Parallel Lines Cut by a Transversal Properties Practice

The four new reasons are: the **Corresponding Angles Postulate,** the **Alternate Interior Angles Theorem**, the **Alternate Exterior Angles Theorem**, and the **Same Side Interior Angles Theorem.**

Don’t forget, though that there are others, like: the **Given**, the **Linear Pair Theorem**, the **Reflexive Properties**, the **Vertical Angles Theorem**, and several more. You are allowed to use any of them that apply.

Fill in the blanks, using the given picture for each set of proofs.



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| 1. |  | 2. |
| Given: $ ∠3 \& ∠7$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $f||g$ Prove: $m∠3+m∠7=180˚$ |  | Given: $ ∠6 \& ∠8$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $f||g$ Prove: $∠6≅∠8$ |
| $$f||g$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$∠6 \& ∠8 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $$∠3 \& ∠7 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$f||g$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $$m∠3+m∠7=180˚$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$∠6≅∠8$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 3. |  | 4. |
| Given: $ ∠6 \& ∠7$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $f||g$ Prove: $∠6≅∠7$ |  | Given: $ ∠1 \& ∠8$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles Prove: $m∠1+m∠8=180˚$ |
| $$f||g$$$$∠6 \& ∠7 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$∠1 \& ∠8 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $$∠6≅∠7$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$m∠1+m∠8=180˚$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 5. |  | 6. |
| Given: $ ∠5 \& ∠7$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $f||g$Prove: $∠5≅∠7$ |  | Given: $ ∠6 \& ∠2$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $f||g$ Prove: $m∠6+m∠2=180˚$ |
| $$f||g$$$$∠5 \& ∠7 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$f||g$$$$∠6 \& ∠2 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $$∠5≅∠7$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$m∠6+m∠2=180˚$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 7. |  | 8. |
| Given: $ ∠5 \& ∠6$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles Prove: $∠5≅∠6$ |  | Given: $ ∠5 \& ∠8$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $f||g$ Prove: $∠5≅∠8$ |
| $$∠5 \& ∠6 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$f||g$$$$∠5 \& ∠8 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $$∠5≅∠6$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$∠5≅∠8$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |



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| 9. |  | 10. |
| Given: $ ∠3 \& ∠7$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $a||b$ Prove: $∠3≅∠7$ |  | Given: $ ∠6 \& ∠7$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $a||b$ Prove: $∠6≅∠7$ |
| $$a||b$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$∠6 \& ∠7 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $$∠3 \& ∠7 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$a||b$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $$∠3≅∠7$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$∠6≅∠7$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 11. |  | 12. |
| Given: $ ∠1 \& ∠8$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles Prove: $∠1≅∠8$ |  | Given: $ ∠1 \& ∠4$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $a||b$Prove: $∠1≅∠4$ |
| $$∠1 \& ∠8 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$a||b$$$$∠1 \& ∠4 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $$∠1≅∠8$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$∠1≅∠4$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 13. |  | 14. |
| Given: $ ∠2 \& ∠8$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles Prove: $m∠2+m∠8=180˚$ |  | Given: $ ∠3 \& ∠8$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $a||b$ Prove: $m∠3+m∠8=180˚$ |
| $$∠2 \& ∠8 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$a||b$$$$∠3 \& ∠8 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $$m∠2+m∠8=180˚$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$m∠3+m∠8=180˚$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| 15. |  | 16. |
| Given: $ ∠5 \& ∠8$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $a||b$Prove: $∠5≅∠8$ |  | Given: $ ∠5 \& ∠2$ are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ angles  and $a||b$ Prove: $m∠5+m∠2=180˚$ |
| $$a||b$$$$∠5 \& ∠8 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$a||b$$$$∠5 \& ∠2 are \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $$∠5≅∠8$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  | $$m∠5+m∠2=180˚$$ | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**For the following questions, you are not expected to use proofs. Solve for the requested angle, using what you know about each angle pair type.**

17. $∠1 and ∠2$ are corresponding angles on parallel lines. $m∠1=62˚$. $m∠2= ? \\_\\_\\_\\_\\_\\_\\_\\_\\_$

18. $∠3 and ∠4$ are same side interior angles on parallel lines. $m∠3=105˚$. $m∠4= ? \\_\\_\\_\\_\\_\\_\\_\\_\\_$

19. $∠5 and ∠6$ are a linear pair. $m∠5=23˚$. $m∠6= ? \\_\\_\\_\\_\\_\\_\\_\\_\\_$

20. $∠7 and ∠8$ are vertical angles. $m∠7=71˚$. $m∠8= ? \\_\\_\\_\\_\\_\\_\\_\\_\\_$