

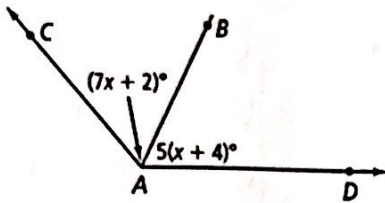
Additional Algebraic Proof Problems

Name: Key

1. Proof:

Given:  $\overline{AB}$  is the bisector of  $\angle CAD$ .

Prove:  $x = 9$

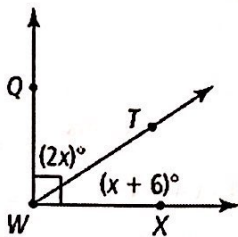


STATEMENTS	REASONS
① $\overline{AB}$ bisects $\angle CAD$	① Given
② $\angle CAB \cong \angle BAD$	② Definition of bisector
③ $m\angle CAB = m\angle BAD$	③ $\cong \angle$ 's $\rightarrow$ = measures
④ $7x + 2 = 5(x + 4)$	④ Substitution
⑤ $7x + 2 = 5x + 20$	⑤ Distributive Prop
⑥ $2x + 2 = 20$	⑥ Subtraction Prop
⑦ $2x = 18$	⑦ Subtraction Prop
⑧ $x = 9$	⑧ Division Prop

2. Proof:

Given:  $\angle QWT$  and  $\angle TWX$  are complementary.

Prove:  $x = 28$

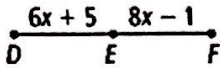


STATEMENTS	REASONS
① $\angle QWT$ & $\angle TWX$ are complementary	① Given
② $\angle QWT + \angle TWX = 90^\circ$	② Definition of Complementary
③ $2x + x + 6 = 90$	③ Substitution
④ $3x + 6 = 90$	④ CLT
⑤ $3x = 84$	⑤ Subtraction Prop
⑥ $x = 28$	⑥ Division Prop

3. Proof:

Given:  $E$  is the midpoint of  $\overline{DF}$ .

Prove:  $DE = 23$

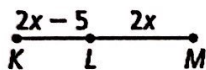


STATEMENTS	REASONS
① $E$ is midpoint of $\overline{DF}$	① Given
② $\overline{DE} \cong \overline{EF}$	② Definition of midpoint
③ $DE = EF$	③ $\cong$ segments $\rightarrow$ = measures
④ $6x + 5 = 8x - 1$	④ Substitution
⑤ $5 = 2x - 1$	⑤ Subtraction Prop
⑥ $6 = 2x$	⑥ Addition Prop
⑦ $3 = x$	⑦ Division Prop
⑧ $x = 3$	⑧ Symmetric Prop

4. Proof:

Given:  $KM = 35$

Prove:  $x = 10$

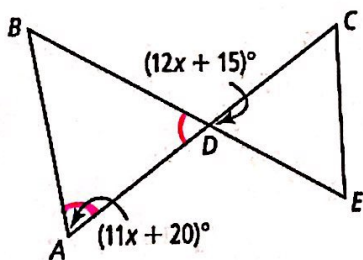


STATEMENTS	REASONS
① $KM = 35$	① Given
② $KL + LM = KM$	② Segment Addition
③ $2x - 5 + 2x = 35$	③ Substitution
④ $4x - 5 = 35$	④ CLT
⑤ $4x = 40$	⑤ Addition Prop
⑥ $x = 10$	⑥ Division Prop

5. Proof:

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

Prove:  $x = 5$



STATEMENTS	REASONS
① $\angle A \cong \angle BDA$	① Given
② $\angle BDA \cong \angle CDE$	② Vertical $\angle$ 's are $\cong$
③ $\angle A \cong \angle CDE$	③ Transitive Prop (1,2)
④ $m\angle A = m\angle CDE$	④ $\cong$ $\angle$ 's $\rightarrow$ = measures
⑤ $11x + 20 = 12x + 15$	⑤ Substitution
⑥ $20 = x + 15$	⑥ Subtraction Prop
⑦ $5 = x$	⑦ Subtraction Prop
⑧ $x = 5$	⑧ Symmetric Prop