Exterior Angle Theorem

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| **Exterior Angle Theorem** | |  |  | | --- | --- | | Given:  Prove: | | | Statements | Reasons | |  | Ext. Thm. | |
| The measure of an exterior angle on a triangle is equal to the added measures of the two remote (far away) interior angles. |

**Fill in the blanks on the proofs below.**

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| 1. | |  | 2. | |
| Given:    Prove: | |  | Given:    Prove: | |
| Statements | Reasons |  | Statements | Reasons |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | are a lin. pair | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
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| 3. | |  | 4. | |
| Given:    Prove: | |  | Given: :    Prove: | |
| Statements | Reasons |  | Statements | Reasons |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Our focus this unit has been on proofs. However, it is just as important for you to be able to solve a problem (without the proof structure). For the following problems, use what you know to determine the answer.**

Lines Cut by a Transversal

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| 5. & are corresponding angles on parallel lines. . What is the ?  (If ||, Corresponding Angles: \_\_\_\_\_ \_\_\_\_\_, so \_\_\_\_\_ = \_\_\_\_\_) | 6. & are corresponding angles on parallel lines. & . What is ?  (If ||, Corresponding Angles: \_\_\_\_\_ \_\_\_\_\_, so \_\_\_\_\_ = \_\_\_\_\_) |
| 7. & are alternate interior angles on parallel lines. . What is the ?  (If ||, Alternate Angles: \_\_\_\_\_ \_\_\_\_\_, so \_\_\_\_\_ = \_\_\_\_\_) | 8. & are alternate exterior angles on parallel lines. & . What is ?  (If ||, Alterate Angles: \_\_\_\_\_ \_\_\_\_\_, so \_\_\_\_\_ = \_\_\_\_\_) |
| 9. & are same side interior angles on parallel lines. . What is the ?  (If ||, Same Side Angles: \_\_\_\_\_ \_\_\_\_\_ = 180) | 10. & are same side interior angles on parallel lines. &  . What is ?  (If ||, Same Side Angles: \_\_\_\_\_ \_\_\_\_\_ = 180) |

Triangle Sum

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| 11. On *ABC*, . What is the ?  (In a , the angles: \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ = 180) | 12. On *LMN*, . What is the ?  (In a , the angles: \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ = 180) |
| 13. Find the measurement of the missing angle.    (In a , the angles: \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ = 180) | 14. Find the value of *x* and the measurement of all of the angles.    (In a , the angles: \_\_\_\_\_ \_\_\_\_\_ \_\_\_\_\_ = 180) |

Exterior Angles

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| 15. On *ABC*, . What is the measure of the exterior angle ?    (On a : remote angles \_\_\_ \_\_\_ \_\_\_ exterior angle) | 16. On *LMN*,  . What is the ?    (On a : remote angles \_\_\_ \_\_\_ \_\_\_ exterior angle) |
| 17. Find the measure of the angle marked with a “?”.    (On a : remote angles \_\_\_ \_\_\_ \_\_\_ exterior angle) | 18. Solve for *x* and find the measure of the exterior angle.    (On a : remote angles \_\_\_ \_\_\_ \_\_\_ exterior angle) |

Pythagorean theorem

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| 19. *ABC* is a right triangle. The hypotenuse is 8 cm long and one of the two remaining sides (called “legs”) is 2 cm long. Find the measurement of the missing side length.  (Pythagorean Theorem: = hypotenuse) | 20. *LMN* is a right triangle. The hypotenuse is 15 in long and one of the two remaining sides (called “legs”) is 10 in long. Find the measurement of the missing side length.  (Pythagorean Theorem: = hypotenuse) |
| 21. Find the measurement of the missing side length.    (Pythagorean Theorem: = hypotenuse) | 22. Find the measurement of the missing side length.    (Pythagorean Theorem: = hypotenuse) |