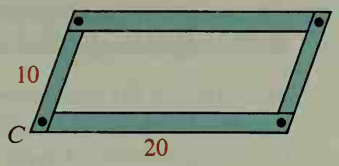
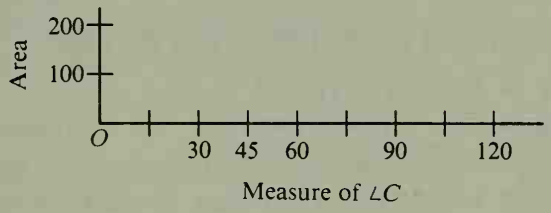
34. Think of a parallelogram made with cardboard strips and hinged at each vertex so that the measure of $\angle C$ will vary. Find the area of the parallelogram for each measure of $\angle C$ given in parts (a)–(e).



a. 30 **b.** 45 **c.** 60 **d.** 90 **e.** 120

f. Approximate your answers to parts (b), (c), and (e) by using $\sqrt{2} \approx 1.4$ and $\sqrt{3} \approx 1.7$. Then record your answers to parts (a)–(e) on a set of axes like the one below.

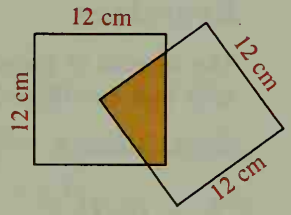


35. The area of a rhombus is 100. Find the length of the two diagonals if one is twice as long as the other.

36. The base of a triangle is 1 cm longer than its altitude. If the area of the triangle is 210 cm^2, how long is the altitude?

C **37.** Find the area of quadrilateral $ABCD$ given $A(2, -2)$, $B(6, 4)$, $C(-1, 5)$, and $D(-5, 2)$.

38. Two squares each with sides 12 cm are placed so that a vertex of one lies at the center of the other. Find the area of the shaded region.



39. The diagonals of a parallelogram are 82 cm and 30 cm. One altitude is 18 cm long. Find the two possible values for the area.

For Exercises 40–42, draw a scalene triangle *ABC*.

40. Construct an isosceles triangle whose area is equal to the area of $\triangle ABC$.

41. Construct an isosceles right triangle whose area is equal to the area of $\triangle ABC$.

42. Construct an equilateral triangle whose area is equal to the area of $\triangle ABC$.

Explorations

These exploratory exercises can be done using a computer with a program that draws and measures geometric figures.

Draw any quadrilateral and connect the midpoints of its sides. You should get a parallelogram (see Exercise 11, page 186). Compare the area of the original quadrilateral and the area of this parallelogram. What do you notice? Can you explain why this is true?