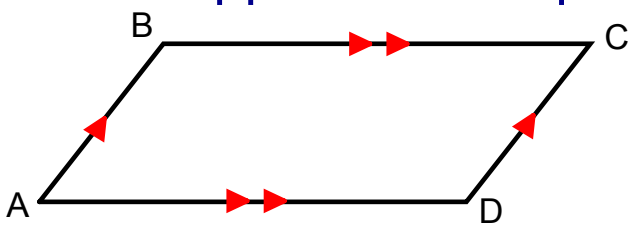
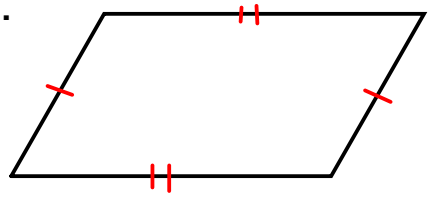
Chapter 8.2: Use Properties of Parallelograms

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



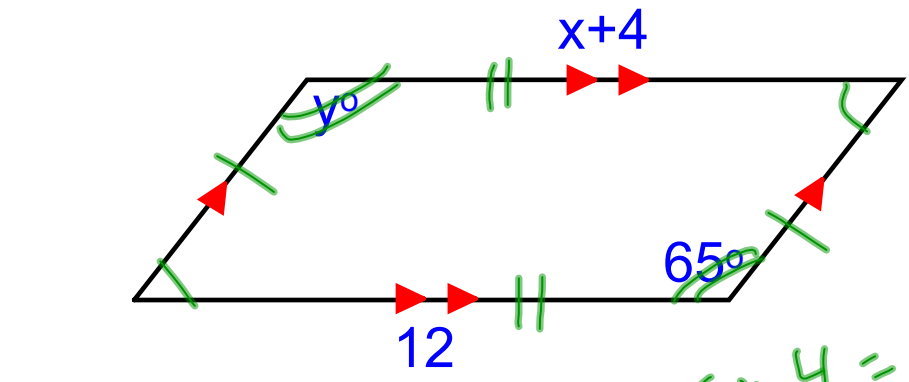
$\square ABCD$ - Parallelogram ABCD

Theorem 8.3 - If a quadrilateral is a parallelogram, then its opposite sides are congruent.



Theorem 8.4 - If a quadrilateral is a parallelogram, then its opposite angles are congruent.

Find x and y.



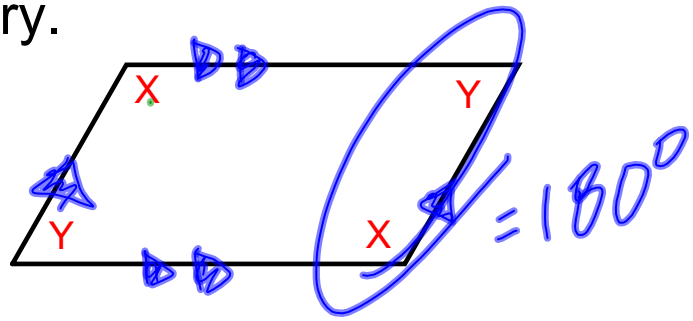
$y = 65^\circ$

$x + 4 = 12$

$-4 \quad -4$

$x = 8$

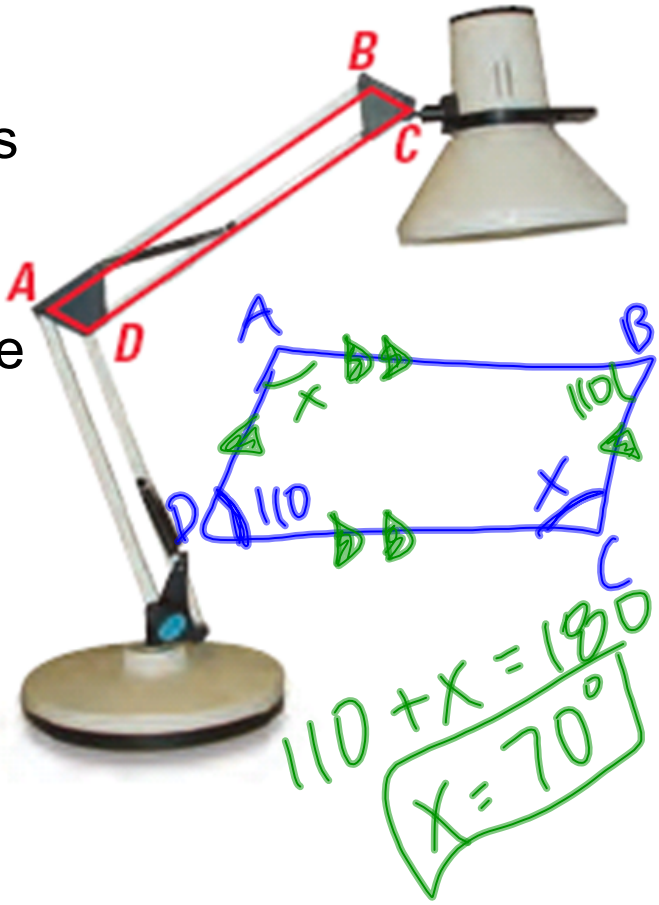
Theorem 8.5 - If a quadrilateral is a parallelogram, then its consecutive angles are supplementary.



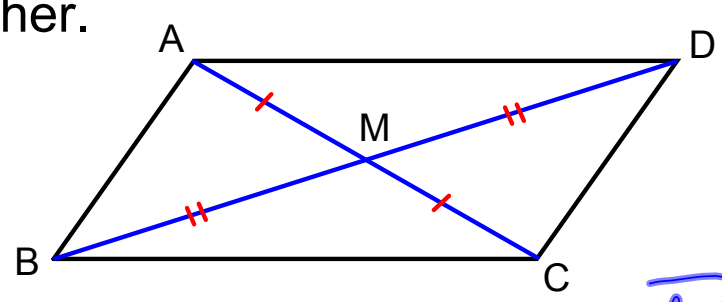
$= 180^\circ$

$x + y = 180$

Part of the extending arm of a desk lamp is a parallelogram. The angles of the parallelogram change as the lamp is raised and lowered. Find m<BCD when m<ADC=110



Theorem 8.6 - If a quadrilateral is a parallelogram, then its diagonals bisect each other.



M is a midpoint of $\overline{AC}$ and $\overline{DB}$.

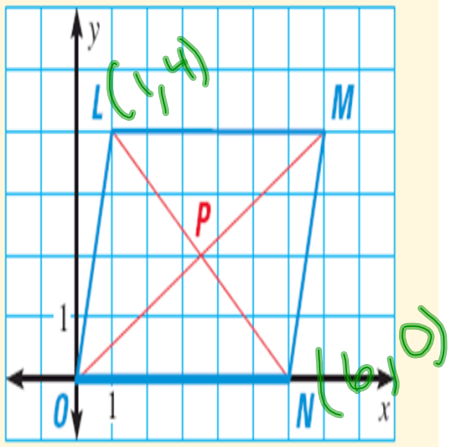
$\overline{AM} \cong \overline{CM}$

$\overline{BM} \cong \overline{DM}$

The diagonals of $\square LMNO$ intersect at point P. What are the coordinates of P?

(A) $\left(\frac{7}{2}, 2\right)$ (B) $\left(2, \frac{7}{2}\right)$

(C) $\left(\frac{5}{2}, 2\right)$ (D) $\left(2, \frac{5}{2}\right)$



(1,4)

(6,0)

$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

(1,4)
(6,0)

$\left(\frac{1+6}{2}, \frac{4+0}{2}\right) = \left(\frac{7}{2}, 2\right)$

Homework: Ch 8.2 pg. 518
#'s 4,6,10,14,16,24-28e,38