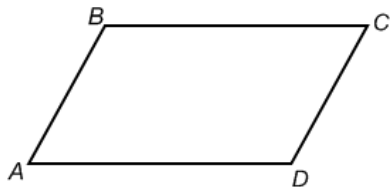# Geometry CC WS 2.5 – Parallelograms

Properties of Quadrilaterals
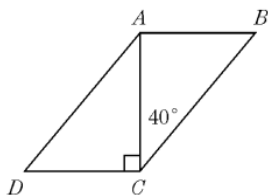- ➤ Four sided polygon
- ➤ Sum of the interior angles is $360°$
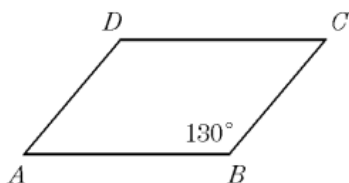
Properties of a parallelogram

- ➤ Opposite sides are parallel $\overline{BC} \parallel \overline{DA}, \overline{BA} \parallel \overline{DC}$
- ➤ Opposite sides are congruent $\overline{BC} \cong \overline{DA}, \overline{BA} \cong \overline{DC}$
- ➤ Opposite angles are congruent $\angle A \cong \angle C, \angle B \cong \angle D$
- ➤ Consecutive angles are supplementary $m\angle A + m\angle D = 180°, m\angle D + m\angle C = 180°$
- ➤ Diagonals bisect each other

1. In parallelogram $ABCD$, $\overline{AC} \perp \overline{DC}$. If $m\angle ACB = 40°$, find $m\angle ADC$.
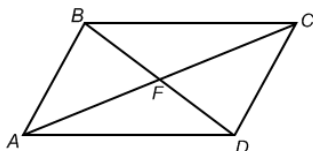

2. In parallelogram $ABCD$, $m\angle A$ is 30 degrees more than $m\angle B$. Find the measure of angle D.

3. In parallelogram $ABCD$, $m\angle B = 130°$. Find the measure of angle A and angle D.

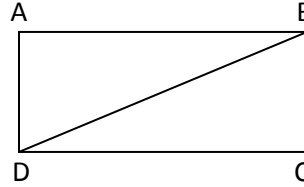4. In parallelogram $ABCD$, $BD = 12$, $m\angle CAD = 30°$ and $m\angle ADC = 110°$.

a) Find $m\angle BCA$.

b) Find $m\angle CAB$.

c) Find BF.

Properties of a Rectangles
- ➤ Parallelogram
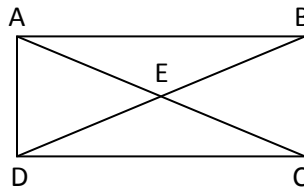- ➤ Four right angles
- ➤ Diagonals are congruent

Questions 1-3. Using rectangle *ABCD,* find the missing value. (hint: if you have a right triangle, Pythagorean theorem can be used).

1. *AB* = 8, *AD* = 6, find *DB* _____

2. *AB* = 13, *DB* = 18, find *DC*_____

3. *BC* = 5, *DB* = 13, find *DC* _____

A   B

D   C

Questions 4-7. Using rectangle *ABCD,* fill in the blanks to make true statements.

4. $m\angle DAB =$_____

5. $\angle ABD \cong$_____

6. $\angle AED \cong$_____

7. $\overline{AC} \cong$_____

A   B

E

D   C

8. If $m\angle BCA = 65$, $m\angle ACD =$_____ and $m\angle CAD =$_____

9. If $m\angle ADB = 70$ and $m\angle DEC = 120$, $m\angle ACD =$_____ and $m\angle BEC =$_____

10. If $AE = 13$, $AC =$_____, $DB =$_____ and $BE =$_____

Properties of a Rhombus
- ➤ Parallelogram
- ➤ 4 congruent sides
- ➤ diagonals are perpendicular to each other
- ➤ diagonals bisect the angles

Questions 11-16, using rhombus *ABCD,* complete the statements.

11. If $m\angle ADC = 68°$, $m\angle BDC =$_____

12. If $m\angle DCB = 110°$, $m\angle ABD =$_____

13. If $BC = 13$, the perimeter of rhombus *ABCD* = _____

14. If $AC = 12$ and $DB = 16$, $DC =$_____

15. If $AE = 2x+1$ and $CE = 3x\text{-}5$, $AC =$_____

16. If $m\angle EDC = 5x + 3$ and $m\angle ACD = 8x - 4$, find the value of x_____

A   B

E

D   C