2 Parallel Lines

October 4, 2020   5:08 PM
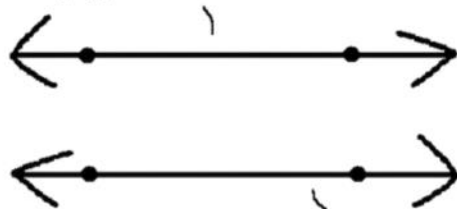
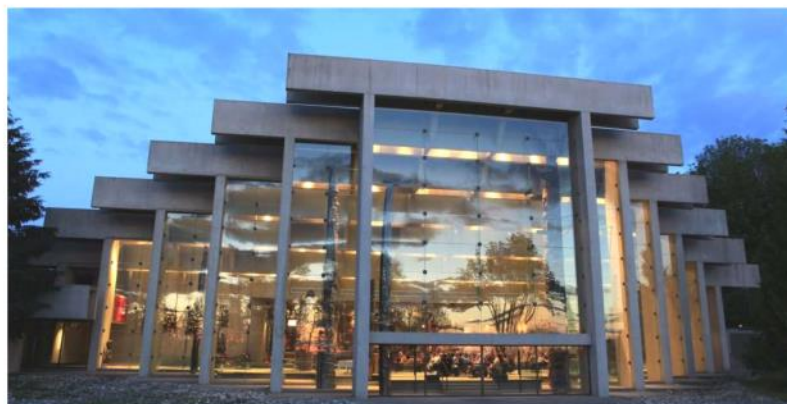A mathematical tragedy: two parallel lines fall in love
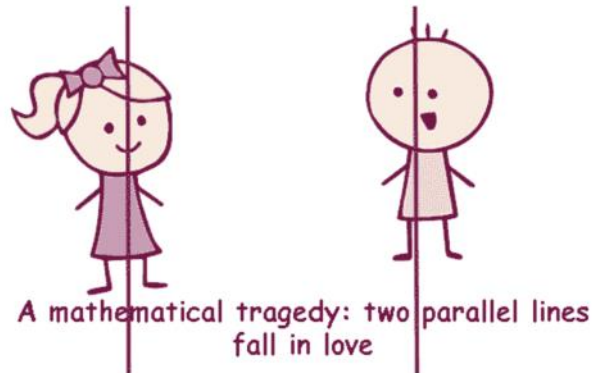
The love shared by Parallel Lines......
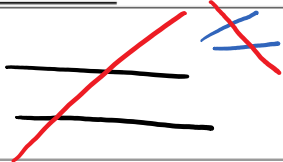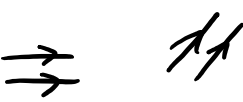......is a sweet, sarcastic one...
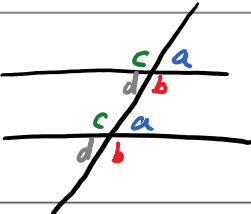
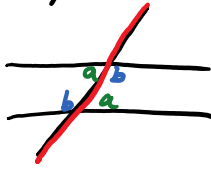

I could stay by your side forever.
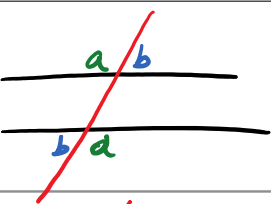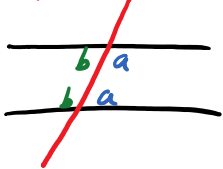
Like you have a choice.

Ms. Kamber

UBC Museum of Anthropology

## Relationships between Angles and Lines

Transversal		a line that intersects (crosses) 2 or more line
Parallel Lines Symbol: ∦		lines that never meet
Perpendicular Lines Symbol: ⊥	⌐ 90°	
Corresponding angles	c a / d b c a / d b	∠'s in the same relative place eg. "upper right"
Alternate interior angles on opposite sides of transversal inside the 2 lines	a b / b a	on opp. sides of transversal, both inside the 2 lines
Alternate exterior angles outside the 2 lines	a b / b a	
(**Interior** angles on the (Same Side) of the (Transversal (ISST)	b a / b a	

Vertically opp.
 a / b X b / a

Example 1: From the diagram, identify pairs of:
   A) Corresponding angles: ∠1 + ∠5, ∠2 + ∠6, ∠3 + ∠7, ∠4 + ∠8
   B) Alternate interior angles: ∠3 + 6 , ∠4 + 5
   C) Alternate exterior angles: ∠1 + 8 , ∠2 + ∠7
   D) Interior angles on the Same Side of the Transversal:
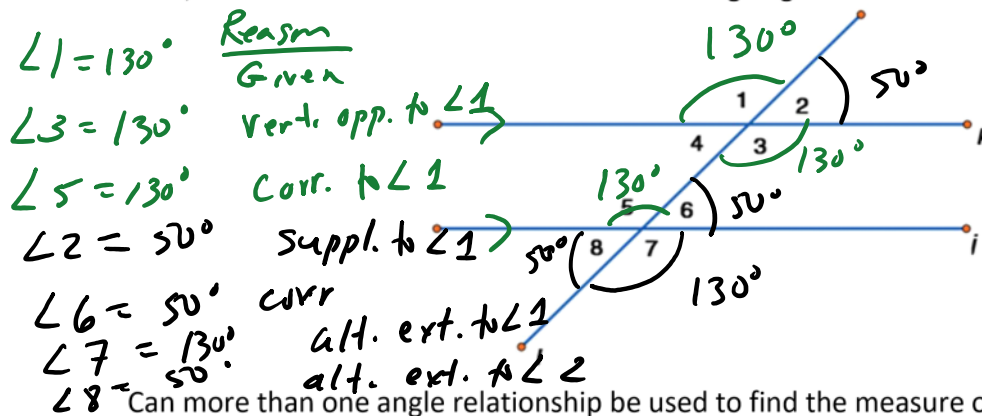   ∠3 + ∠5 , ∠4 + ∠6
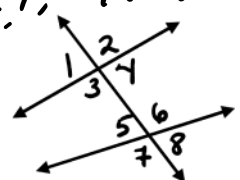
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If two lines are **parallel,** then:

- **Corresponding angles** are ___equal___ ("Equal" also means c_ongruent_.)
- **Alternate interior angles** are ___equal___
- **Alternate exterior angles** are ___equal___
- Interior angles on the same side of the transversal are ___supplementary___

$180°$

So to *prove* that 2 lines are___parallel___, you need to show any of the ___above___!

Example 2: Given that the horizontal lines are parallel and that angle 1 is equal to 130°, find the measurement of the other missing angles.

$\angle 1 = 130°$ $\underline{\text{Reason}}$
            Given

$\angle 3 = 130°$ vert. opp. to $\angle 1$

$\angle 5 = 130°$ Corr. to $\angle 1$

$\angle 2 = 50°$ suppl. to $\angle 1$

$\angle 6 = 50°$ corr

$\angle 7 = 130°$ alt. ext. to $\angle 1$

$\angle 8 = 50°$ alt. ext. to $\angle 2$
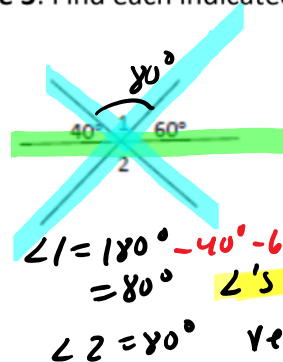
$130°$ $50°$ k

$130°$ $50°$ i

Can more than one angle relationship be used to find the measure of some of the angles? Explain using an example.

Yes!!

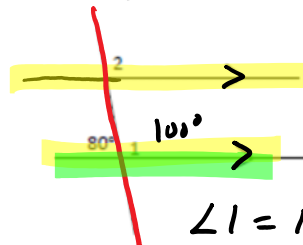**Example 3**: Find each indicated **angle**. For each one, state the **reason**:

a)

$80°$

$40°$ $60°$

$\angle 1 = 180° - 40° - 60°$
      $= 80°$ $\angle$'s on a line

$\angle 2 = 80°$ vertically opp.

b)

$80°$ $100°$

$\angle 1 = 180° - 80°$
     $= 100°$ suppl. $\angle$'s

$\angle 2 = 100°$ corr. $\angle$'s

Assignment:
- "Why did Orgo iron his 4-leaf clover?" (CC-12)
- "What is unusual about the new surgeon doll? (CC-13)
- Make up your own question involving ISST angles and solve it.

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