Math 3 8.9 Angle Measures and Segment Lengths Unit 8

*SWBAT apply the rules and theorems of segments to solve for unknowns.*

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| **Theorem 1:** | **Theorem 2:** |
| The measure of an angle formed by two lines that intersect inside a circle is half the sum of the measures of the intercepted arcs. | The measure of an angle formed by two lines that intersect outside a circle is half the difference of the measures of the intercepted arcs. |
|  |  |

**Example 1:** Find each measure.



1.
2.
3.

**Example 2:** Find the following angles.



1. m∠MPN
2. 
3.



**You Try!** Find the following angles.



1.
2. x
3. Arc AB



|  |
| --- |
| **Theorem 3:** |
| For a given point and circle, the product of the lengths of the two segments from the point to the circle is constant along any line through the point and the circle. |
|  |  |  |

**Example 4:** Find the value of the variable in $⊙O.$

1.
2.
3.



**You Try!** What is the value of the variable to the nearest tenth?



