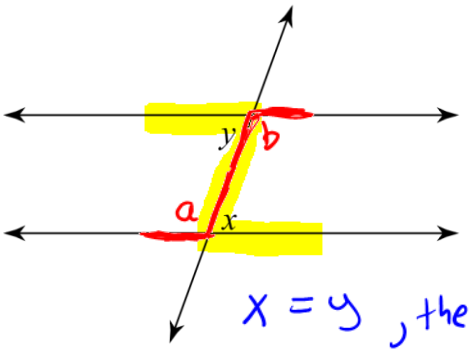
Math 9 – Plane Geometry Name: Mr. V

Lesson #3: Parallel Lines Date: June 11

Learning Goal: We are learning to identify angles that are based on two parallel lines intersected by a third line. We are learning to use these rules to find unknown angles.

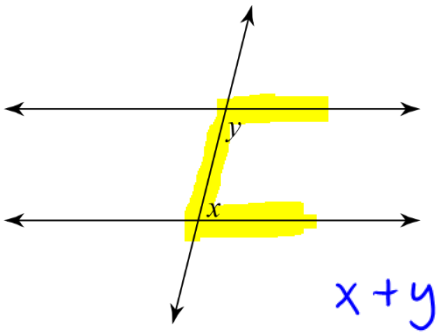
In our final lesson of the year (yikes), we will look at the properties of two parallel lines intersected by a third line. There are three theorems, or patterns, that exist within two parallel lines. Keep in mind the theorems of SAT and OAT in this lesson.

1. Alternate Angles – called the "Z" rule



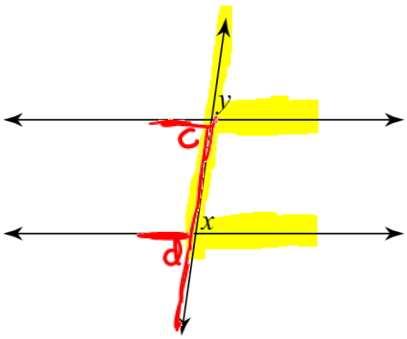
$x = y$, the alternate angles are equal

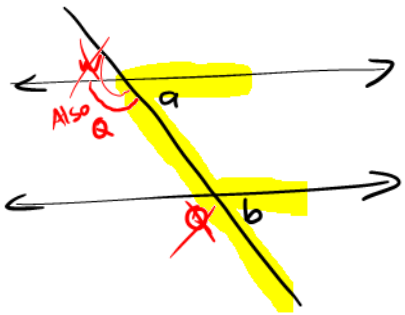
2. Co-interior Angles – called the "C" rule



$x + y = 180°$

3. Corresponding Angles – called the "F" rule

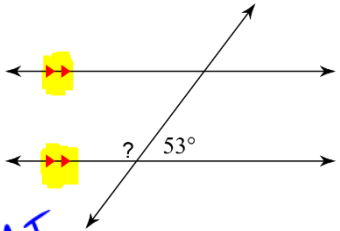




$x = y$

Example 1: Find the measure of the indicated angle (?). State your reasoning.

a)

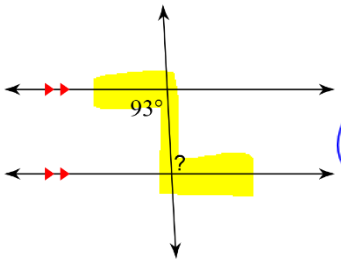


S.A.T

$? = 180 - 53$

$? = 127°$

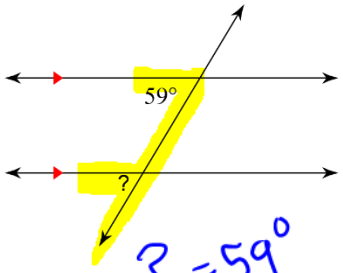
b)



Z-rule

$? = 93°$

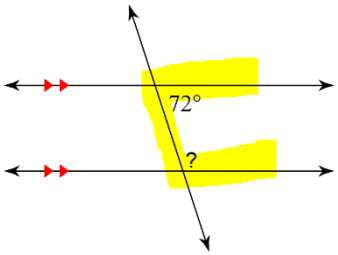
c)



"F rule"

? = 59°

d)



"C rule"

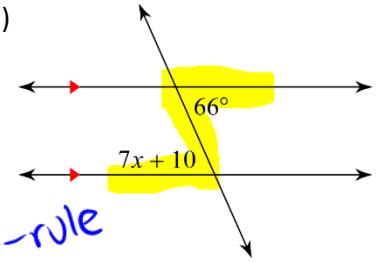
~~? = 72°~~

? + 72 = 180

? = 108°

Example 2: Determine the value of *x*. State your reasonings.

a)



Z-rule

7x + 10 = 66

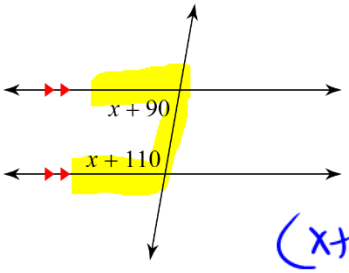
−10 −10

7x = 56

7 7

x = 8

b)



"C rule"

(x+90) + (x+110) = 180

2x + 200 = 180

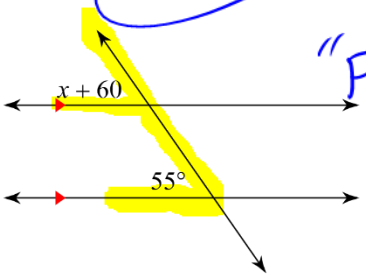
−200 −200

2x = −20

2 2

x = −10

c)



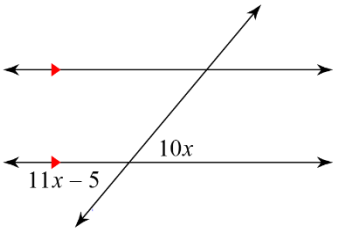
"F rule"

(x + 60) = 55°

−60 −60

x = −5

d)



O.A.T

11x − 5 = 10x

−10x −10x

1x − 5 = 0

+5 +5

x = 5

Success Criteria

- I can identify the Z, C, and F patterns in parallel lines intersected by a third line
- I can use these patterns to identify the values of unknown angles