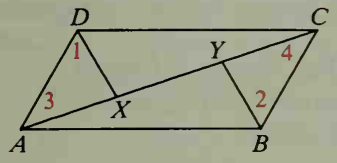
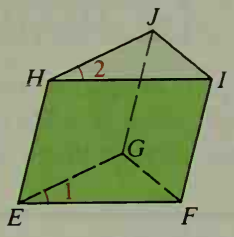
Find something interesting to prove. Then prove it. Answers may vary.

33. Given: $\square ABCD$; $\angle 1 \cong \angle 2$



34. Given: $\square EFIH$; $\square EGJH$; $\angle 1 \cong \angle 2$



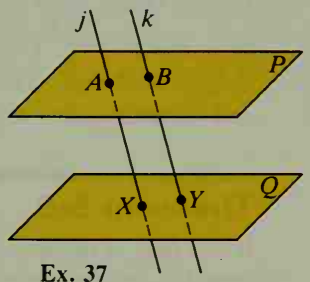
The coordinates of three vertices of a parallelogram are given. Find all the possibilities you can for the coordinates of the fourth vertex.

C **35.** (3, 4), (9, 4), (6, 8)

36. (−1, 0), (2, −2), (2, 2)

37. a. Given: Plane $P \parallel$ plane Q; $j \parallel k$
Prove: $AX = BY$

b. State a theorem about parallel planes and lines that you proved in part (a).



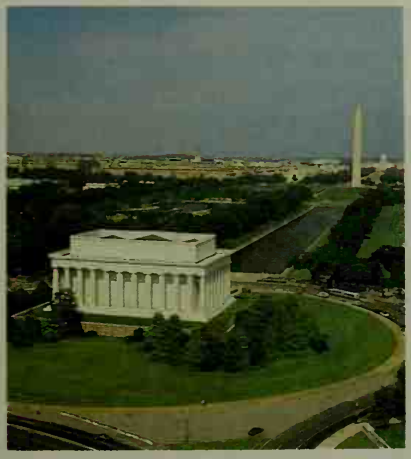
Ex. 37

38. Prove: If a segment whose endpoints lie on opposite sides of a parallelogram passes through the midpoint of a diagonal, that segment is bisected by the diagonal.

★ **39.** Write a paragraph proof: The sum of the lengths of the segments drawn from any point in the base of an isosceles triangle perpendicular to the legs is equal to the length of the altitude drawn to one leg.

Biographical Note

Benjamin Banneker



Benjamin Banneker (1731–1806) was a noted American scholar, largely self-taught, who became both a surveyor and an astronomer. As a surveyor, Banneker was a member of the commission that defined the boundary line and laid out the streets of the District of Columbia. As an astronomer, he accurately predicted a solar eclipse in 1789. From 1791 until his death he published almanacs containing information on astronomy, tide tables, and also such diverse subjects as insect life and medicinal products. Banneker's almanacs included ideas that were far ahead of their time, for example, the formation of a Department of the Interior and an organization like the United Nations.