A quadrilateral is a shape with four sides. One type of quadrilateral is a parallelogram. In a parallelogram, both pairs of opposite sides are parallel.

Use a ruler and protractor to draw a parallelogram below that does not have any right angles. Make sure that both pairs of opposite sides are parallel.

Label the parallelogram ABCD. Make sure the letters go in order around the parallelogram. Then use a protractor to measure each angle below

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Make a conjecture (create your own theorem) about the angles of a parallelogram

Now use a ruler to measure each side length below in cm.

= \_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Make a conjecture (create your own theorem) about the sides of a parallelogram

Draw in the diagonals of your parallelogram ( and ). Label the point where the two diagonals cross E. Measure each length listed below.

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Write down everything that you notice about the measurements you made.

Now use a protractor to measure each angle below

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Which **one theorem from chapter 2** explains why there are so many pairs of congruent angles in your picture?

Now you should be ready to prove some of your conjectures from earlier. Complete the following proofs.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Statement** | **Reason** |
| Image result for parallelogram |  |  |  |
| Given: $\overbar{AB}∥\overbar{DC}, \overbar{AD}∥\overbar{BC}$Prove: $∠D≅∠B$ |  |  |  |

In words, what did you just prove about all parallelograms?

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Statement** | **Reason** |
| Image result for parallelogram |  |  |  |
| Given: $\overbar{AB}∥\overbar{DC}, \overbar{AD}∥\overbar{BC}$Prove: $\overbar{AB}≅\overbar{DC}$ |  |  |  |

In words, what did you just prove about all parallelograms?