Properties of parallel lines: a review

Sunday, 20 October 2019 9:48 am

★ By the end of the lesson I would hope that you have an understanding (and be able to apply to questions) the following concepts:

- What alternate angles are
- What corresponding angles are
- What co-interior angles are
- What vertically opposite angles are
- What complementary and supplementary angles are
- What it means for lines to be parallel

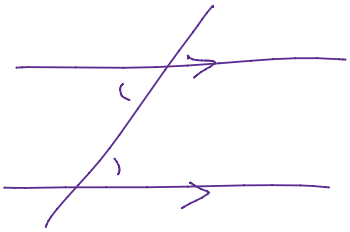
RECAP:

This is the first lesson of this module and so there isn't really much to recap from the Further Maths course, but there is a lot to recap from previous years learning! This has been covered in Years 8 and onwards in most Maths curriculum … so let's recap that learning before moving on.

The MaffsGuru Approach

I think of the above rules as one word:

FUZX

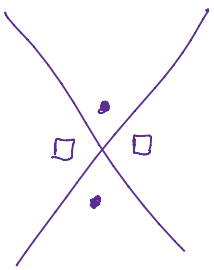


Yup!

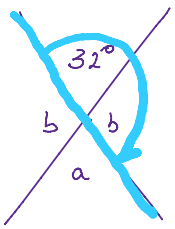
Let's start with them one by one.

The "X" Rule

This is actually the Vertically Opposite Rule







$360° - 32 - 32$

$= \frac{296°}{2}$

$= 148°$

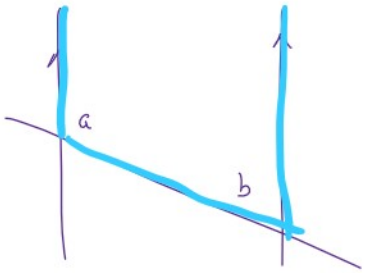
$a = 32°$

$b = 180° - 32°$

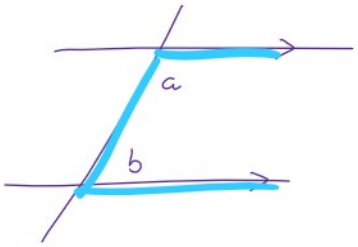
$= 148°$

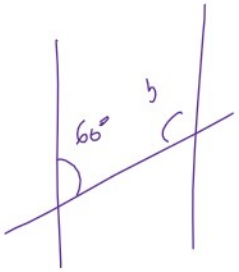
The "U" Rule

This is actually the Co-interior angles Rule



$a + b = 180°$



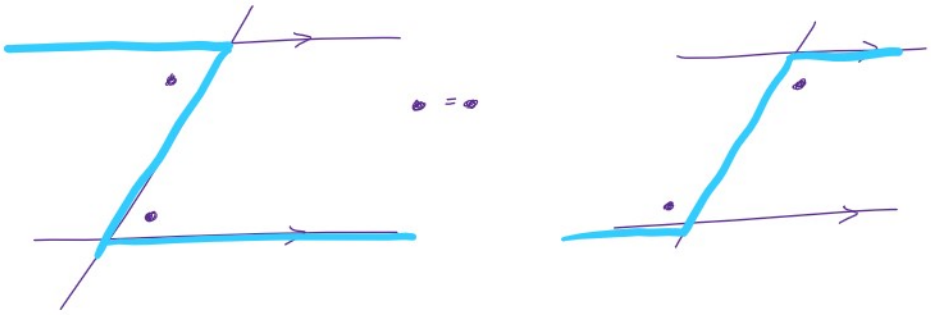


$b = 180° - 60°$

$= 120°$

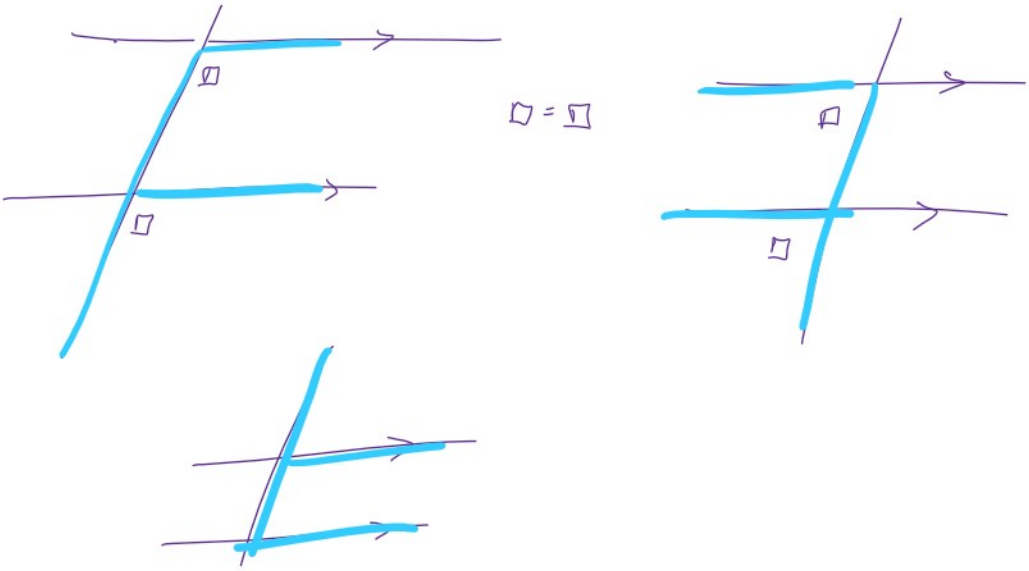
The "Z" Rule

This is actually the Alternate angles rule



The "F" Rule

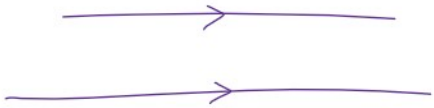
This is actually the Corresponding Angles rule



Other angles language ...

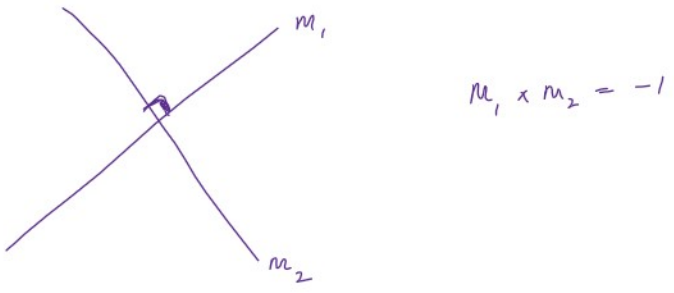
Parallel

Parallel lines are lines which have the same gradient. As such, they will never meet.



Perpendicular

Perpendicular lines are two lines which cross at right angles to each other.
The gradients of the two lines are linked by a simple rule

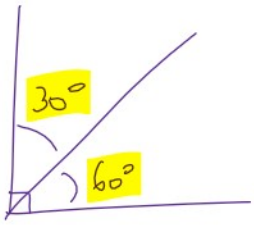


Complementary Angles

These are angles which add to 90°

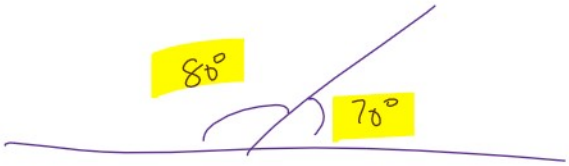
Complementary Angles

These are angles which add to 90°



Supplementary angles

These are angles which add to 180°

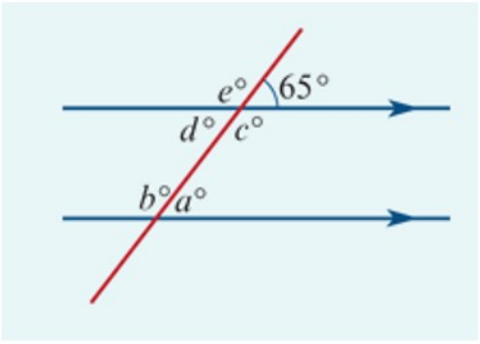


Examples of how to use the rules

The following examples are used, with permission, from the Cambridge Further Mathematics Units 3 and 4 textbook.

Example 1

Find the values of the pronumerals in the diagram shown



FL12X

$a = 180° - 115° = 65°$

$b = 115°$

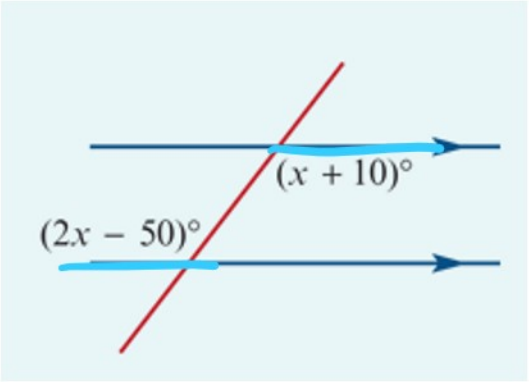
$c = 115°$

$d = 65°$

$e = 180° - 65° = 115°$

Example 2

Find the values of the pronumerals in the diagram shown



$x + 10 = 2x - 50$

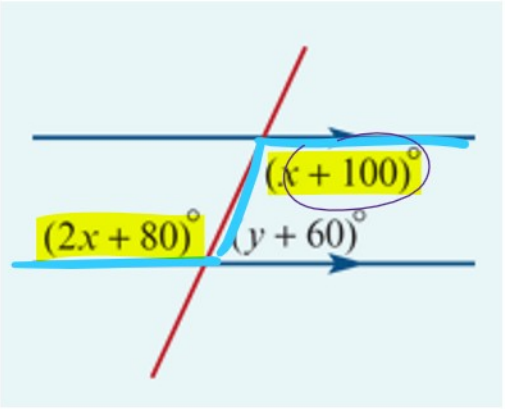
$50 + 10 = 2x - x$

$60 = x$

$x = 60°$

Example 3

Find the values of the pronumerals in the diagram shown



$2x + 80 = x + 100$

$2x - x = -80 + 100$

$x = 20$

$y + 60 + 120^\circ = 180^\circ$

$y + 180^\circ = 180^\circ$

$y = 0$

