Exterior to Parallel Lines

Special Angles: Interior & Exterior to Triangles.

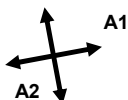
Pairs of Angles

Complementary



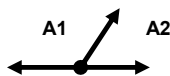
$A1 + A2 = 90^\circ$
Adjacent Angles

Vertical



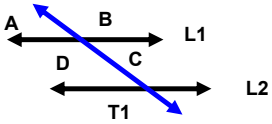
Two Pairs of
Opposite & Equal

Supplementary



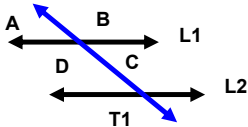
$A1 + A2 = 180^\circ$
Adjacent Angles

Special Angles - 1



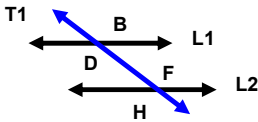
Line 1 (L1) and Line 2 (L2) are **Parallel Lines**.
(T1) is a transversal line. T1 is the blue line.
Angles: **A,C** & **B,D** are **Vertical Angles**.

Special Angles - 2



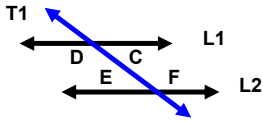
Line 1 (L1) and Line 2 (L2) are **Parallel Lines**.
(T1) is a transversal line. T1 is the blue line.
A,B **D,C** & **B,C** **A,D** are **Supplementary Angles**.

Special Angles - 3



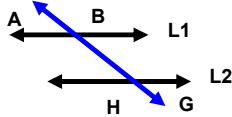
(L1) & (L2) are **Parallel Lines**. (T1) is **Transversal!**
Angles: **B,F** & **D,H** are **Corresponding Angles**.
Corresponding Angles are Equal & Matching Angles.

Special Angles - 4



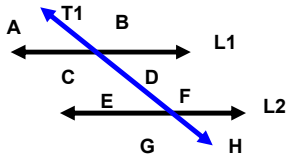
(L1) & (L2) are Parallel Lines. (T1) is Transversal!
 Angles: C,E & D,F are **Alternate Interior Angles**.
 Alternate Interior Angles are Equal **and** Inside Angles.

Special Angles - 5



(L1) & (L2) are Parallel Lines. (T1) is Transversal
 Angles: A,G & B,H are **Alternate Exterior Angles**.
 Alternate Exterior Angles are Equal **&** Outside Angles.

Special Angles - 6



Let's apply fundamental knowledge learned!

B,C = ? E,G = ? B,F = ? C,F = ? B,G = ?

Angles of a Triangle

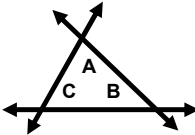
Sum of Interior Angles of any triangle is equal to 180° !

Sum of the Interior Angles $\angle A + \angle B + \angle C = 180^\circ$

Many such unproven statements have been set forth!

How are such bold statements proved or sustained?

Interior Angles - 1

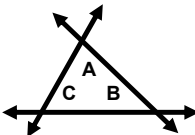


The Sum of Interior Angles of any Triangle equals 180° !

Sum of the Interior Angles $\angle A + \angle B + \angle C = 180^\circ$

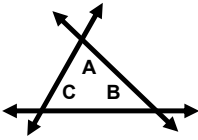
What evidence would prove Interior Angles = 180° ?

Interior Angles - 2



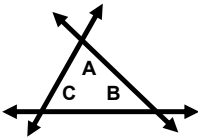
Maybe drawing a large triangle on a piece of paper and measure angles A,B,C then add them together? Does this prove? Would doing it over & over again?

Interior Angles - 3



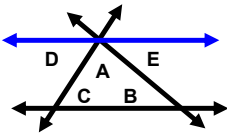
Doing it over & over is convincing! **More is better!**
What type of reasoning was used for this conclusion?
Deductive or Inductive? Which is better reasoning?

Interior Angles - 4



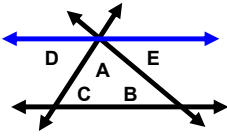
Maybe we can try **another type** of experiment!
What alternate evidence would **validate the statement**:
The **Sum of the Interior Angles** equal 180° ?

Interior Angles - 5



Construct a Parallel line through the top of the triangle
then compare \angle s D,A,E to \angle s A,B,C. **Compare sums?**
Is it needed to do **over & over** again? What type proof?

Interior Angles - 6



If $\angle D, A, E = 180^\circ$ & $D=C$ & $E=B$ then $\angle C, A, B = 180^\circ$
What type of reasoning was used for this conclusion?
Deductive or Inductive? Which is better reasoning?

Conclusion
