# Vertical and Adjacent Angles

*VerticalAdjacent.tns*

Name _____

Class _____

**Problem 1 – Exploring Vertical Angles**

1. Define **Vertical (or Opposite) Angles**.



2. On page 1.3, $\overleftrightarrow{AC}$ intersects $\overleftrightarrow{BD}$ at point *O*. Name two pairs of vertical angles.



3. On page 1.4, $\overleftrightarrow{AC}$ intersects $\overleftrightarrow{BD}$ at point *O*. Move point *D* or point *B* to four different locations where the angles have different measures. Record *m∠AOB*, *m∠BOC*, *m∠COD*, and *m∠AOD* for each of your four locations.

| Location | 1ˢᵗ | 2ⁿᵈ | 3ʳᵈ | 4ᵗʰ |
|---|---|---|---|---|
| *m∠AOB* | | | | |
| *m∠BOC* | | | | |
| *m∠COD* | | | | |
| *m∠AOD* | | | | |

What patterns do you notice?



4. If ∠*AOD* and _____ are vertical angles, then the *m∠AOD* _____.

5. If ∠*AOB* and _____ are vertical angles, then the *m∠AOB* _____.

6. Based on your data from Question 3, make a conjecture about vertical angles in general.

![TI logo] **Vertical and Adjacent Angles**

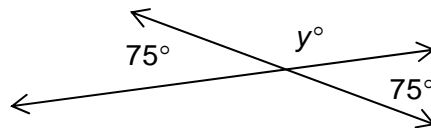**Problem 2 – Exploring Adjacent Angles**

7. Define **Adjacent Angles**.


8. On page 2.2, $\overrightarrow{AC}$ intersects $\overleftrightarrow{BD}$ at point O. Identify all four pair of adjacent angles.


9. On page 2.3, move point *D* or point *B* and make a conjecture about adjacent angles formed by two intersecting lines. Hint: You may have to do a calculation.


10. If ∠*AOB* and _____ are adjacent angles formed by two intersecting lines, then the

    *m*∠*AOB and* _____ are _____.

**Complete the following problems.**

11. Find the value of *x* and *y*.

    75°   *y*°
          75°

12. Find the value of *x*.

    $(x + 10)°$          $(4x - 35)°$