

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.  $O(0, 0)$ ,  $P(0, 5)$ ,  $Q(\underline{\quad}, \underline{\quad})$ ,  $R(2, 0)$     21.  $A(2, 1)$ ,  $B(4, 1)$ ,  $C(4, 5)$ ,  $D(\underline{\quad}, \underline{\quad})$   
 22.  $O(0, 0)$ ,  $E(4, 0)$ ,  $F(4, 3)$ ,  $G(\underline{\quad}, \underline{\quad})$     23.  $H(1, 3)$ ,  $I(4, 3)$ ,  $J(\underline{\quad}, \underline{\quad})$ ,  $K(1, 6)$

$\overline{RA}$  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.)

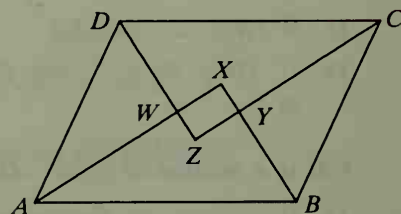
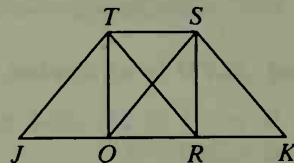
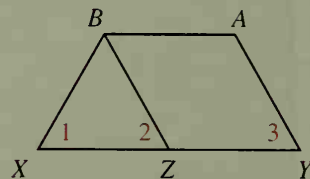
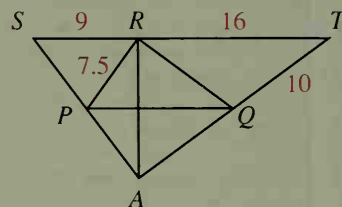
34. Prove: If the diagonals of a parallelogram are perpendicular, then the parallelogram is a rhombus.

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