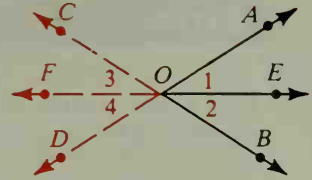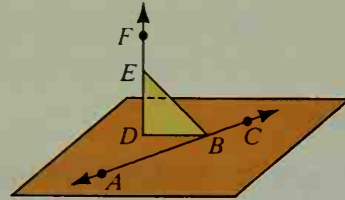**23.** Draw any $\angle AOB$ and its bisector $\overrightarrow{OE}$. Now draw the rays opposite to $\overrightarrow{OA}$, $\overrightarrow{OB}$, and $\overrightarrow{OE}$. What can you conclude about the part of the diagram shown in red? Prove your conclusion.

C 24. Make a diagram showing $\angle PQR$ bisected by $\overrightarrow{QX}$. Choose a point Y on the ray opposite to $\overrightarrow{QX}$.
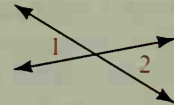
Prove: $\angle PQY \cong \angle RQY$

25. Given: $m \angle DBA = 45$;
  $m \angle DEB = 45$

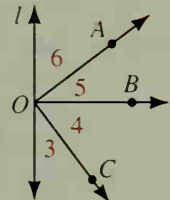Prove: $\angle DBC \cong \angle FEB$

Self-Test 2

1. It is known that $\angle HOK$ has a supplement, but can't have a complement. Name one possible measure for $\angle HOK$. 89

2. $m \angle 1 = 3x - 5$ and $m \angle 2 = x + 25$
 **a.** $x = $? 15   **b.** $m \angle 1 = $ 40? (numerical value)

For Exercises 3 and 4 you are given that $\overrightarrow{OB} \perp l$ **and** $\overrightarrow{OA} \perp \overrightarrow{OC}$.

3. If $m \angle 3 = 37$, complete:
  $m \angle 4 = $? 53 $m \angle 5 = $? 37 $m \angle 6 = $? 53

4. If $m \angle 3 = t$, express the measures of the other numbered angles in terms of t.
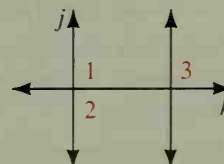
In the diagram, $\overline{DE} \perp n$. **State the theorem or name the definition that justifies the statement about the diagram.**

5. $\angle 8$ is a 90° angle. def of ⊥ lines

6. $\angle 7 \cong \angle 10$ def of vertical lines

7. $\angle 9$ and $\angle 10$ are complementary. def of ⊥ lines
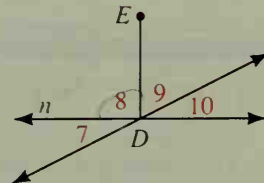
8. Give a plan for the following proof.

  Given: $\angle 1$ is supp. to $\angle 3$;
    $\angle 2$ is supp. to $\angle 3$.

  Prove: $j \perp k$

9. Write a proof for Exercise 8 in two-column form.