LESSON MAKER PRO

Quadrilateral Clues

Use side and angle relationships to solve for missing measures.

HIGH SCHOOL · G.2D.1.5

G.2D.1.5 "Apply the properties of special quadrilaterals (square, rectangle, trapezoid, isosceles trapezoid, rhombus, kite, parallelogram) to solve problems involving angle measures and segment lengths using mathematical models, algebraic reasoning..."

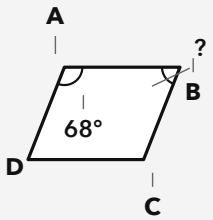
NAME _____ DATE _____

MATCH OR ADD?

In a parallelogram, opposite sides and opposite angles are equal, while neighboring angles add to 180°. Rectangles, rhombuses, and squares share these properties. In an isosceles trapezoid, the angles along each base are equal; in a kite, one pair of opposite angles is equal.

WORKED EXAMPLE

Find the angle marked ?.

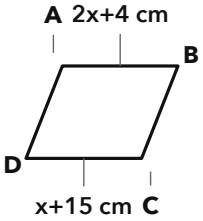


1. Angles A and B are neighboring angles, so they add to 180°.
2. 180° - 68° = 112°.

Answer: 112°

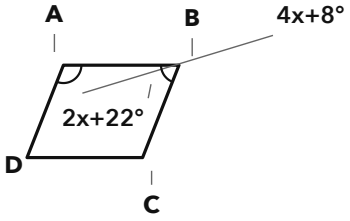
PRACTICE 6 problems

1 Find the length of side AB.



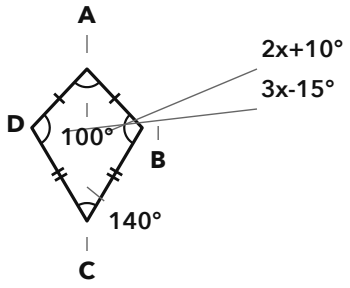
ANSWER _____

2 Find x and the measure of angle B.



ANSWER _____

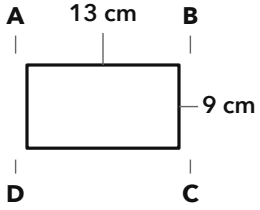
3 The marked pairs of sides are equal. Find x and the measure of angle B.



ANSWER _____

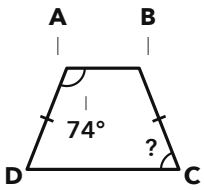
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4 Find the perimeter of the rectangle.



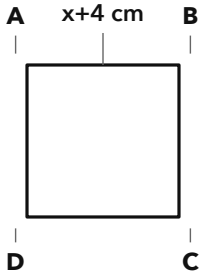
ANSWER _____

5 The trapezoid is isosceles. Find the measure of angle C.



ANSWER _____

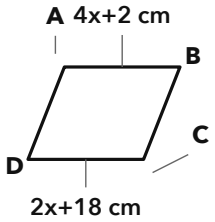
6 The square has a perimeter of 52 cm. Find x.



ANSWER _____

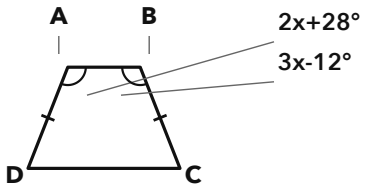
APPLY IT Show your work

1 A laptop decal is shaped like the parallelogram shown. Find the length of side AB.



ANSWER _____

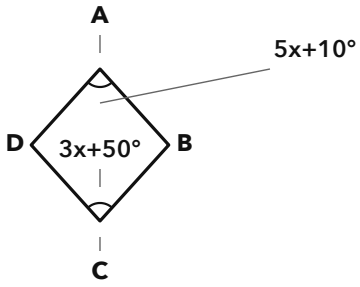
2 A skate ramp side panel has the isosceles trapezoid shape shown. Find the measure of angle C.



ANSWER _____

CHALLENGE One step up

Find x and the measure of angle B. Explain why the two angle relationships you use hold.



WORK SPACE AND ANSWER

Quadrilateral Clues

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the length of side AB.	**26 cm**
2	Find x and the measure of angle B.	**x = 25; angle B = 72°**
3	The marked pairs of sides are equal. Find x and the measure of angle B.	**x = 25; angle B = 60°**
4	Find the perimeter of the rectangle.	**44 cm**
5	The trapezoid is isosceles. Find the measure of angle C.	**106°**
6	The square has a perimeter of 52 cm. Find x.	**x = 9**

PART 2 · APPLY IT

1. **34 cm** Opposite sides are equal, so 4x+2 = 2x+18 and x = 8. Side AB is 4(8)+2 = 34 cm.
2. **72°** The angles along base AB are equal, so 2x+28 = 3x-12 and x = 40. Angle B is 108°, and angle C is its supplement, 72°.

CHALLENGE

x = 20; angle B = 70°. Opposite angles A and C are equal, so 5x+10 = 3x+50. Neighboring angles A and B add to 180°, so angle B = 180° - 110° = 70°.

For problems asking for x and an angle, require both values. Accept equivalent equations and explanations based on the stated quadrilateral properties.