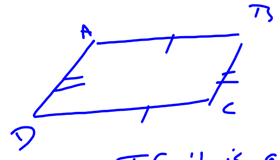
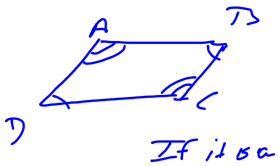
6.3 Proving Quadrilaterals are Parallelograms

The converse of 6.2



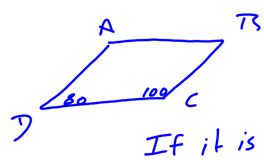
If it is a quadrilateral and both pairs of opposite sides are ≅ then it's a ▱

If $\overline{AB} \cong \overline{DC}$, $\overline{BC} \cong \overline{AD}$ then ABCD is a ▱



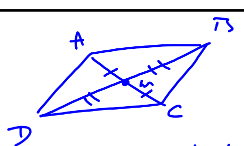
If it is a quadrilateral with opposite angles ≅ then it is a ▱

if $\angle A \cong \angle C$, $\angle B \cong \angle D$ then ABCD is a ▱



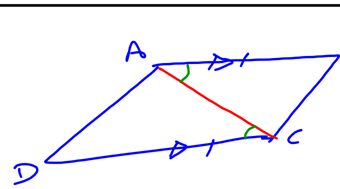
If it is a quadrilateral and consecutive angles are supplementary, then it is a ▱

If $m\angle D + m\angle C = 180$, $m\angle D + m\angle A = 180$ the ABCD is ▱



If it is a quadrilateral and its diagonals bisect each other, then it is a ▱

If $\overline{Am} \cong \overline{mC}$, $\overline{Dm} \cong \overline{mB}$ then ABCD is a ▱



Given $\overline{AB} \parallel \overline{DC}$
$\overline{AB} \cong \overline{DC}$

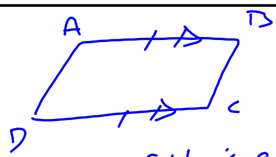
$\overline{AC} \cong \overline{AC}$
Reflexive

$\angle BAC \cong \angle DCA$
Alt Int ∠'s

$\triangle ABC \cong \triangle CDA$
by SAS

$\angle B \cong \angle D$
by corresponding parts

by the same process show $\angle A = \angle C$



If it is a quadrilateral and one pair of opp sides is ≅ and ∥ then it is a ▱

If $\overline{AB} \parallel \overline{CD}$, $\overline{AB} \cong \overline{CD}$ then ABCD is a ▱

6 ways to show it is a ▱

1. Show both pairs of opp sides ∥
2. Show both pairs of opp sides ≅
3. Show both pairs of opp ∠'s ≅
4. Show that consecutive ∠'s are supp
5. Show that the diagonals bisect each other
6. Show that 1 pair of opp sides is ≅, ∥

Slopes

$m = \frac{y_2 - y_1}{x_2 - x_1}$ If $m_1 = m_2$ then ∥

Distance

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

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2 - 36 even

30 - Draw using Protractor, ruler