Mini-Lesson 2.6

Reviewing Properties of Equality and Writing Two-Column Proofs

Learning Objectives:

1. Use properties of equality to justify reasons for steps.
2. Write a two-column proof.
3. Key vocabulary: *reflexive property, symmetric property, transitive property, substitution property, proof, two-column proof*

Key Examples:

1. Solve $7x+18=81$. Give a reason to justify each statement.

2. Solve $15x-2(30+4x)=22x$. Give a reason to justify each statement.

3. Fill in each blank with the reason to justify the statement.
   a)

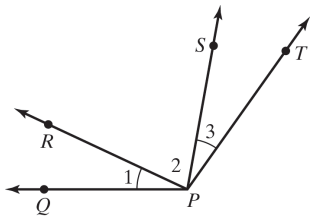
Statements	Reasons
$m\angle R = m\angle S$	Given
$m\angle S = m\angle T$	Given
$m\angle R = m\angle T$	_____

   b)

Statements	Reasons
$AB + CD = 10$	Given
$AB = EF$	Given
$EF + CD = 10$	_____

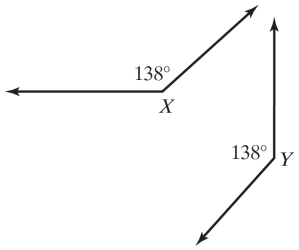
4. Write a two-column proof.

   Given: $m\angle 1 = m\angle 3$
   Prove: $m\angle QPS = m\angle TPR$



5. Write a two-column proof.

   Given: $m\angle X = 138°$, $m\angle Y = 138°$
   Prove: $\angle X \cong \angle Y$



Answers: 1) and 2) *See Additional Answers at end of Mini-Lessons.* 3a) Transitive Property 3b) Substitution Property 4) and 5) *See Additional Answers at end of Mini-Lessons.*

Mini-Lesson 2.7

Proving Theorems About Angles

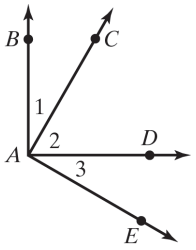
Learning Objectives:

1. Prove and use theorems about angles.
2. Key vocabulary: *paragraph proof*

Key Examples:

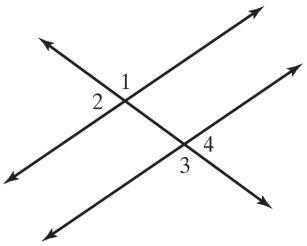
1. Write a two-column proof.

   Given: $\overrightarrow{AB} \perp \overrightarrow{AD}$ and $\overrightarrow{AC} \perp \overrightarrow{AE}$
   Prove: $\angle 1 \cong \angle 3$



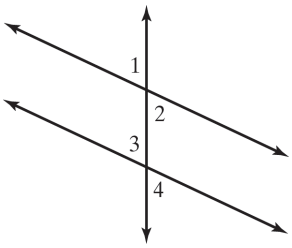
2. Write a two-column proof.

   Given: $\angle 1 \cong \angle 3$
   Prove: $\angle 2 \cong \angle 4$

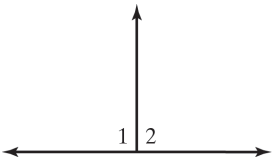


3. Write a two-column proof.

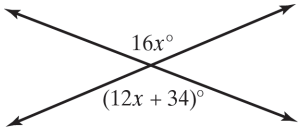
   Given: $\angle 2 \cong \angle 3$
   Prove: $\angle 1 \cong \angle 4$



4. Write a proof of the Equal Supplementary Angles Theorem in paragraph form.
   Given: $m\angle 1 = m\angle 2$ and $m\angle 1 + m\angle 2 = 180°$
   Prove: $\angle 1$ and $\angle 2$ are right angles.



5. Find the value of x.



Answers:
1)–4) *See Additional Answers at the end of the Mini-Lectures.* 5) 8.5