

Parallelogram

A four-sided polygon with two pairs of equal and parallel sides

Trapezoid

A four-sided polygon with one pair of parallel sides and one pair of sides that are not parallel

Rectangle

A four-sided polygon with four right angles and the opposite sides equal

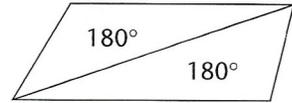
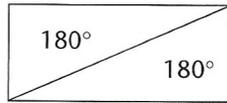
Square

A polygon with four equal sides and four right angles

Rhombus

A four-sided polygon with four parallel sides the same length

Quadrilaterals are polygons. In general, a quadrilateral has four sides, four angles, and two diagonals. The sum of the angle measures in any quadrilateral is 360° . This is shown by the fact that a triangle has 180° and two triangles make up every quadrilateral.



Quadrilaterals have special names.

Parallelogram

A quadrilateral with both pairs of opposite sides the same length and parallel

**Trapezoid**

A quadrilateral with only one pair of parallel sides

**Rectangle**

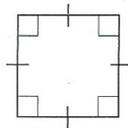
A parallelogram with four right angles

**Right trapezoid**

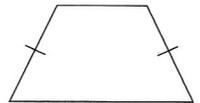
A quadrilateral with one pair of parallel sides and two right angles

**Square**

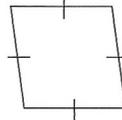
A rectangle with all sides the same length

**Isosceles trapezoid**

A quadrilateral with one pair of parallel sides and two sides the same length

**Rhombus**

A parallelogram with all sides the same length

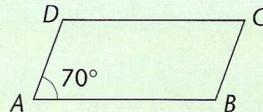


The angle measures of a quadrilateral can be computed.

EXAMPLE 1

In parallelogram $ABCD$, $m\angle A = 70^\circ$.

Find $m\angle B$, $m\angle C$, and $m\angle D$.



EXAMPLE 1*(continued)***Step 1**

Because $\overline{AB} \parallel \overline{CD}$, $\angle A$ and $\angle D$ are supplementary. Find $m\angle D$.

$$m\angle A + m\angle D = 180^\circ$$

$$70^\circ + m\angle D = 180^\circ$$

$$m\angle D = 180^\circ - 70^\circ$$

$$m\angle D = 110^\circ$$

Step 2

Because $\overline{AD} \parallel \overline{BC}$, $\angle C$ and $\angle D$ are supplementary. Find $m\angle C$.

$$m\angle C + m\angle D = 180^\circ$$

$$m\angle C + 110^\circ = 180^\circ$$

$$m\angle C = 180^\circ - 110^\circ$$

$$m\angle C = 70^\circ$$

Step 3

Because $\overline{AB} \parallel \overline{CD}$, $\angle B$ and $\angle C$ are supplementary. Find $m\angle B$.

$$m\angle B + m\angle C = 180^\circ$$

$$m\angle B + 70^\circ = 180^\circ$$

$$m\angle B = 180^\circ - 70^\circ$$

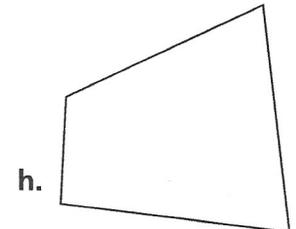
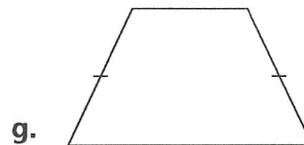
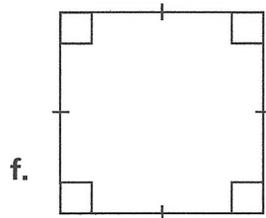
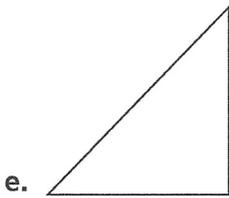
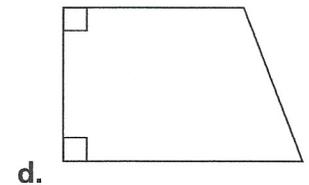
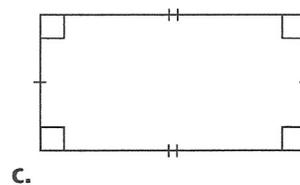
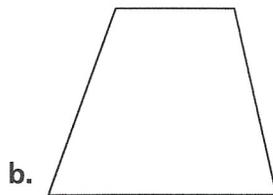
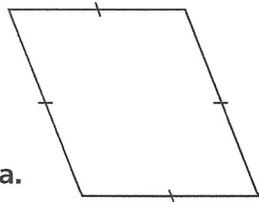
$$m\angle B = 110^\circ$$

Exercise A Find the measures of the angles.

Quadrilaterals

Directions Find a figure that matches each description. Write the letter of the figure on the blank.

1. A trapezoid with unequal sides and no right angles _____
2. A square _____
3. A rhombus without right angles _____
4. A right trapezoid _____
5. A rectangle that is not a square _____
6. An isosceles trapezoid _____
7. A quadrilateral with no parallel sides _____
8. A figure that is not a quadrilateral _____



Directions Answer the questions.

9. What do a square and a rhombus have in common?

10. What do a square and a trapezoid have in common?
