

Quadrilaterals:

Use your properties of special quadrilaterals to answer each of the following:

The Parallelogram:

- 1) In parallelogram ABCD, if the measure of $\angle B$ exceeds the measure of $\angle A$ by 50, find the degree measure of $\angle B$.
- 2) In parallelogram ABCD, the degree measure of $\angle A$ is represented by $2x$ and the degree measure of $\angle B$ by $2x + 60$. Find the value of x .
- 3) In parallelogram ABCD, $\angle A$ measures x degrees and $\angle B$ measures $(2x - 30)$ degrees. Find the degree measure of $\angle A$.
- 4) The measure of $\angle A$ and $\angle B$ of parallelogram ABCD are in the ratio 7:2. Find the degree measure of $\angle A$.
- 5) In parallelogram ABCD, the measure of $\angle A$ exceeds the measure of $\angle B$ by 30 degrees. Find the degree measure of $\angle B$.
- 6) The degree measures of two opposite angles of a parallelogram are represented by $3x + 40$ and $x + 70$. Find x and each angle measure.
- 7) In parallelogram ABCD, the measure of $\angle ABC = 3x - 12$, the measure of $\angle CDA = x + 40$. Find each angle of the parallelogram.
- 8) In parallelogram ABCD, $AB = 7x - 4$ and $CD = 2x + 21$. Find AB and CD .

The Rectangle:

- 9) In rectangle ABCD, the length of diagonal AC is represented by $6x - 2$ and the length of diagonal BD is represented by $4x + 2$. Find the value of x , AC, and BD.
- 10) In rectangle PQRS, diagonals PR and QS meet at T. If $PT = 4$, find the length of TR, TQ, PR, and QS.
- 11) In rectangle ABCD, diagonals AC and BD meet at point E. If $CB = 6$, $AB = 8$, and $AC = 10$, find AD, CD, EC, AE, DE, EB, and DB.
- 12) In rectangle ABCD, diagonals AC and BD meet at point E. If $AE = 7x - 1$ and $EC = 5x + 5$, find x and AC.

The Rhombus:

- 13) PQRS is a rhombus. The shorter diagonal PR measures 12 units and the measure of $\angle PQR = 60$ degrees. Find the length of a side of the rhombus.

14) The length of the shorter diagonal AC of rhombus ABCD is 7 and the measure of $\angle ABC = 60$ degrees, find the length of a side of the rhombus.

15) In rhombus ABCD, $AB = 8$ and the measure of $\angle ABC = 120$ degrees. Find the length of the shorter diagonal BD.

The Square:

16) ABCD is a square. If the measure of $\angle ABC$ is $3x + 30$, find the measure of x .

17) ABCD is a square. The measure of the diagonal BD is $3\sqrt{2}$. What is the measure of a side of the square?

18) If one side of a square is 44, and the side opposite it is $2x - 22$. Find the value of x .

The Trapezoid:

19) Trapezoid ABCD with the measure of $\angle ABD = 30$, the measure of $\angle BDC = 30$, the measure of $\angle ADB = 40$, the measure of $\angle BCD = 70$, $AD = x + 5$, and $BC = 3x - 21$. What are the lengths of sides AD and BC?

20) In isosceles trapezoid ABCD, $AD = 3x + 4$ and $BC = 22$, find the value of x .

21) In isosceles trapezoid ABCD, $\angle ADC = 80$. Find the measure of $\angle BCD$ and the measure of $\angle DAB$.

22) In isosceles trapezoid ABCD, $AD = 2y - 7$ and $BC = y + 5$. Find AD.

23) In isosceles trapezoid ABCD, the measure of $\angle ADC = 4x + 20$ and the measure of $\angle DAB = 8x - 20$. Find the value of x , $\angle ADC$, $\angle DAB$, $\angle BCD$, and $\angle ABC$.

24) If AD in isosceles trapezoid ABCD $= 2x + y$, $BC = 7y - 2x$, and $x = 3$, find AD.