Name _____ Class _____ Date _____

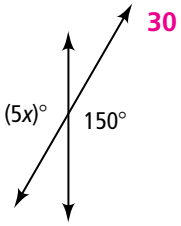
Practice

Form G

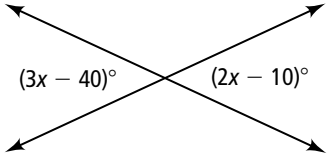
Proving Angles Congruent

Find the value of x.

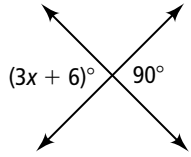
1. 30



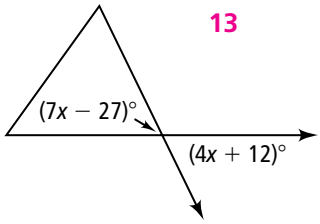
2. 30



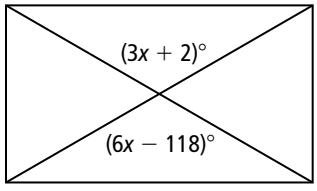
3. 28



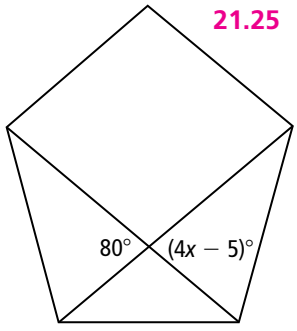
4. 13



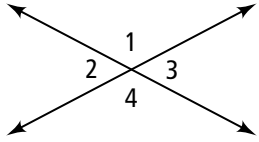
5. 40



6. 21.25



Find $m\angle 1$ using the given information.



7. $m\angle 1 = 5x$, $m\angle 4 = 2x + 90$ **150**

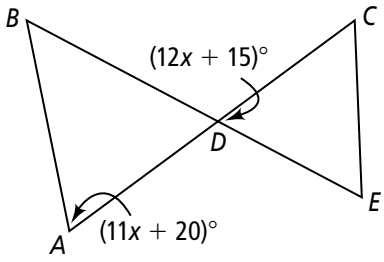
8. $m\angle 1 = 8x - 120$, $m\angle 4 = 4x + 16$ **152**

9. $m\angle 2 = 180 - 3x$, $m\angle 3 = 2x$ **108**

Complete the proofs by filling in the blanks.

10. Given: $\angle A \cong \angle BDA$

Prove: $x = 5$



Statements	Reasons
1) ? ***∠A ≅ ∠BDA***	1) Given
2) ? ***∠BDA ≅ ∠CDE***	2) Vertical Angles are ≅.
3) $\angle A \cong \angle CDE$	3) ? **Transitive Property of Congruence**
4) ? ***m∠A = m∠CDE***	4) Definition of Congruence
5) $11x + 20 = 12x + 15$	5) ? **Substitution Property**
6) ? **20 = x + 15**	6) Subtraction Property of Equality
7) ? **5 = x**	7) ? **Subtraction Property of Equality**

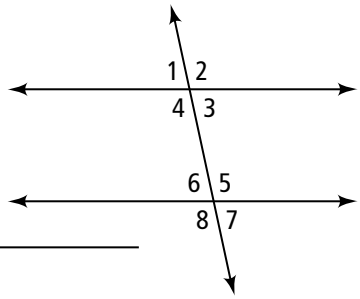
Name _____ Class _____ Date _____

Practice (continued) *Form G*

Proving Angles Congruent

11. **Given:** $\angle 5 \cong \angle 2$

Prove: $\angle 8 \cong \angle 4$



Statements	Reasons
1) ? ∠5 ≅ ∠2	1) Given
2) ∠2 ≅ ∠4	2) ? Vertical Angles are ≅.
3) ? ∠5 ≅ ∠4	3) Transitive Property of Congruence
4) ? ∠8 ≅ ∠5	4) Vertical Angles are ≅.
5) ∠8 ≅ ∠4	5) ? Transitive Property of Congruence

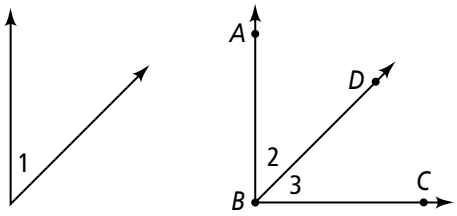
12. Complete the paragraph proof below.

Given: $\angle 1$ and $\angle 2$ are complementary

$\angle 2$ and $\angle 3$ are complementary

$\overline{BD}$ bisects $\angle ABC$

Prove: $m\angle 1 = 45$



We know that _____ and _____ are complementary and $\angle 2$ and $\angle 3$ are complementary because these facts are given. By the _____, $m\angle 2 + m\angle 3 = 90$. Given that $\overline{BD}$ bisects $\angle ABC$, it follows that _____. Using substitution, _____, or $2(m\angle 3) = 90$. Using the _____, $m\angle 3 = 45$. By the Congruent Complements Theorem, _____. It follows that _____, because congruent angles have the same measure and _____ by substitution.

$\angle 1$; $\angle 2$; definition of complementary angles; $m\angle 2 = m\angle 3$; $m\angle 3 + m\angle 3 = 90$; Division Property of Equality; $\angle 1 \cong \angle 3$; $m\angle 1 = m\angle 3$; $m\angle 1 = 45$

13. **Writing** Look back at the proof in Exercise 11. Rewrite the proof as a paragraph proof.

Answers may vary. Sample: It is given that $\angle 5 \cong \angle 2$. Since vertical angles are ≅, it follows that $\angle 2 \cong \angle 4$. Using the Transitive Property of Congruence, it follows that $\angle 5 \cong \angle 4$. Again, because vertical angles are ≅, it follows that $\angle 8 \cong \angle 5$. Finally, it follows that $\angle 8 \cong \angle 4$, using the Transitive Property of Congruence.