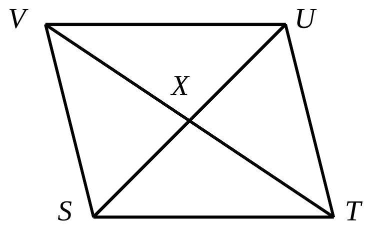
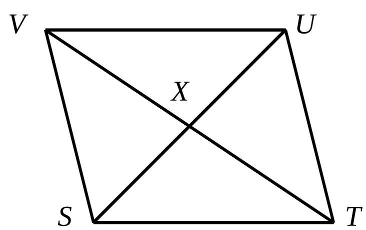
NAME:______________________________

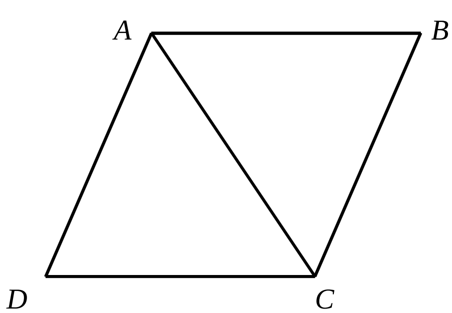
1. Given: $\overline{VU} \cong \overline{ST}$ and $\overline{SV} \cong \overline{TU}$
Prove: $VX = XT$



2. Given: $\overline{SV} \cong \overline{TU}$ and $\overline{SV} \parallel \overline{TU}$
Prove: $VX = XT$



3. Given: $ABCD$ is a rhombus.
Prove: $\Delta\ BCA \cong \Delta\ DAC$



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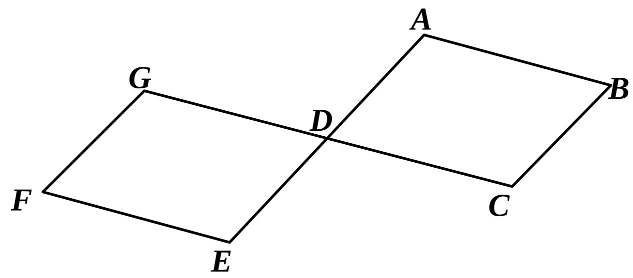
4. Given that *ABCD* and *EFGD* are parallelograms and that *D* is the midpoint of $\overline{CG}$ and $\overline{AE}$, prove that *ABCD* and *EFGD* are congruent.



5. Theorem 9-6 states that if one pair of opposite sides of a quadrilateral is congruent and parallel, the quadrilateral is a parallelogram. This condition is met in two quadrilaterals. $\overline{AB}$ is parallel and congruent to $\overline{DC}$ in *ABCD*, $\overline{EF}$ is parallel and congruent to $\overline{HG}$ in *EFGH*, and $\overline{AB} \cong \overline{EF}$. Are the two quadrilaterals congruent?

6. To find the formula for the area of a trapezoid, you can rotate the trapezoid and place the image next to the original to make a parallelogram. Write a flow proof to show that the figure made from the two trapezoids is a parallelogram.

[1]

1. $\overline{VU} \cong \overline{ST}$ and $\overline{SV} \cong \overline{TU}$	1. Given
2. $STUV$ is a parallelogram	2. If both pairs of opp. sides of a quad. are ≅, then the quad is a parallelogram.
3. $VX = XT$	3. The diagonals of a parallelogram bisect each other.

[2]

1. $\overline{SV} \cong \overline{TU}$ and $\overline{SV} \parallel \overline{TU}$	1. Given
2. $STUV$ is a parallelogram	2. If one pair of opp. sides of a quad. are both || and ≅, then the quad is a parallelogram.
3. $VX = XT$	3. The diagonals of a parallelogram bisect each other.

[3]

1. $ABCD$ is a rhombus	1. Given
2. $ABCD$ is a a parallelogram	2. Definition of a rhombus
3. $\Delta BCA \cong \Delta DAC$	3. The diagonals of a parallelogram form two congruent triangles.

[4] Check students' work. They should use the def. of midpoint and opposite sides of a parallelogram are ≅ to show that $\overline{AD} \cong \overline{DE} \cong \overline{FG} \cong \overline{BC}$ and $\overline{GD} \cong \overline{DC} \cong \overline{AB} \cong \overline{EF}$. Then, using the vert. $\angle$ thm. and opposite $\angle$'s of a parallelogram are ≅, show that $\angle GDE \cong \angle ADC \cong \angle B \cong \angle F$. $\angle G \cong \angle E \cong \angle C \cong \angle A$, since opposite angles are = and add to 360° in a parallelogram. Therefore $ABCD \cong EFGD$ because their corresponding sides and corresponding $\angle$'s ≅.

[5] No, the other two sides are not necessarily congruent. Check students' examples.

[6] Check students' work. They should show that in trapezoid $ABCD$, $\overline{AB}$ and $\overline{CD}$ are parallel, so $\angle A$ and $\angle D$ are supplementary. In the image $A'B'C'D'$, $\angle A \cong \angle A'$, so $\angle A'$ and $\angle D$ are also supplementary. Hence, $\overline{AD} \parallel \overline{A'D'}$. Similarly, prove $\overline{AD'} \parallel \overline{A'D}$, so $AD'A'D$ is a parallelogram.