WORKSHEET: *Parallelogram Properties*   PERIOD: _____ DATE: _____
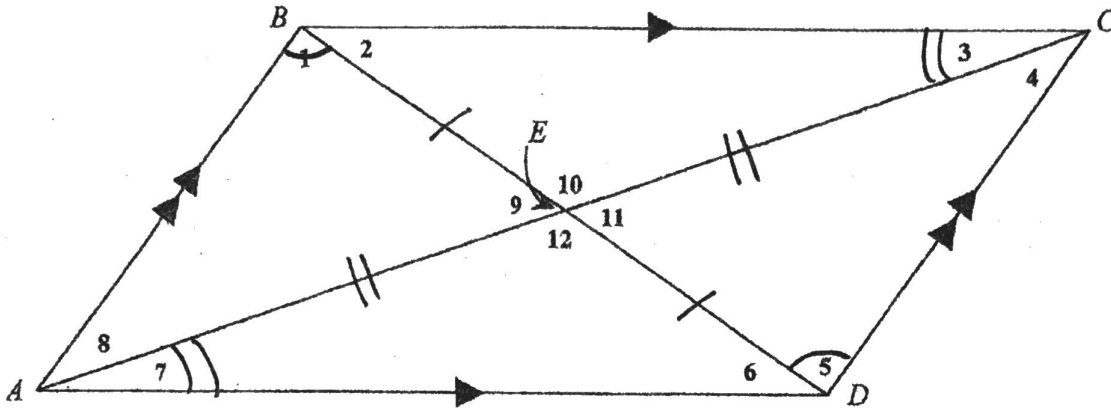
Parallelograms – Using Properties

Complete each of the following:

1) $m\angle 1 = m\angle$ __5__   2) $m\angle 7 = m\angle$ __3__   3) $m\angle ABC = m\angle$ __CDA__

4) $m\angle BCD = m\angle$ __DAB__   5) $m\angle 9 = m\angle$ __11__   6) $mBE = m$ __ED__

7) $mAB = m$ __DC__   8) $\triangle ABD \cong \triangle$ __CDB__   9) $\triangle CAB \cong \triangle$ __ACD__

10) $2 \cdot mBE = m$ __BD__   11) $mAD = m$ __BC__   12) $mAE = m$ __EC__

13) $\angle BAD$ is supplementary with $\angle$ __ADC__ and also with $\angle$ __ABC__ .

IF *ABCD* is a **rectangle**, then:

14) $m\angle ABC =$ __90__ °   15) $mAC = m$ __BD__   16) $m\angle 2 + m\angle 5 =$ __90__ °

17) $m\angle 2 = m\angle$ __6__ $= m\angle$ __7__ $= m\angle 3$ 18) The diagonals form __4__ isosceles $\triangle$'s

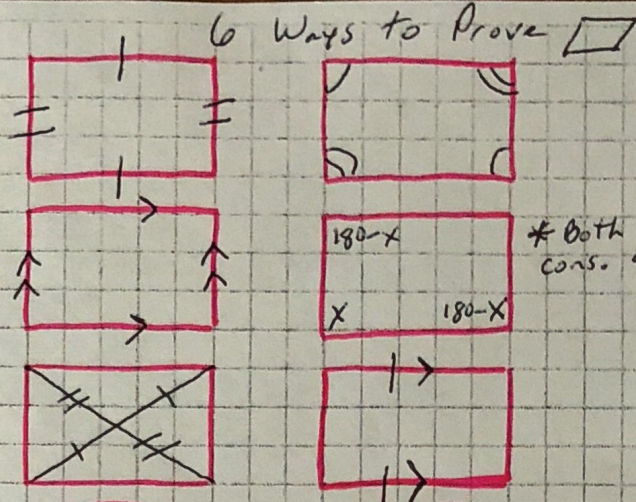IF *ABCD* is a **rhombus**, then:

19) $m\angle 10 =$ __90__ °   20) $m\angle 2 + m\angle 3 =$ __90__ °   21) $mAB \cong mBC$

22) $m\angle 8 = m\angle$ __7__ $= m\angle$ __3__ $= m\angle$ __4__

IF *ABCD* is a **square**, then:

23) $mAC = m$ __BD__   24) $m\angle 9 = m\angle 10 = m\angle 11 = m\angle 12 =$ __90__ °

25) $m\angle 1 = m\angle 2 = m\angle 3 = m\angle 4 = m\angle 5 = m\angle 6 = m\angle 7 = m\angle 8 =$ __45__ °

29

5 Properties of Parallelograms

- Opposite sides are congruent
- Opposite sides are parallel
- Opposite angles are $\cong$
- Consecutive angles = 180°
- Diagonals ~~are~~ ~~do~~ bisect each other

6 Ways to Prove ▱

2 Properties of Rectangle

- Four right angles
- Diagonals are congruent

① Prove one Parallelogram Prop.
② Prove one Rectangle

3 Properties of Rhombus

- All sides $\cong$
- Diagonals are $\perp$ to each other
- Diagonals bisect opp. $\angle$'s

① Prove one Parallelogram Prop.
② Prove one Rhombus Prop.

How many properties does a square have?

10

① Prove one Parallelogram Prop.
② Prove One Rhombus Prop.
③ Prove one Rectangle Prop.

Why would you use the distance formula? Trying to conclude if opp. sides are $\cong$

What theorems prove lines parallel? converse of { cons. int. $\angle$'s, corresponding $\angle$'s, alt. Int. $\angle$'s, alt Ext. $\angle$'s }

Why would you use the slope formula? Trying to conclude if opp. sides are $\parallel$ b/c the slopes of $\parallel$ lines are the same.

What theorems prove triangles congruent? SAS, ASA, SSS, HL, AAS