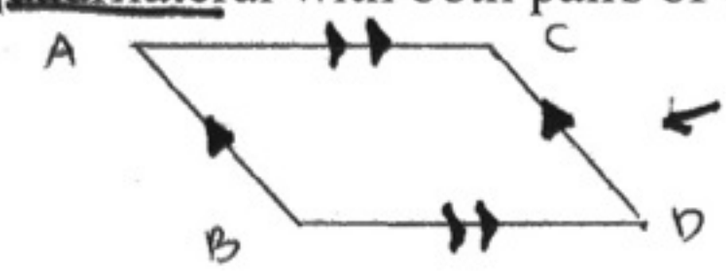
Lesson 6-2 Parallelograms

a 4-sided figure

A **parallelogram** is a quadrilateral with both pairs of opposite sides parallel.

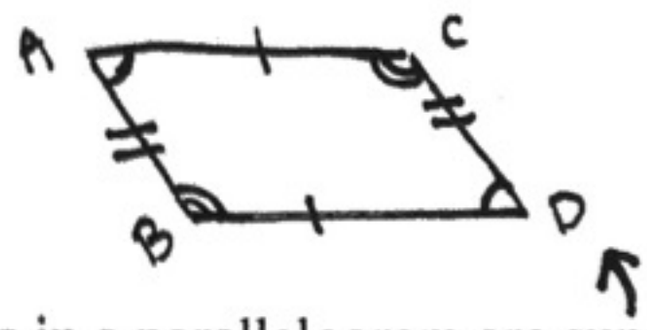


$\overline{AB} \parallel \overline{CD}$
$\overline{AC} \parallel \overline{BD}$

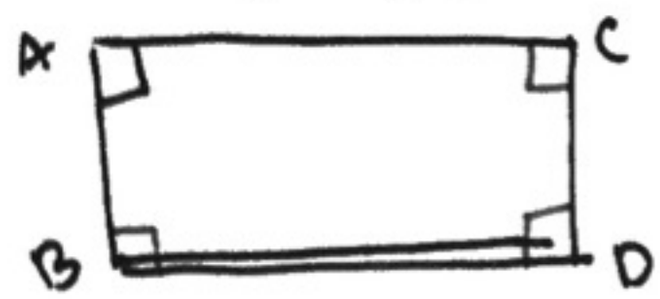
"▱ABCD"

THEOREMS:

- Opposite sides of a parallelogram are congruent: $\overline{AB} \cong \overline{CD}$, $\overline{AC} \cong \overline{BD}$
- Opposite angles in a parallelogram are congruent $\angle A \cong \angle D$, $\angle B \cong \angle C$

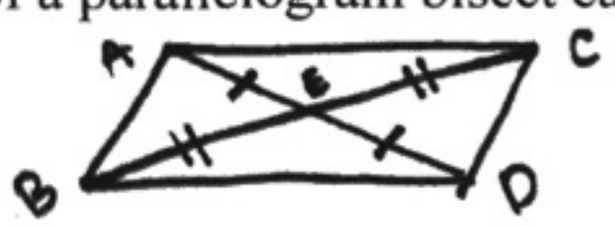


- Consecutive angles in a parallelogram are supplementary: $m\angle B + m\angle D = 180$, $m\angle A + m\angle B = 180$, $m\angle A + m\angle C = 180$, $m\angle C + m\angle D = 180$
- If a parallelogram has one right angle, it has four right angles.



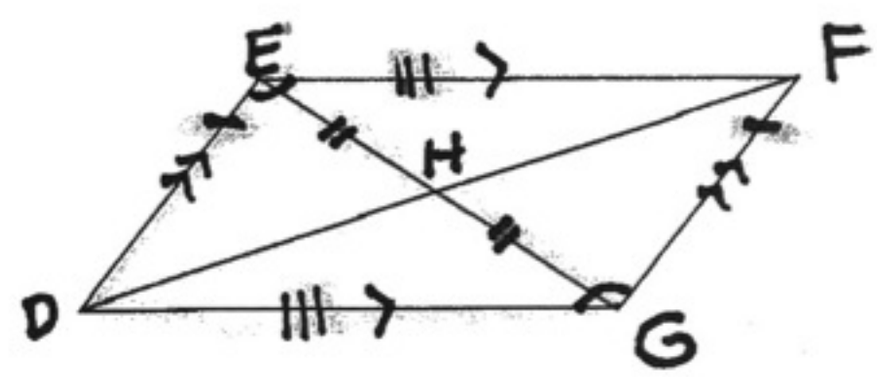
if $m\angle A = 90$, $m\angle C$, $m\angle B$, $m\angle D$ all $= 90$

- The diagonals of a parallelogram bisect each other.



$\overline{AE} \cong \overline{DE}$
$\overline{BE} \cong \overline{CE}$

Ex1) Complete each statement about ▱DEFG. ~~Justify your answer.~~



a. $\overline{DG} \parallel$ $\overline{EF}$

b. $\overline{DE} \approx$ $\overline{GF}$

c. $\overline{GH} \approx$ $\overline{EH}$

d. $\angle DEF \approx$ $\angle DGF$

e. $\angle EFG$ is suppl. to $\angle DGF$.

f. $\triangle DGE \approx$ $\triangle EFG$ (SSS)

1. $\overline{DE} \cong \overline{GF}$, $\overline{EF} \cong \overline{DG}$	1. opp sides of ▱ are ≅
2. $\overline{EG} \cong \overline{EG}$	2. reflexive prop
3. $\triangle DGE \cong \triangle EFG$	3. SSS

180 - 55

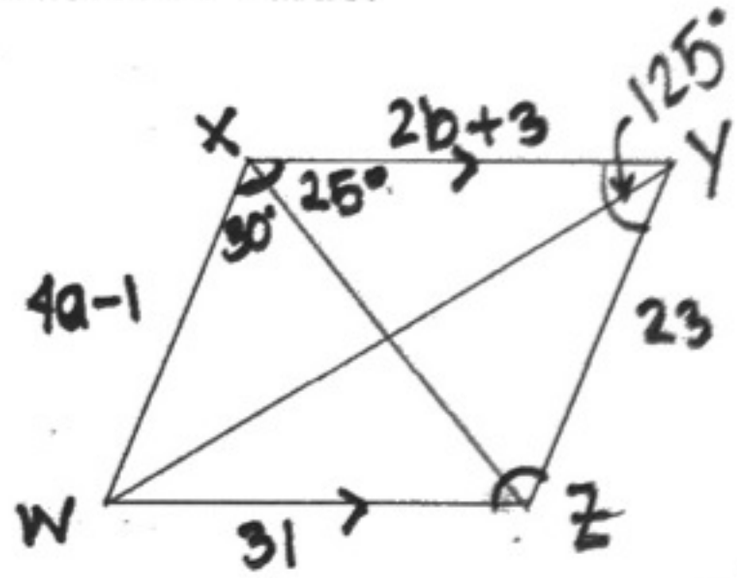
Ex2) Use ▱WXYZ to find each measure or value.

a. m<XYZ = 125°

b. m<WZY = 55°

c. m<XZW = 25°

d. a = _____



alt int ∠s are ≅

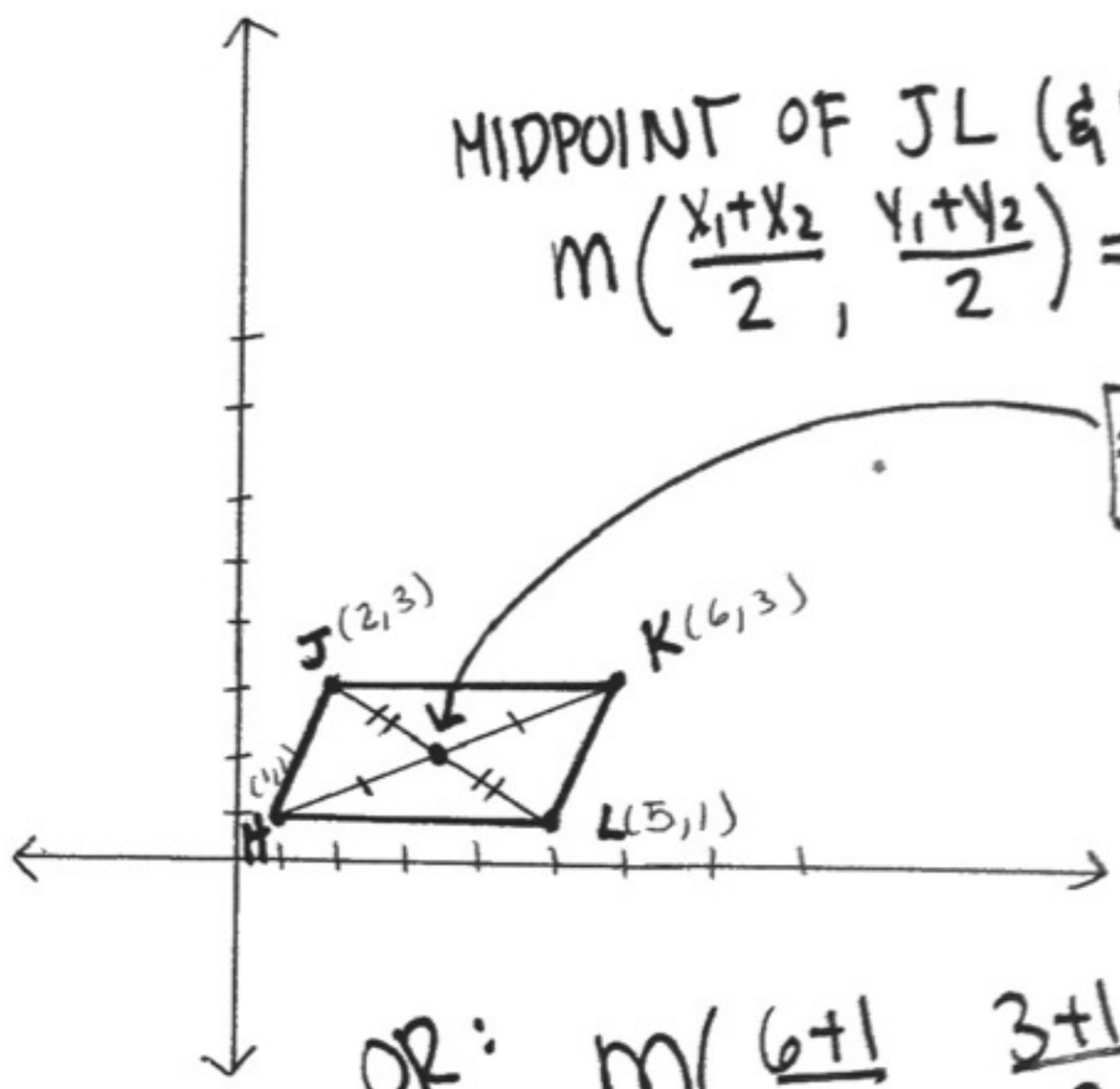
(opp sides of ▱ ≅)

4a-1 = 23

a = 6

Ex3) COORDINATE GEOMETRY: Find the coordinates of the intersection of the diagonals of parallelogram *HJKL* given the set of vertices.

H(1, 1), *J*(2, 3), *K*(6, 3), *L*(5, 1)



MIDPOINT OF JL (& HK)

$m\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right) = m\left(\frac{2+5}{2}, \frac{3+1}{2}\right)$

$= m(3.5, 2)$

OR: $m\left(\frac{6+1}{2}, \frac{3+1}{2}\right)$

$m(3.5, 2)$

Unit 6
Assign. #1:
P. 328 #3-11,
15-33, 44