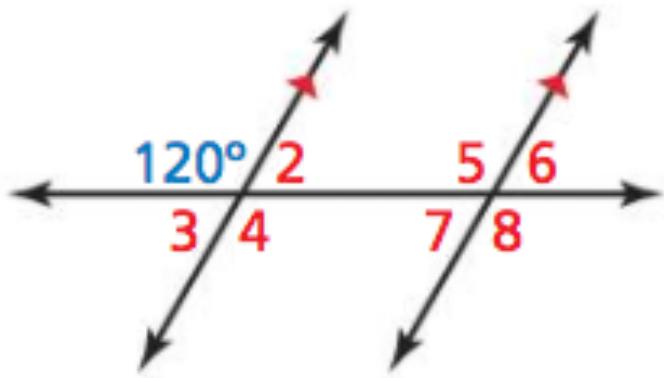


3.2 Parallel Lines and a Transversal

Do Now: Lets look at the diagram below. What conjecture can you create?



Conclusion:

Key Postulates!

Theorems

Theorem 3.1 Corresponding Angles Theorem

If two parallel lines are cut by a transversal, then the pairs of corresponding angles are congruent.

Examples In the diagram at the left, $\angle 2 \cong \angle 6$ and $\angle 3 \cong \angle 7$.

Proof Ex. 36, p. 180

Theorem 3.2 Alternate Interior Angles Theorem

If two parallel lines are cut by a transversal, then the pairs of alternate interior angles are congruent.

Examples In the diagram at the left, $\angle 3 \cong \angle 6$ and $\angle 4 \cong \angle 5$.

Proof Example 4, p. 134

Theorem 3.3 Alternate Exterior Angles Theorem

If two parallel lines are cut by a transversal, then the pairs of alternate exterior angles are congruent.

Examples In the diagram at the left, $\angle 1 \cong \angle 8$ and $\angle 2 \cong \angle 7$.

Proof Ex. 15, p. 136

Theorem 3.4 Consecutive Interior Angles Theorem

If two parallel lines are cut by a transversal, then the pairs of consecutive interior angles are supplementary.

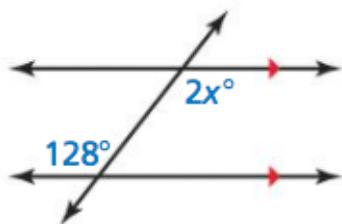
Examples In the diagram at the left, $\angle 3$ and $\angle 5$ are supplementary, and $\angle 4$ and $\angle 6$ are supplementary.

Proof Ex. 16, p. 136

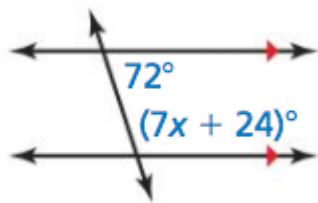
Practice Problems:

State the angle relationship and determine the value of x

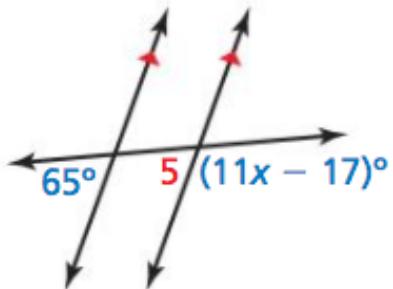
7.



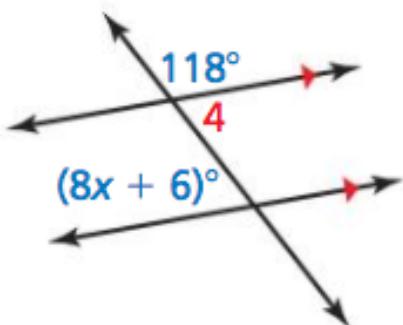
8.



9.



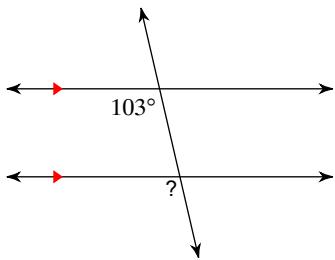
10.



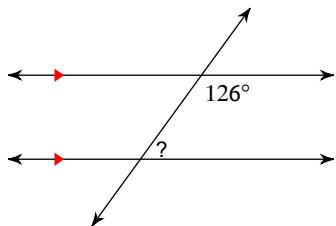
3.2 Parallel Lines and a Transversal

Find the measure of each angle indicated.

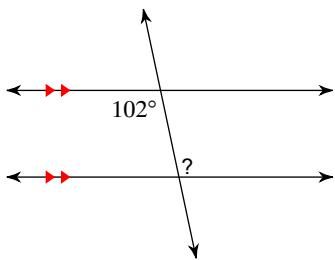
1)



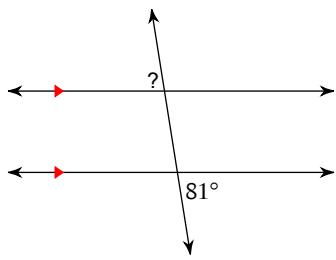
2)



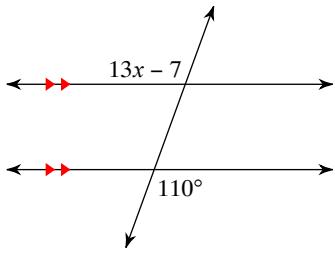
3)



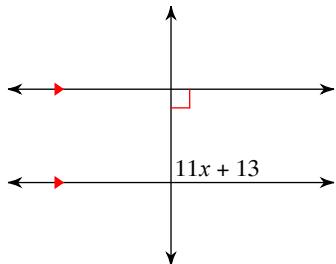
4)

Solve for x .

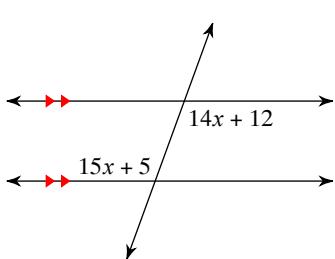
5)



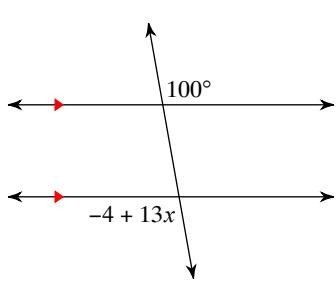
6)



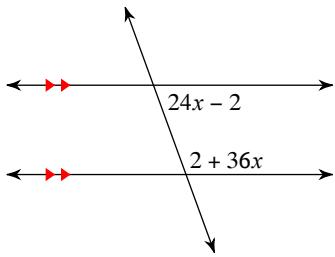
7)



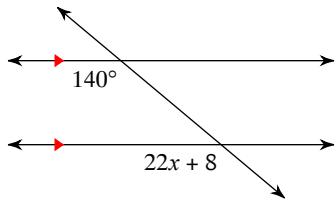
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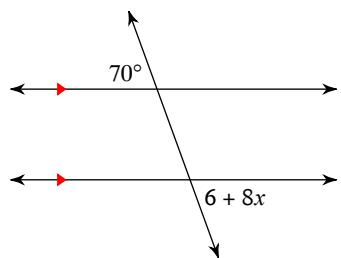
9)



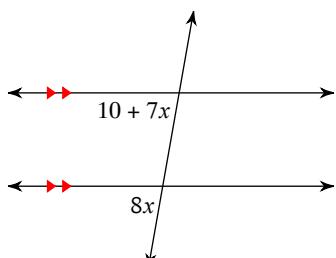
10)



11)

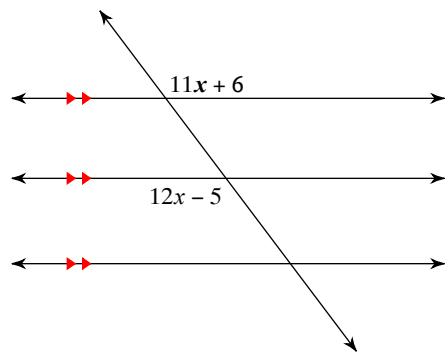


12)

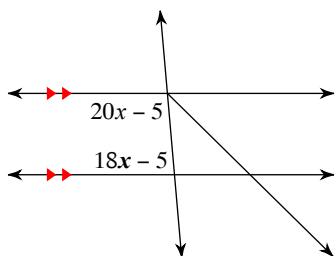


Find the measure of the angle indicated in bold.

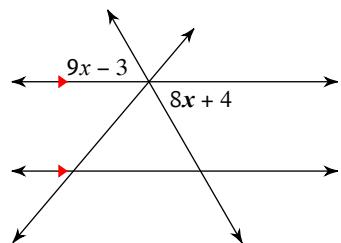
13)



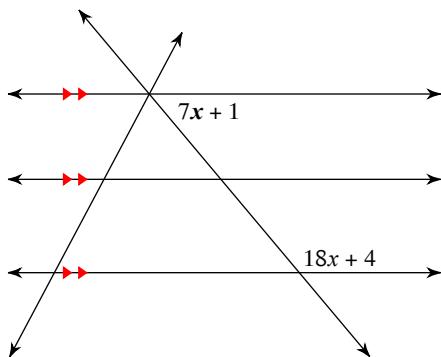
14)



15)



16)



Answers to 3.2 Parallel Lines and a Transversal

1) 103°

5) 9

9) 3

13) 127°

2) 54°

6) 7

10) 6

14) 85°

3) 102°

7) 7

11) 8

15) 60°

4) 81°

8) 8

12) 10

16) 50°