Handout #9. November 17, 2019

Solve equations by substitution:

Example: $(y+5) \div 3 = 7$

$substitution: y + 5 = z$

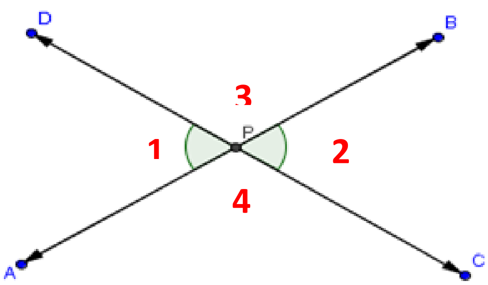
$z \div 3 = 7$

$z = 7 \times 3 = 21$

$y + 5 = 21$

$y = 21 - 5 = 16$ *Check:* $(16 + 5) \div 3 = 7$

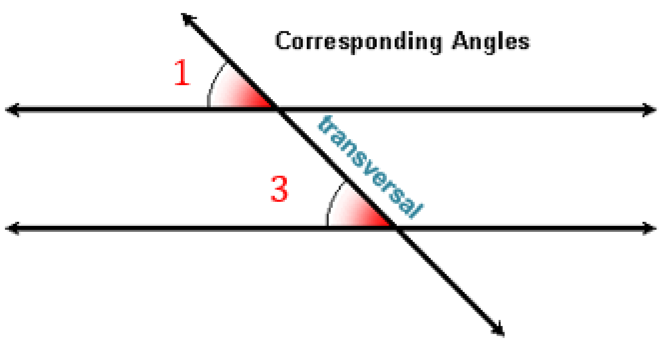
Geometry



Remember vertical angles?

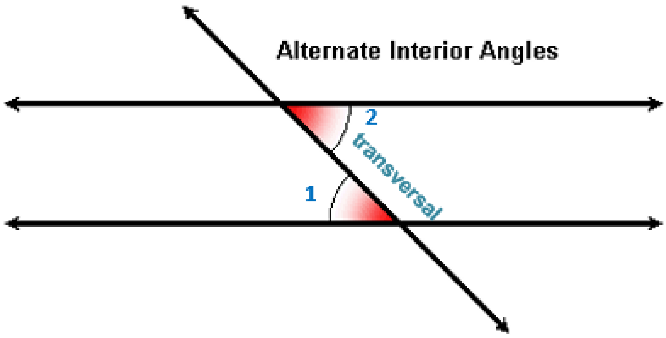
$\angle 1 = \angle 2$

$\angle 3 = \angle 4$



- A **transversal** is a **line** that passes through two **lines** in the same plane at two distinct points.
- The angles in matching corners are called **Corresponding Angles**.
- When the lines are parallel, the **Corresponding Angles** are equal

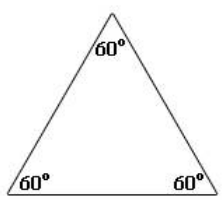
$\angle 1 = \angle 3$



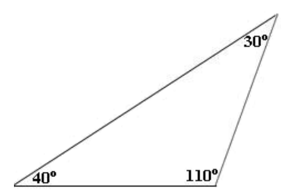
• The **angles** that are formed on opposite sides of the transversal and inside the two lines are **Alternate Interior Angles**.
• When the lines are parallel, the **Alternate Interior Angles** are equal.

$$\angle 1 = \angle 2$$

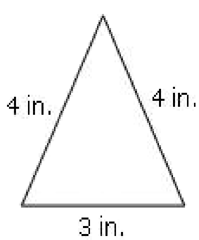
Triangles:



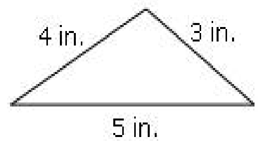
Acute triangle has all acute angles, not only 60°



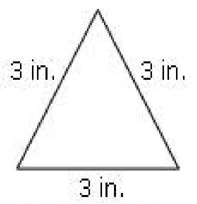
Obtuse triangle has an obtuse angle.



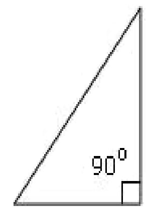
Isosceles triangle has two equal sides



Scalene triangle that has three unequal sides



Equilateral triangle has three equal sides

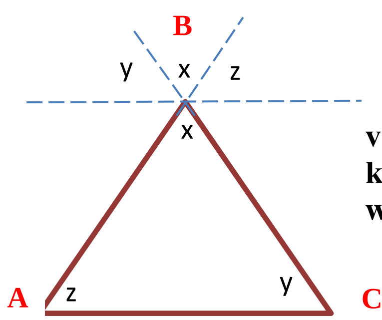


Right triangle has a right angle.

Triangle properties:

Sum of interior angles of any triangle (***(∀△)*** is 180°.
$\angle x + \angle y + \angle z = 180°$

Proof:



We prove it by using our knowledge of vertical angles and corresponding angles and the knowledge that a straight line is a straight angle which is *180°*

In any triangle ***(∀△)*** the sum of 2 sides is always grater then the third.
(∀△ ABC, AB+BC > AC)

In **any triangle**,

- the **largest** interior **angle** is **opposite** the **largest side**.
- the **smallest** interior **angle** is **opposite** the **smallest side**
- the middle-sized interior angle is **opposite** the middle-sized side