Name: _____ Block:____ Date: _____

Mathematics Problem of the Day
Show All Work in pencil for full credit!

FLATLAND CATASTROPHE

The senses of Flatlanders are limited to two dimensions. So if someone were to observe them from a point just "above" their world, the Flatlanders would have no way of seeing that observer.

But what if you tossed a ball through the two-dimensional plane of Flatland? Would the Flatlanders perceive the event as some sort of astronomical catastrophe? Can you describe exactly what they would see?

Type: __HSPA, __P/SAT, __DG, __ALG, __SMPSN, __other _____

11. $\overleftrightarrow{AB} \perp \overleftrightarrow{EF}$, $\overleftrightarrow{CD} \perp \overleftrightarrow{EF}$ Given
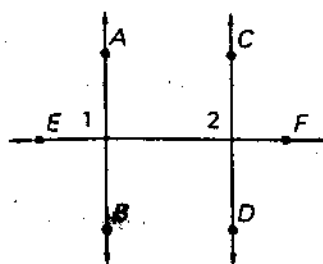
2.4 $m\angle 1 = 90°$ **a.** _?_

       $m\angle 2 = 90°$ **b.** _?_

       $m\angle 1 = m\angle 2$ **c.** _?_

10. $m\angle AEB = m\angle CED$ Given

2.9 $m\angle BEC = m\angle BEC$ **a.** _?_

     $m\angle AEB + m\angle BEC = m\angle CED + m\angle BEC$ **b.** _?_

     $m\angle AEC = m\angle AEB + m\angle BEC$ **c.** _?_

     $m\angle BED = m\angle CED + m\angle BEC$ **d.** _?_

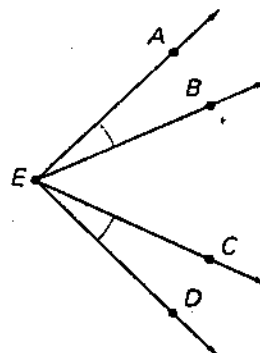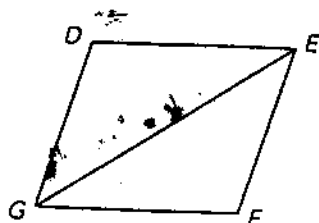 $m\angle AEC = m\angle BED$ **e.** _?_

2.5   **5.** Given: $DG = 8$, $GF = 8$, $\overline{GF} \cong \overline{EF}$

        Prove: $\overline{DG} \cong \overline{EF}$

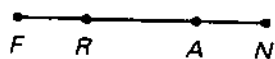| Statements	Reasons
1. $DG = 8$, $GF = 8$	1. _?_
2. $DG = GF$	2. _?_
3. $\overline{DG} \cong \overline{GF}$	3. _?_
4. $\overline{GF} \cong \overline{EF}$	4. _?_
5. $\overline{DG} \cong \overline{EF}$	5. _?_

2.6   **6.** Given: $\overline{FR} \cong \overline{AN}$

        Prove: $\overline{FA} \cong \overline{RN}$

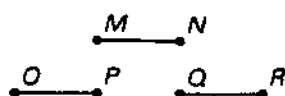| Statements	Reasons
1. $\overline{FR} \cong \overline{AN}$	1. _?_
2. $FR = AN$	2. _?_
3. $RA = RA$	3. _?_
4. $FR + RA = AN + RA$	4. _?_
5. $FR + RA = FA$	5. _?_
6. $AN + RA = RN$	6. _?_
7. $FA = RN$	7. _?_
8. $\overline{FA} \cong \overline{RN}$	8. _?_

4. Given: $OP = MN$, $MN = QR$
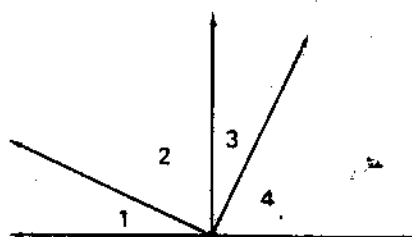
Prove: $\overline{OP} \cong \overline{QR}$

M   N

O P   Q   R

Statements	Reasons
1. $OP = MN$, $MN = QR$	1. ?
2. $OP = QR$	2. ?
3. $\overline{OP} \cong \overline{QR}$	3. ?

11. Complete the proof.

Given: $\angle 1$ and $\angle 2$ are complementary.
$\angle 1 \cong \angle 3$, $\angle 2 \cong \angle 4$

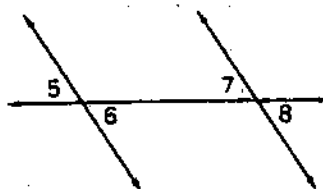Prove: $\angle 3$ and $\angle 4$ are complementary.

Statements	Reasons
1. ?	1. Given
2. $m\angle 1 + m\angle 2 = 90°$	2. ?
3. $\angle 1 \cong \angle 3$, $\angle 2 \cong \angle 4$	3. ?
4. ?	4. Defintion of congruent angles
5. $m\angle 3 + m\angle 2 = 90°$	5. ?
6. $m\angle 3 + m\angle 4 = 90°$	6. ?
7. ?	7. Definition of complementary angles

12. Write a two-column proof.

Given: $m\angle 6 = m\angle 7$

Prove: $\angle 5 \cong \angle 8$

13. Write an argument for Exercise 12 in the form of a paragraph proof.

LESSON
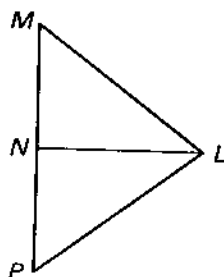**2.5**

Practice B

For use with pages 102–107
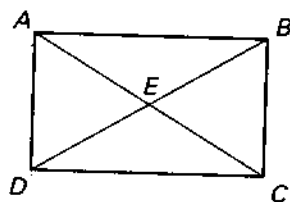
Match the statement with the Property of Congruence.

1. For any segment $\overline{XY}$, $\overline{XY} \cong \overline{XY}$

2. If $\overline{JK} \cong \overline{MN}$ and $\overline{MN} \cong \overline{CD}$, then $\overline{JK} \cong \overline{CD}$.

3. If $\overline{BN} \cong \overline{TR}$, then $\overline{TR} \cong \overline{BN}$.

A. Transitive Property

B. Symmetric Property

C. Reflexive Property

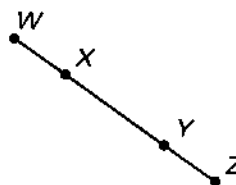**Mark the diagram with the given information.**

4. $LM = 5$, $LP = 5$
   $MN = 3$, $PN = 3$

5. E is the midpoint of $\overline{AC}$.
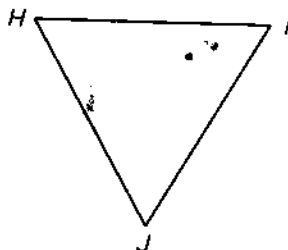 E is the midpoint of $\overline{BD}$.

6. $\overline{WX} \cong \overline{YZ}$

Complete the argument, giving a reason for each step.

7. Given: $HI = 8$, $IJ = 8$, $\overline{IJ} \cong \overline{JH}$
   Prove: $\overline{HI} \cong \overline{JH}$

Statements	Reasons
1. $HI = 8$	1. ?
2. $IJ = 8$	2. ?
3. $HI = IJ$	3. ?
4. $\overline{HI} \cong \overline{IJ}$	4. ?
5. $\overline{IJ} \cong \overline{JH}$	5. ?
6. $\overline{HI} \cong \overline{JH}$	6. ?

8. Given: $AL = SK$
   Prove: $AS = LK$

Statements	Reasons
1. $AL = SK$	1. ?
2. $LS = LS$	2. ?
3. $AL + LS = SK + LS$	3. ?
4. $AL + LS = AS$	4. ?
5. $SK + LS = LK$	5. ?
6. $AS = LK$	6. ?

9. Write an argument for Exercise 7 in the form of a paragraph proof.

Geometry
Chapter 2 Resource Book

LESSON
2.6

Practice B
For use with pages 109–116

Lesson 2.6

Use the diagram to decide whether the statement is *true* or *false*.

1. If $m\angle 5 = 42°$, then $m\angle 6 = 48°$.

2. If $m\angle 5 = 42°$, then $m\angle 7 = 42°$.

3. $m\angle 5 + m\angle 7 = m\angle 6 + m\angle 8$

4. $m\angle 5 + m\angle 8 = m\angle 6 + m\angle 7$
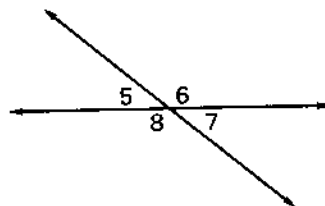
Make a sketch of the given information. Label all angles which can be determined.

5. Adjacent complementary angles where one angle measures 42°

6. Nonadjacent supplementary angles where where one angle measures 42°

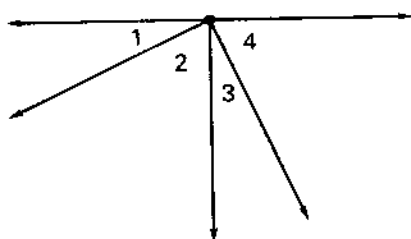7. A linear pair of congruent angles

8. Vertical angles which measure 42°

Solve for *x*.

9. $(4x - 17)°$ $(2x + 9)°$

10. $(3x + 8)°$ $(7x + 2)°$

11. $79°$ $(3x - 5)°$
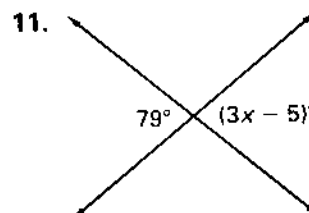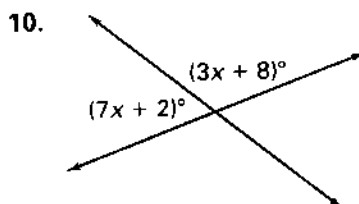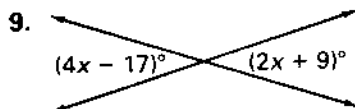
12. Give a reason for each step of the proof.

Given: $\angle 1$ and $\angle 2$ are complementary.
$\angle 1 \cong \angle 3, \angle 2 \cong \angle 4$

Prove: $\angle 3$ and $\angle 4$ are complementary.

Statements	Reasons
1. $\angle 1$ and $\angle 2$ are complementary.	1. Given
2. $m\angle 1 + m\angle 2 = 90°$	2. _?_
3. $\angle 1 \cong \angle 3, \angle 2 \cong \angle 4$	3. Given
4. $m\angle 1 = m\angle 3, m\angle 2 = m\angle 4$	4. _?_
5. $m\angle 3 + m\angle 2 = 90°$	5. _?_
6. $m\angle 3 + m\angle 4 = 90°$	6. _?_
7. $\angle 3$ and $\angle 4$ are complementary.	7. _?_

13. Write a two-column proof.

Given: $\angle 2 \cong \angle 3$

Prove: $\angle 1 \cong \angle 4$