

NO QUIZ TODAY!!

**We're starting chapter 7 and skipping
chapters 5 & 6!!**

Grab a SM2 book from the front of the room
and start tearing out chapter 7, pgs.478-563

Squares and Rectangles

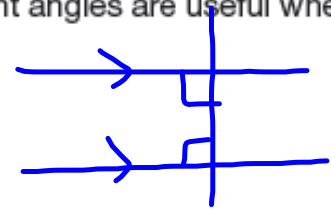
Properties of Squares and Rectangles

7.1

PG.479-480 IN YOUR BOOK

A quadrilateral is a four-sided polygon. A square is a quadrilateral with four right angles and all sides congruent.

Quadrilaterals have different properties that are directly related to the measures of their interior angles and their side lengths. Perpendicular lines and right angles are useful when proving properties of certain quadrilaterals.



PG.481 IN YOUR BOOK

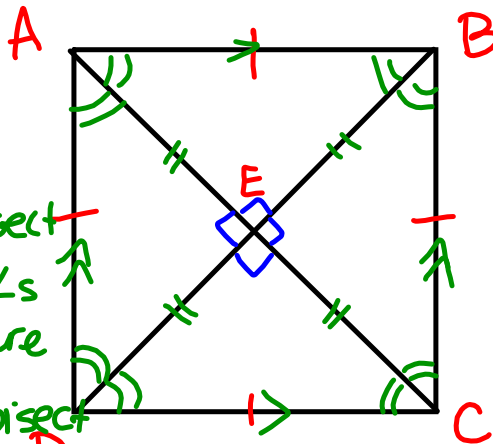
The Perpendicular/Parallel Line Theorem states: "If two lines are perpendicular to the same line, then the two lines are parallel to each other."

- Draw a square with two diagonals. Label the vertices and the intersection of the diagonals. List all of the properties you know to be true.

A diagonal of a polygon is a line segment that connects two non-adjacent vertices.



- Diagonals bisect the interior \angle s of the square
- Diagonals bisect each other



$AB \cong BC \cong DC \cong AD$
 $DB \cong AC$ (diagonals are \cong)
 $\angle DEC \cong \angle AEB \cong \angle AED \cong \angle BEC$
 (all right angles)
 $AD \parallel BC$ and $AB \parallel DC$

$\angle ADB \cong \angle CBD$
 $\triangle DEC \cong \triangle CEB \cong \triangle BEA \cong \triangle AED$
 $\triangle ADC \cong \triangle CBA$

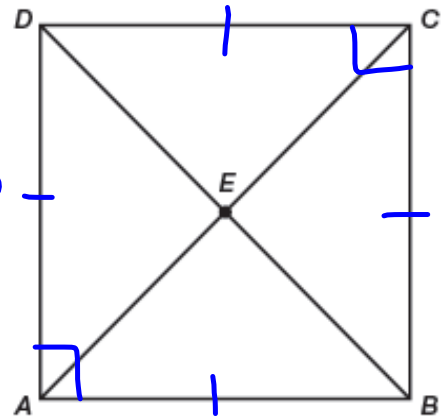
PG.482 IN YOUR BOOK

4. Prove the statement $\triangle DAB \cong \triangle CBA$.

Given: Square $ABCD$ with diagonals \overline{AC} and \overline{BD} intersecting at point E

Prove: $\triangle DAB \cong \triangle CBA$

SAS Congruence theorem



5. Do you have enough information to conclude $\overline{AC} \cong \overline{BD}$? Explain your reasoning.

Yes, the Δ s are \cong , then CPCTC.

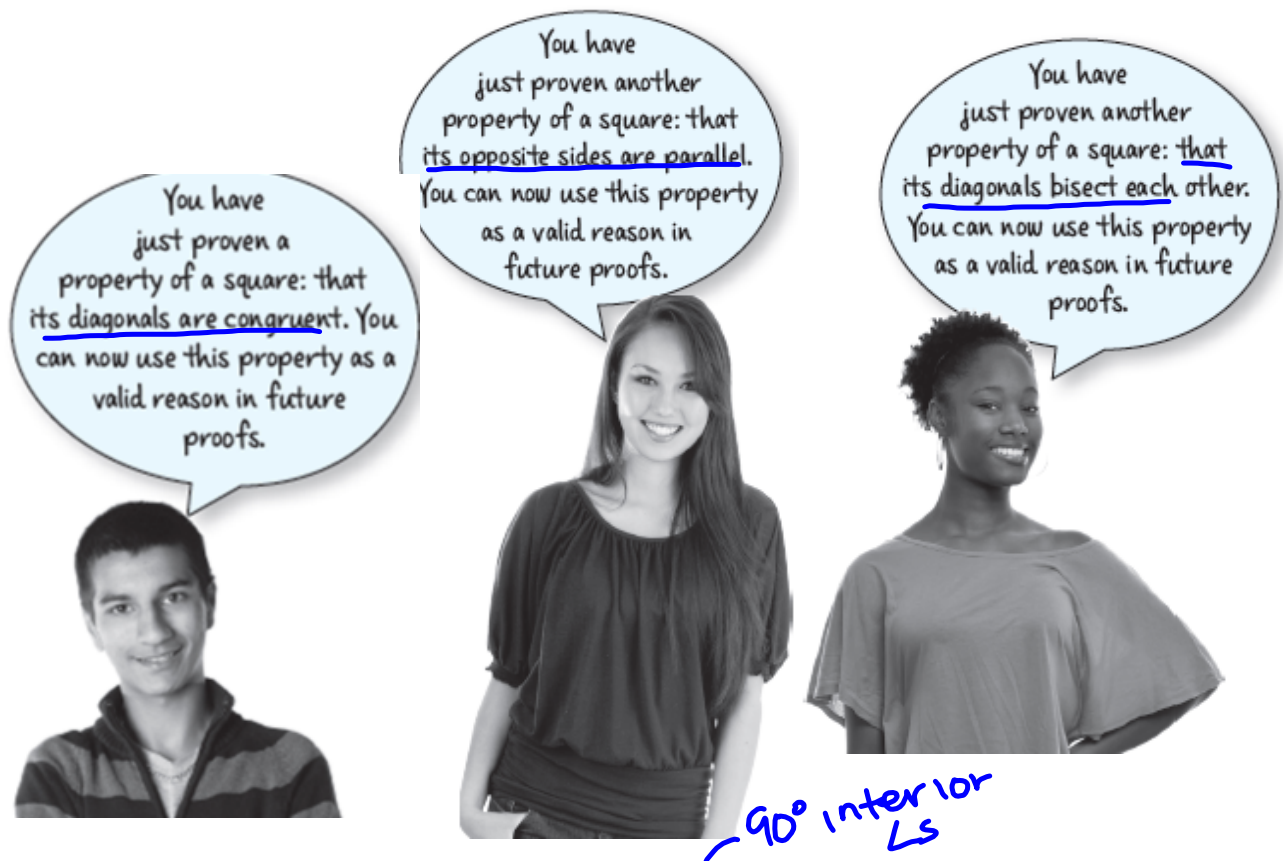
↑ corresponding parts of congruent triangles are congruent

You have just proven a property of a square: that its diagonals are congruent. You can now use this property as a valid reason in future proofs.



Properties of Squares

(PG.482,483,484, and 485 IN YOUR BOOK)

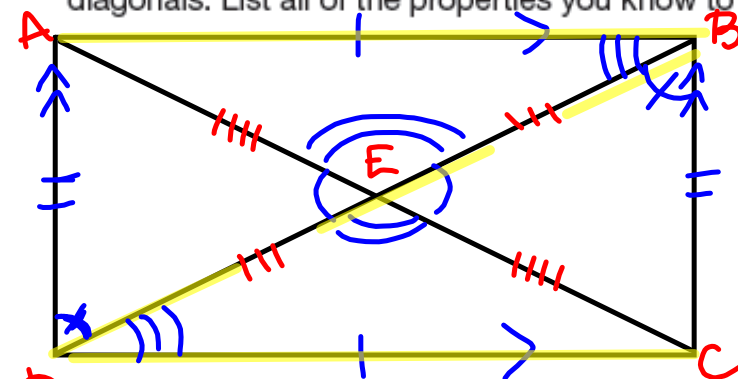


10. Prove that the diagonals of a square bisect the vertex angles. Use square $ABCD$ in Question 8.
11. Prove that the diagonals of a square are perpendicular to each other. Use square $ABCD$ in Question 8.

PG.486 IN YOUR BOOK

A rectangle is a quadrilateral with opposite sides congruent and all angles congruent.

1. Draw a rectangle with two diagonals. Label the vertices and the intersection of the two diagonals. List all of the properties you know to be true.



$AB \cong DC$
 $AD \cong BC$

$AE \cong EC$
 and
 $DE \cong EB$

$AB \parallel DC$

$AD \parallel BC$

$\angle AED \cong \angle BEC$

$\angle AEB \cong \angle DEC$

$\angle ABD \cong \angle BDC$

$\triangle ABE \cong \triangle CDE$
 (AAS)

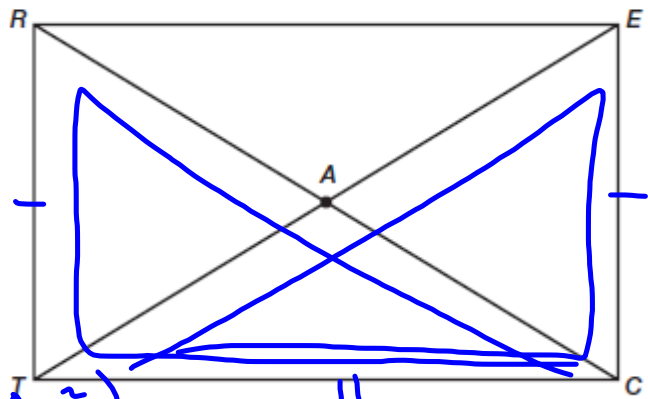
$\triangle ABD \cong \triangle CDB$
 (SAS)

$\triangle AED \cong \triangle BEC$
 (AAS)

3. Prove the statement $\triangle RCT \cong \triangle ETC$.

Given: Rectangle $RECT$ with diagonals \overline{RC} and \overline{ET} intersecting at point A

Prove: $\triangle RCT \cong \triangle ETC$



$RT \cong EC$

$CT \cong CT$

$RC \cong ET$

$\triangle RCT \cong \triangle ETC$ (SSS $\triangle \cong$)

Properties of Rectangles
PG.488 IN YOUR BOOK

5. Describe how you could prove the second pair of opposite sides of the rectangle are congruent.

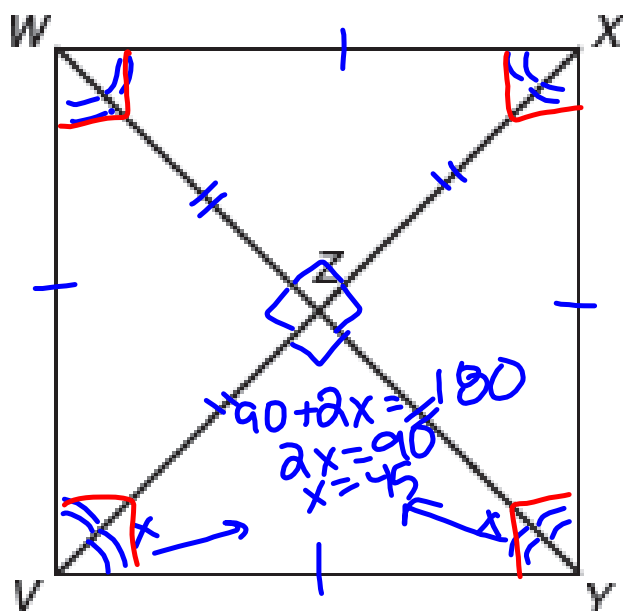
6. Do you have enough information to conclude rectangle *RECT* is a parallelogram? Explain your reasoning.

7. Do you have enough information to conclude the diagonals of a rectangle are congruent? Explain your reasoning.

8. Do you have enough information to conclude the diagonals of a rectangle bisect each other? Explain your reasoning.

NOT IN YOUR BOOK

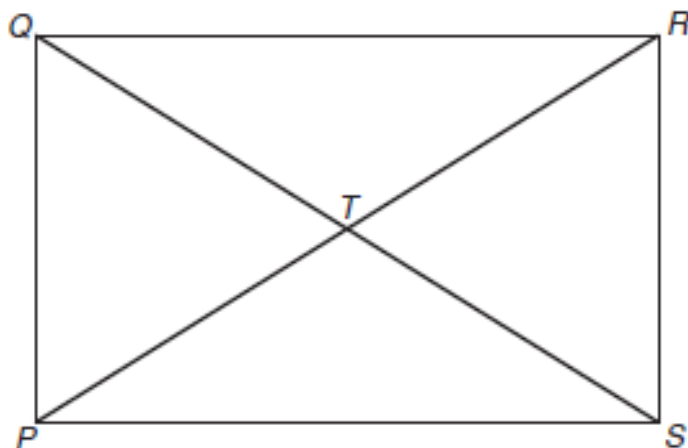
1. In quadrilateral $VWXY$, segments VX and WY bisect each other, and are perpendicular and congruent. Is this enough information to conclude that quadrilateral $VWXY$ is a square? Explain.



$$\begin{aligned} \triangle WZX &\cong \triangle XZY \cong \\ \triangle YZV &\cong \triangle WZV \\ (\text{SAS } \triangle \cong) \end{aligned}$$

NOT IN YOUR BOOK

Quadrilateral $PQRS$ is a rectangle with diagonals PR and QS .



2. Name all parallel segments.

3. Name all congruent segments.

4. Name all right angles.

5. Name all congruent angles.

6. Name all congruent triangles.

Homework

Finish 7.1