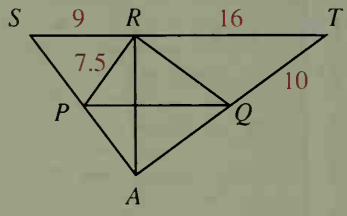
The coordinates of three vertices of a rectangle are given. Plot the points and find the coordinates of the fourth vertex. Is the rectangle a square?

20. $O(0, 0)$, $P(0, 5)$, $Q(\underline{?}, \underline{?})$, $R(2, 0)$ **21.** $A(2, 1)$, $B(4, 1)$, $C(4, 5)$, $D(\underline{?}, \underline{?})$

22. $O(0, 0)$, $E(4, 0)$, $F(4, 3)$, $G(\underline{?}, \underline{?})$ **23.** $H(1, 3)$, $I(4, 3)$, $J(\underline{?}, \underline{?})$, $K(1, 6)$

$\overline{RA}$ is an altitude of $\triangle SAT$. P and Q are midpoints of $\overline{SA}$ and $\overline{TA}$. $SR = 9$, $RT = 16$, $QT = 10$, and $PR = 7.5$.

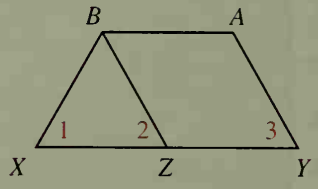


B **24.** Find RQ. **25.** Find SA.

26. Find the perimeter of $\triangle PQR$.

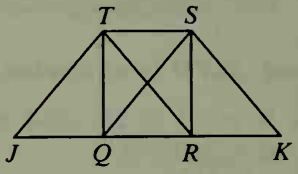
27. Find the perimeter of $\triangle SAT$.

28. Given: $\square ABZY$; $\overline{ZY} \cong \overline{BX}$; $\angle 1 \cong \angle 2$
Prove: $ABZY$ is a rhombus.



29. Given: $\square ABZY$; $\overline{AY} \cong \overline{BX}$
Prove: $\angle 1 \cong \angle 2$ and $\angle 1 \cong \angle 3$

30. Given: Rectangle $QRST$; $\square RKST$
Prove: $\triangle QSK$ is isosceles.



31. Given: Rectangle $QRST$; $\square RKST$; $\square JQST$
Prove: $\overline{JT} \cong \overline{KS}$

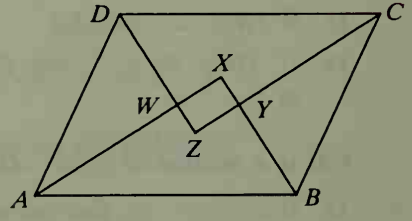
32. Prove Theorem 5-12.

33. Prove Theorem 5-14 for one diagonal of the rhombus. (Note that a proof for the other would be similar, step-by-step.)

34. Prove: If the diagonals of a parallelogram are perpendicular, then the parallelogram is a rhombus.

35. Prove: If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.

36. a. The bisectors of the angles of $\square ABCD$ intersect to form quad. $WXYZ$. What special kind of quadrilateral is $WXYZ$?
b. Prove your answer to part (a).



37. Draw a rectangle and bisect its angles. The bisectors intersect to form what special kind of quadrilateral?

The coordinates of three vertices of a rhombus are given, not necessarily in order. Plot the points and find the coordinates of the fourth vertex. Measure the sides to check your answer.

38. $O(0, 0)$, $L(5, 0)$, $D(4, 3)$, $V(\underline{?}, \underline{?})$ **39.** $O(0, 0)$, $S(0, 10)$, $E(6, 18)$, $W(\underline{?}, \underline{?})$