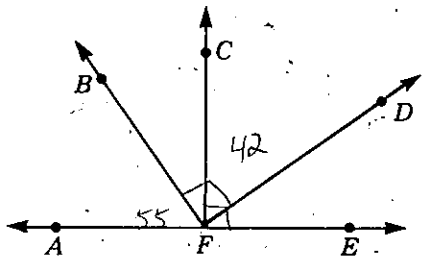
NAME Key DATE _____ SCORE _____

Perpendicular Lines; Planning a Proof

For use after Section 2-6

In the diagram, $\overleftrightarrow{AE} \perp \overleftrightarrow{FC}$ and $\overleftrightarrow{FB} \perp \overleftrightarrow{FD}$. Find the measures of the following angles.



Exs. 1–11

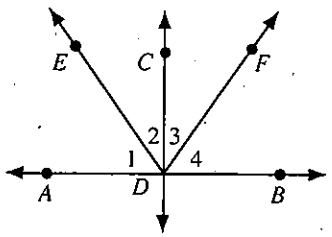
1. $\angle BFD$ 90
2. $\angle CFE$ 90
3. $m\angle AFB = 55$; $m\angle BFC =$ 35
4. $m\angle CFD = 42$; $m\angle DFE =$ 48

Write or name the definition or theorem that justifies the statement about the diagram above.

5. If $\overleftrightarrow{AE} \perp \overleftrightarrow{FC}$, then $\angle AFC \cong \angle EFC$. ⊥ lines → ≅ adj. ∠s
6. If $\overleftrightarrow{FB} \perp \overleftrightarrow{FD}$, then $\angle BFD$ is a right angle. def. ⊥
7. If $\angle BFC$ and $\angle CFD$ are complementary, then $m\angle BFC + m\angle CFD = 90$. def. compl.
8. If $m\angle AFB + m\angle EFB = 180$, then $\angle AFB$ and $\angle EFB$ are supplementary. def. supp.
9. If $\angle BFD$ is a right angle, then $\overleftrightarrow{FB} \perp \overleftrightarrow{FD}$. def. ⊥
10. If $\angle EFC$ is a right angle, then $m\angle EFC = 90$. def. rt. ∠
11. If $\angle AFC \cong \angle CFE$, then $\overleftrightarrow{CF}$ and $\overleftrightarrow{AE}$ are perpendicular. lines form ≅ adj. ∠s → ⊥ lines

Supply the statements or reasons needed to complete the proof.

12. Given: $\overleftrightarrow{CD} \perp \overleftrightarrow{AB}$; $\angle 1 \cong \angle 4$
    Prove: $\angle 2 \cong \angle 3$



Proof:

Statements	Reasons
1. $\overleftrightarrow{CD} \perp \overleftrightarrow{AB}$	1. Given
2. $\angle 1$ and $\angle 2$ are complementary; $\angle 3$ and $\angle 4$ are complementary.	2. ext. sides 2 adj. adj. ∠s ⊥ → compl. ∠s
3. $\angle 1 \cong \angle 4$	3. Given
4. $\angle 2 \cong \angle 3$	4. compl. of ≅ ∠s → ≅