Geometry – Mr. Bo
Unit 2 – Day 3 Notes

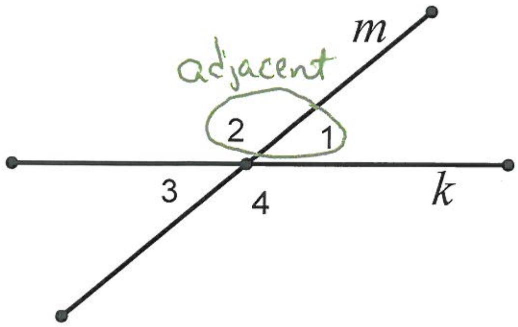
Name: Notes
Date: ______________

## Drawing Conclusions -
## Vertical, Supplementary, & Complementary Angles

**Definitions:**

Adjacent Angles: 2 <'s that share a side and vertex.

Non-Adjacent Angles: 2 <'s that either don't share a side or don't share a vertex.




Lines m and k intersect:

Which angles are adjacent?

<1 adj. to <2

Which angles are non-adjacent?

<1 and <3 are not adj.

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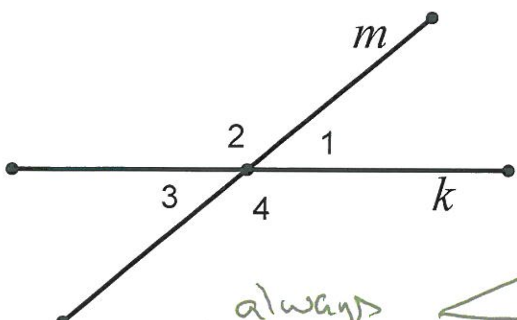
**Vertical Angles:** the non-adj <'s formed by 2 intersecting lines.

**Vertical Angles Theorem:** Vert. <'s are ≅.




always in this order.

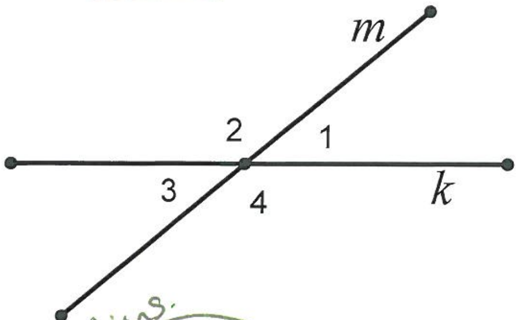
Given: Lines m & k intersect.

look for these in pictures.

| Statements | Reasons |
|---|---|
| *(Identify the Vert. ∠'s)*<br>1. <1 vert <3 | ① non-adj <'s formed by int. lines are vertical. |
| *(State they are ≅)*<br>2. <1 ≅ <3 | ② Vert. <'s are ≅. |

**Supplementary Angles:** <'s that add to 180°

**Supplementary Angles Theorem:** the adj. <'s formed by 2 int. lines are Supplementary




Given: Lines m & k intersect. look for intersecting lines

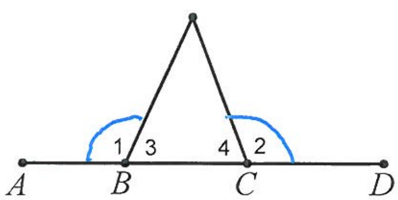
| Statements | Reasons |
|---|---|
| *(Identify the Supp. ∠'s)* 1. <1 Supp <2 | (1) adj. <'s formed by int lines are Supp. |
| (Use the Supp. ∠'s) 2. m<1 + m<2 = 180° | (2) Supp. <'s add to 180°. |

More options.

Option #1: Definition of Supp.

Option #2:

**Supp. Theorem 1:** ≅ ∠'s have ≅ supplements.




Given: $\overline{ABCD}$

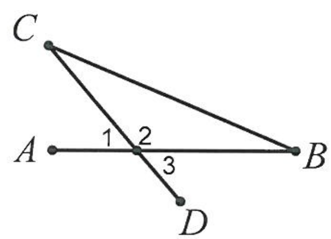
$\angle 1 \cong \angle 2$

Different <'s

| Statements | Reasons |
|---|---|
| *(Identify the Supp. ∠'s)* 1. <1 Supp. <3<br><2 Supp <4 | (1) adj <'s formed by int lines are Supp. |
| (Use the Supp. ∠'s) 2. <3 ≅ <4 | (2) ≅ <'s have ≅ Supps. |

Options #3:

**Supp. Theorem 2:** 2 ∠'s supp. to the same ∠ are ≅.



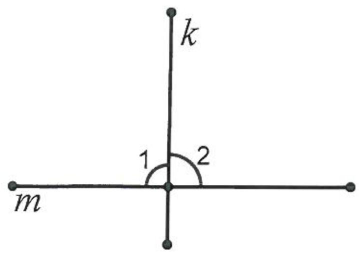

Given: $\overline{AB}$ *and* $\overline{CD}$ intersect

Same angle.

| Statements | Reasons |
|---|---|
| *(Identify the Supp. ∠'s)* 1. <1 Supp <2<br><1 Supp <3 | (1.) adj. <'s formed by int. lines are Supp. |
| (Use the Supp. ∠'s) 2. <2 ≅ <3 | (2) <'s Supp to the Same < are ≅. |

Option #4:

**Supp. Theorem 3:** ∠'s that are both ≅ and supp. are each 90°.




Given: Line m & k intersect.

$\angle 1 \cong \angle 2$

| Statements | Reasons |
|---|---|
| (*Identify the Supp. ∠'s*)<br>1. <1 Supp <2 | ① adj. <'s formed by int. lines are Supp. |
| (Use the Supp. ∠'s)<br>2. <1 and <2 are Rt <'s. | ② <'s that are ≅ and Supp are both 90° |

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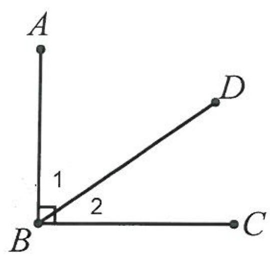
**Complementary Angles work exactly the same as Supplementary Angles!

**Complementary Angles:** <'s that add to 90°

**Complimentary Angles Theorem:** adjacent <'s that form a Rt < are Complementary.




Given: ∠ABC is a right Angle

Conclusion: <1 and <2 are Complementary.

**Complimentary Theorem 1:** ≅ ∠'s have ≅ complements.

**Complimentary Theorem 2:** 2 ∠'s complementary to the same ∠ are ≅.