



James Madison
HIGH SCHOOL

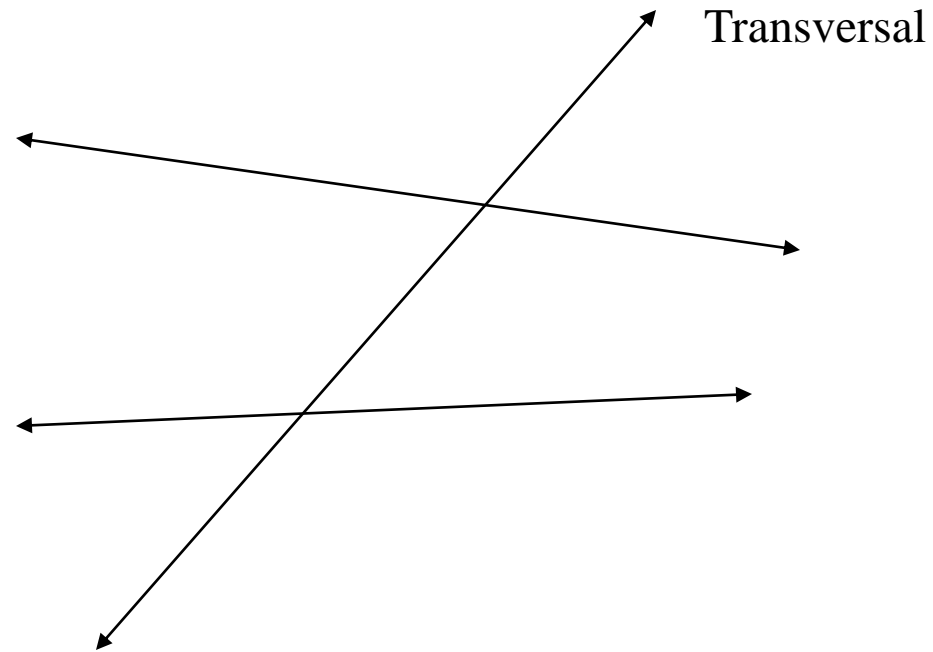
Properties of Parallel Lines



James Madison
HIGH SCHOOL

Properties of Parallel Lines

- Transversal: line that intersects two coplanar lines at two distinct points

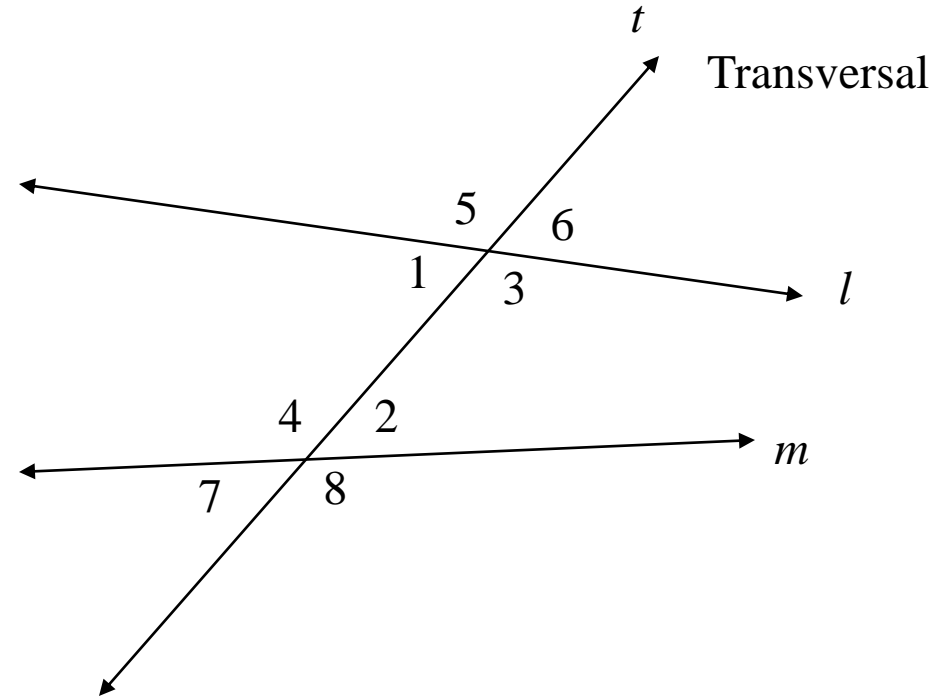




James Madison
HIGH SCHOOL

Properties of Parallel Lines

The pairs of angles formed have special names...



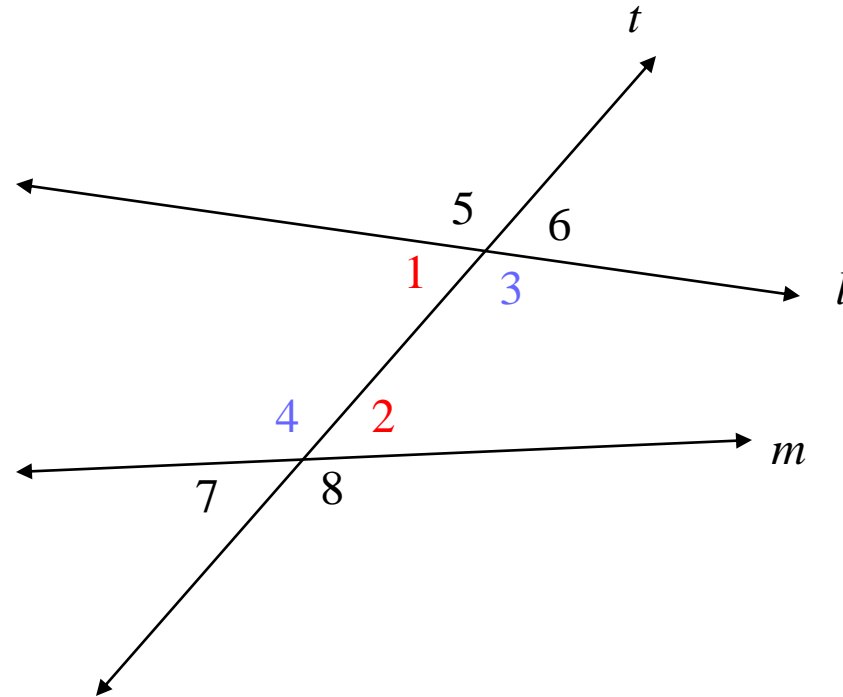


James Madison
HIGH SCHOOL

Alternate Interior Angles

$\angle 1$ and $\angle 2$

$\angle 3$ and $\angle 4$



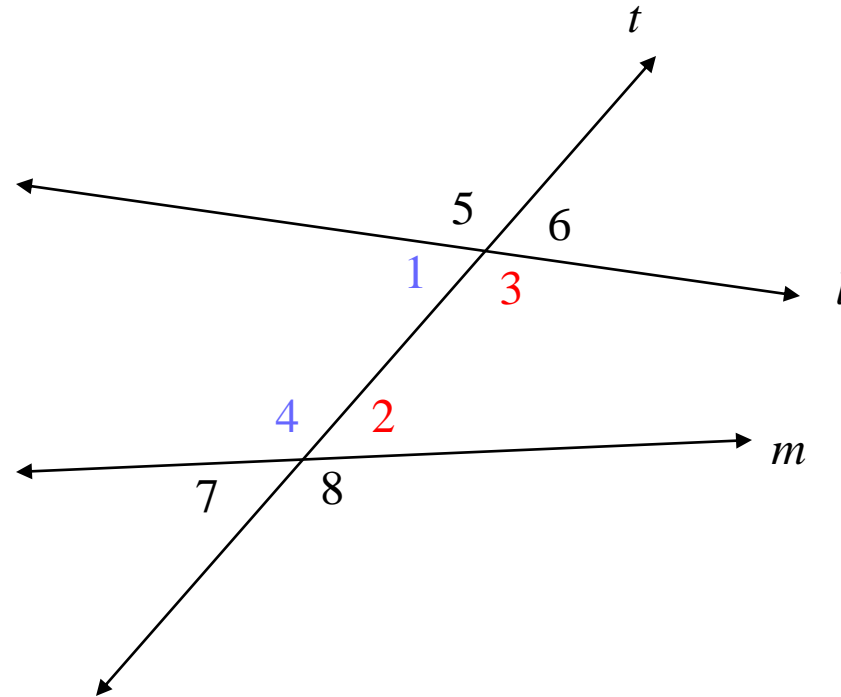


James Madison
HIGH SCHOOL

Same-side Interior Angles

$\angle 1$ and $\angle 4$

$\angle 2$ and $\angle 3$





James Madison
HIGH SCHOOL

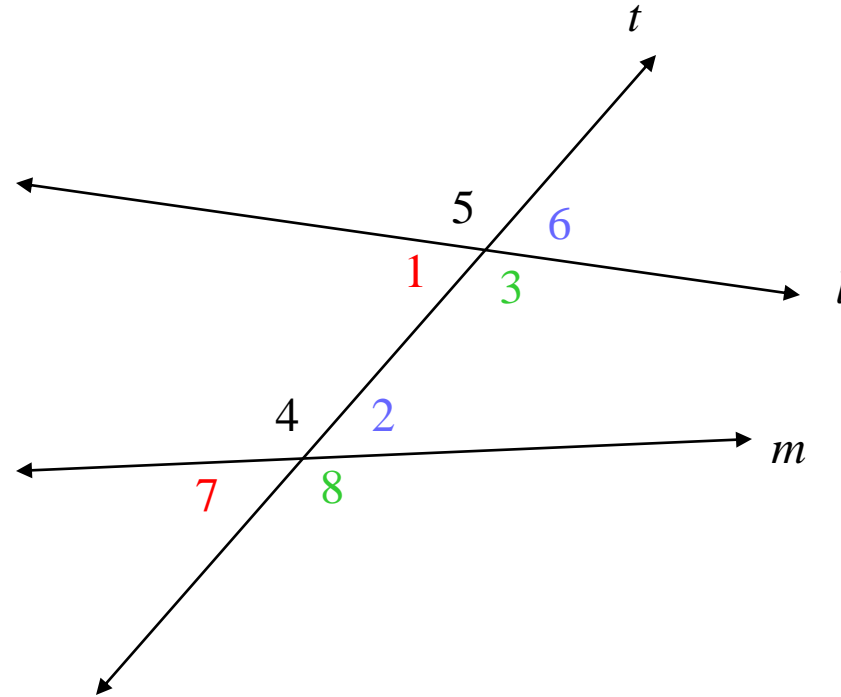
Corresponding Angles

$\angle 1$ and $\angle 7$

$\angle 2$ and $\angle 6$

$\angle 3$ and $\angle 8$

$\angle 4$ and $\angle 5$



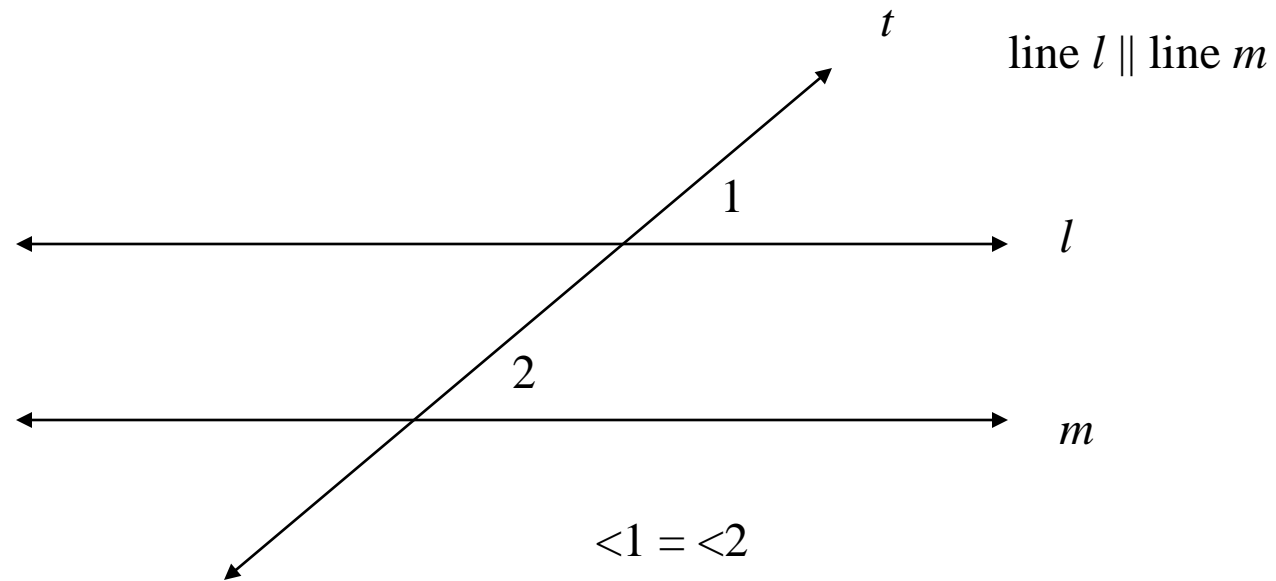


James Madison
HIGH SCHOOL

Properties of Parallel Lines

Postulate Corresponding Angles Postulate

If a transversal intersects two parallel lines, then corresponding angles are congruent



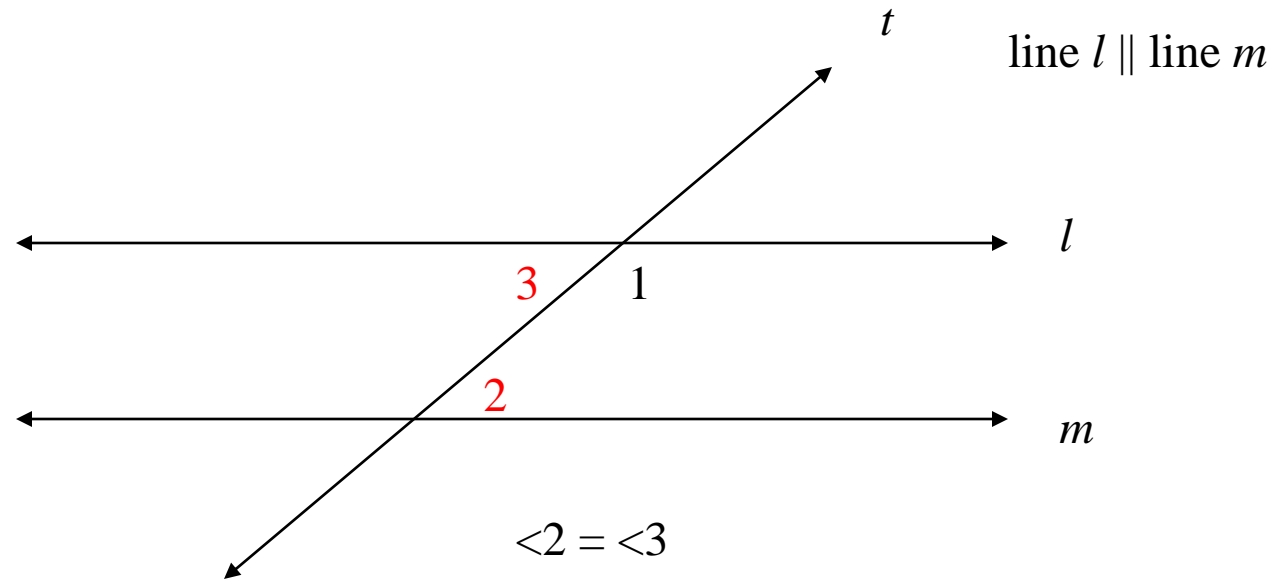


James Madison
HIGH SCHOOL

Properties of Parallel Lines

Theorem Alternate Interior Angles Theorem

If a transversal intersects two parallel lines, then alternate interior angles are congruent.



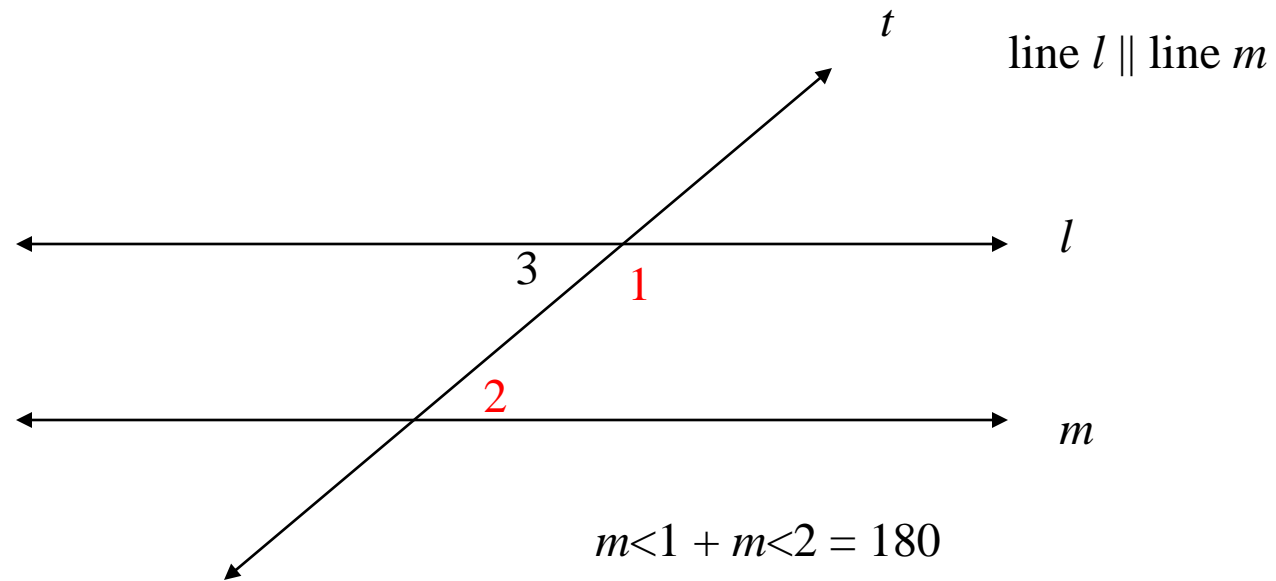


James Madison
HIGH SCHOOL

Properties of Parallel Lines

Theorem Same-Side Interior Angles Theorem

If a transversal intersects two parallel lines, then same-side interior angles are supplementary.



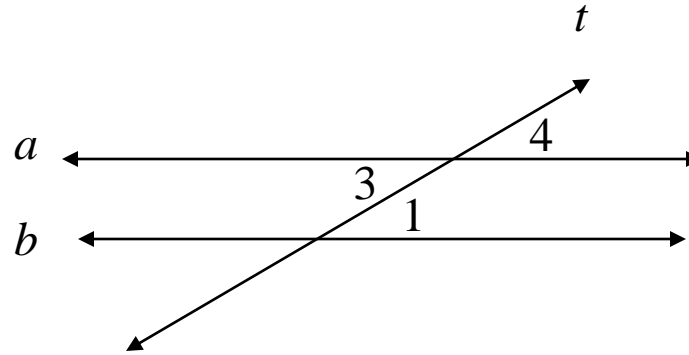


James Madison
HIGH SCHOOL

Two-Column Proof

Given: $a \parallel b$

Prove: $\angle 1 = \angle 3$



Statements

- 1.
- 2.
- 3.
- 4.

Reasons

- 1.
- 2.
- 3.
- 4.

* This proves why alternate interior angles are congruent *

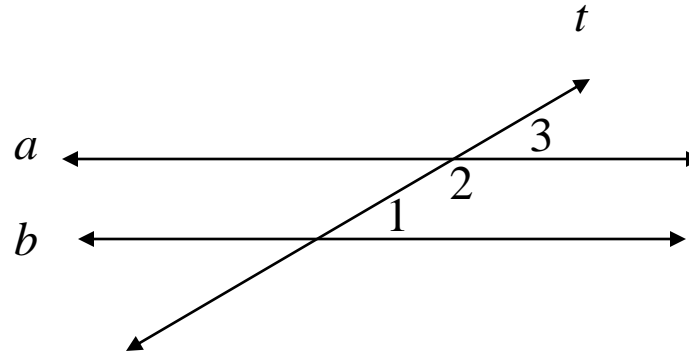


James Madison
HIGH SCHOOL

Two-Column Proof

Given: $a \parallel b$

Prove: $\angle 1$ and $\angle 2$ are
supplementary



Statements

- 1.
- 2.
- 3.
- 4.
- 5.

Reasons

- 1.
- 2.
- 3.
- 4.
- 5.



James Madison
HIGH SCHOOL

Finding Angle Measures

<1

<2

<3

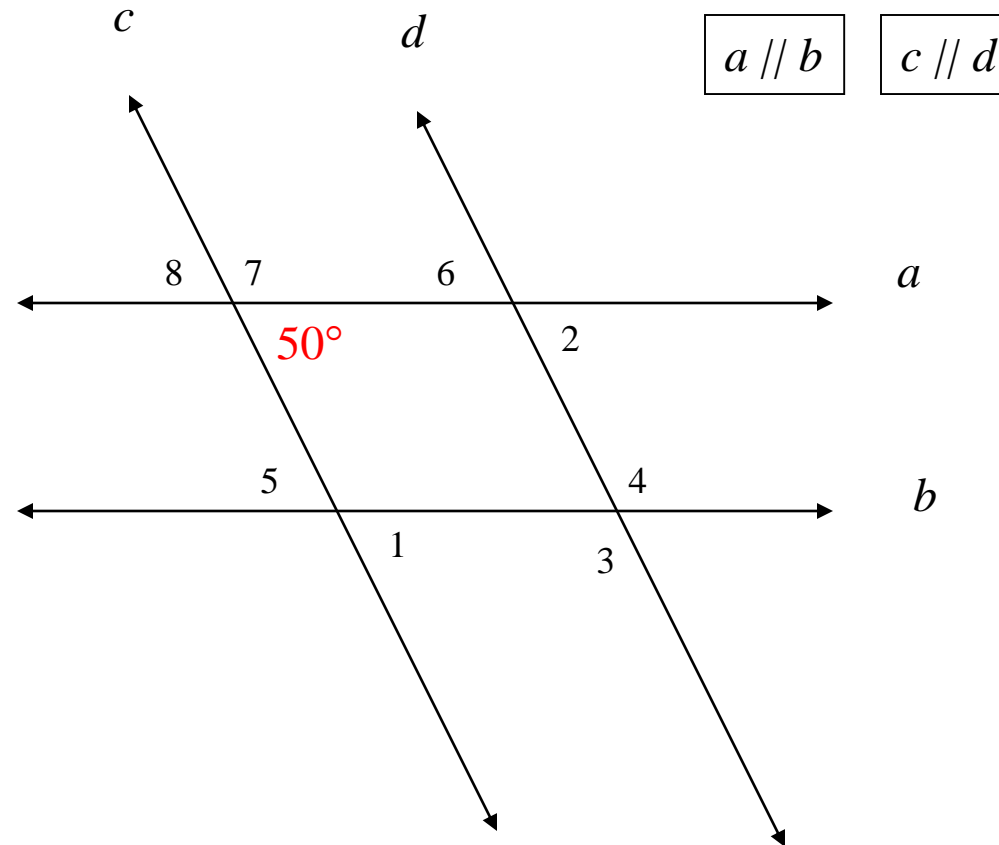
<4

<5

<6

<7

<8



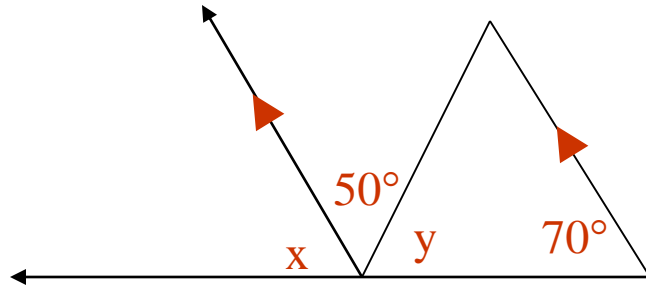
(1, 2, 4, 3, 8, 7, 5, 6)



James Madison
HIGH SCHOOL

Using Algebra to Find Angle Measures

Find the value of x and y .



$x =$

$y =$

