

Side Match Mission

Use matching sides to find missing lengths.

GRADE 7 • 7.MG.3.d

7.MG.3.d "Given a diagram, determine an unknown side length in a quadrilateral using properties of quadrilaterals."

NAME _____

DATE _____

MATCH THE EQUAL SIDES

In a rectangle or parallelogram, opposite sides have the same length. In a square or rhombus, all four sides have the same length. An isosceles trapezoid has two equal legs.

WORKED EXAMPLE

Diagram: Rectangle JKLM has $JK = 4x - 3$ cm and $LM = 29$ cm. Find x .

1. Opposite sides of a rectangle are equal, so $4x - 3 = 29$.
2. Add 3: $4x = 32$.
3. Divide by 4: $x = 8$.

Answer: $x = 8$; $JK = 29$ cm

PRACTICE 6 problems

- 1** Diagram: Rectangle ABCD has $AB = x + 9$ cm and $CD = 21$ cm. Find x and AB .

ANSWER _____

- 2** Diagram: Parallelogram EFGH has $EF = 5x$ cm and $GH = 35$ cm. Find x and EF .

ANSWER _____

- 3** Diagram: Rhombus KLMN has $KL = x - 6$ cm and $MN = 15$ cm. Find x and KL .

ANSWER _____

- 4** Diagram: Square PQRS has $PQ = x + 2$ cm and $QR = 17$ cm. Find x and PQ .

ANSWER _____

- 5** Diagram: Isosceles trapezoid RSTU has leg $RS = x + 11$ cm and leg $TU = 24$ cm. Find x and RS .

ANSWER _____

- 6** Diagram: Parallelogram VWXY has $VW = 19$ cm, $WX = x$ cm, and a perimeter of 62 cm. Find x and WX .

ANSWER _____

APPLY IT Show your work

- 1** A skateboard park is building a rectangular rail frame. One long rail is $2x + 5$ inches long, and the opposite long rail is 39 inches long. Find x and the length of the first long rail.

WORK SPACE

ANSWER _____

- 2** The front of a drama club backdrop is shaped like an isosceles trapezoid. One slanted side is $2x + 7$ feet, and the other slanted side is 37 feet. Find x and the length of the first slanted side.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Diagram: A parallelogram has adjacent sides labeled $5x + 2$ cm and $x + 10$ cm. Its perimeter is 84 cm. Find x and both side lengths. Explain why each side length is counted twice in your equation.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Diagram: Rectangle ABCD has $AB = x + 9$ cm and $CD = 21$ cm. Find x and AB .	$x = 12$; $AB = 21$ cm
2	Diagram: Parallelogram EFGH has $EF = 5x$ cm and $GH = 35$ cm. Find x and EF .	$x = 7$; $EF = 35$ cm
3	Diagram: Rhombus KLMN has $KL = x - 6$ cm and $MN = 15$ cm. Find x and KL .	$x = 21$; $KL = 15$ cm
4	Diagram: Square PQRS has $PQ = x + 2$ cm and $QR = 17$ cm. Find x and PQ .	$x = 15$; $PQ = 17$ cm
5	Diagram: Isosceles trapezoid RSTU has leg $RS = x + 11$ cm and leg $TU = 24$ cm. Find x and RS .	$x = 13$; $RS = 24$ cm
6	Diagram: Parallelogram VWXY has $VW = 19$ cm, $WX = x$ cm, and a perimeter of 62 cm. Find x and WX .	$x = 12$; $WX = 12$ cm

PART 2 • APPLY IT

- $x = 17$; the first long rail is 39 inches long** Opposite sides of a rectangle are equal, so set $2x + 5$ equal to 39. Solve to get $x = 17$.
- $x = 15$; the first slanted side is 37 feet long** The legs of an isosceles trapezoid are equal, so set $2x + 7$ equal to 37. Solve to get $x = 15$.

CHALLENGE

$x = 5$; the side lengths are 27 cm and 15 cm. Each length is counted twice because a parallelogram has two pairs of equal opposite sides.

Accept equivalent equations that use the correct equal-side property. For problems asking for x and a side length, both values should be correct, with units included for lengths.