Name: Answers Date: 12/6/17

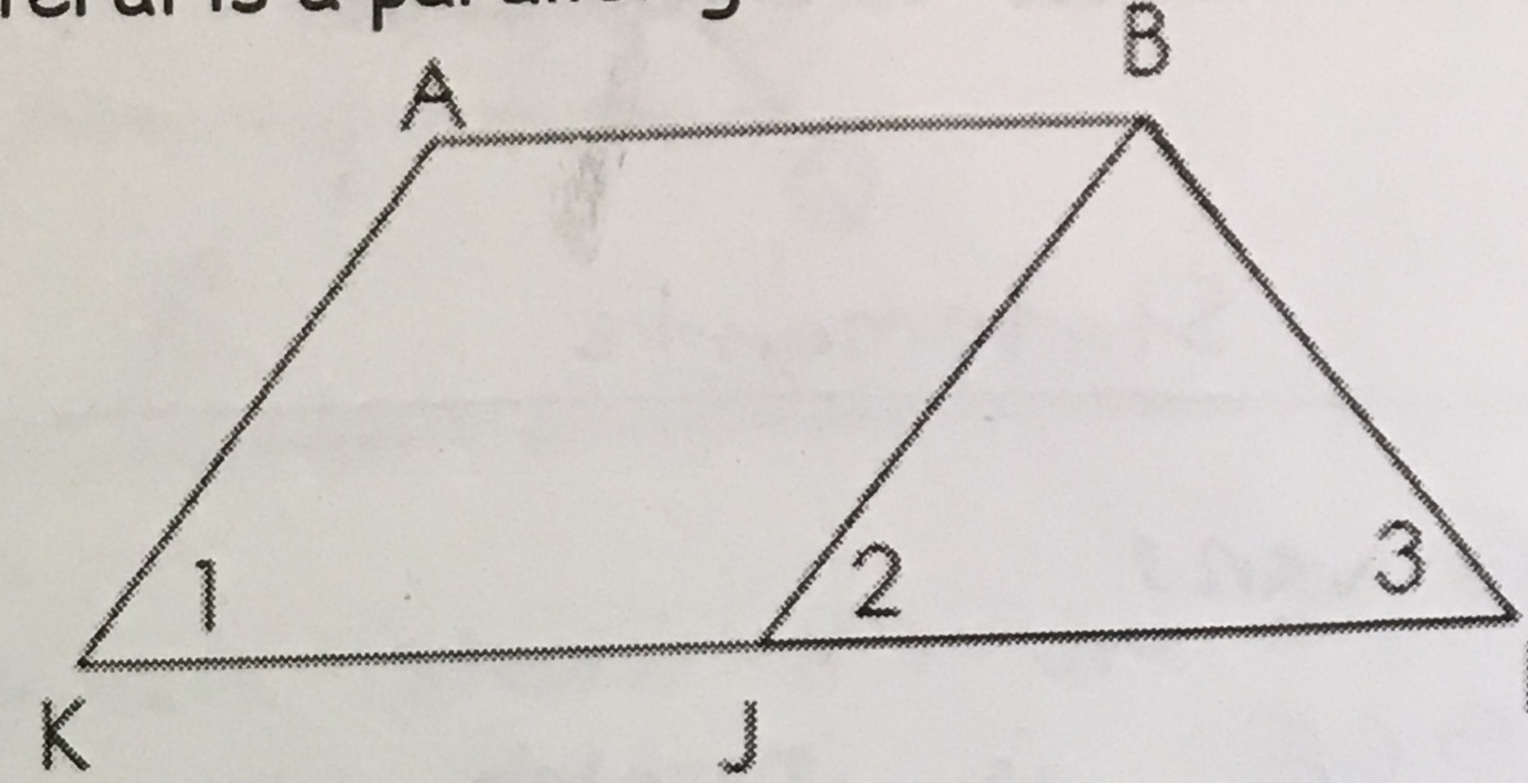
Unit 5 - Polygons

AIM: Students will be able to prove that a quadrilateral is a parallelogram or a rhombus

Do Now:

7. Given: $\angle 1 \cong \angle 2$; $\angle 2 \cong \angle 3$; $\overline{AK} \cong \overline{BL}$

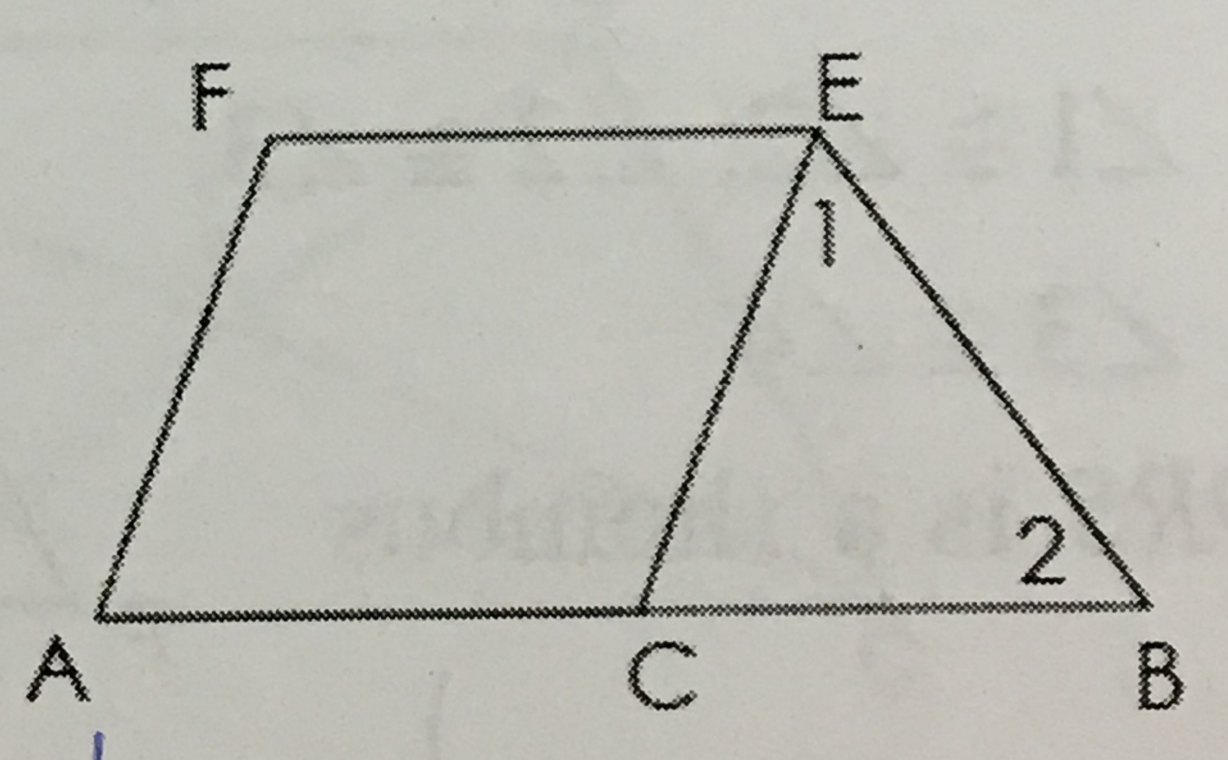
Prove: $ABJK$ is a parallelogram



S	R
1) Givens	1) Given
2) AK // JB	2) If corresponding ∡'s are ≅, then lines ar
3) ΔJBL is isosceles	3) Base ∡'s are ≅
4) JB ≅ LB	4) Isosceles Δ's have ≅ legs
5) KA ≅ JB	5) Transitive / Substitution
6) ABJK is a $\boxed{P}$	6) One pair of opp sides is ≅ and //.

1. Given: $ACEF$ is a rhombus; $\overline{AC} \cong \overline{BC}$

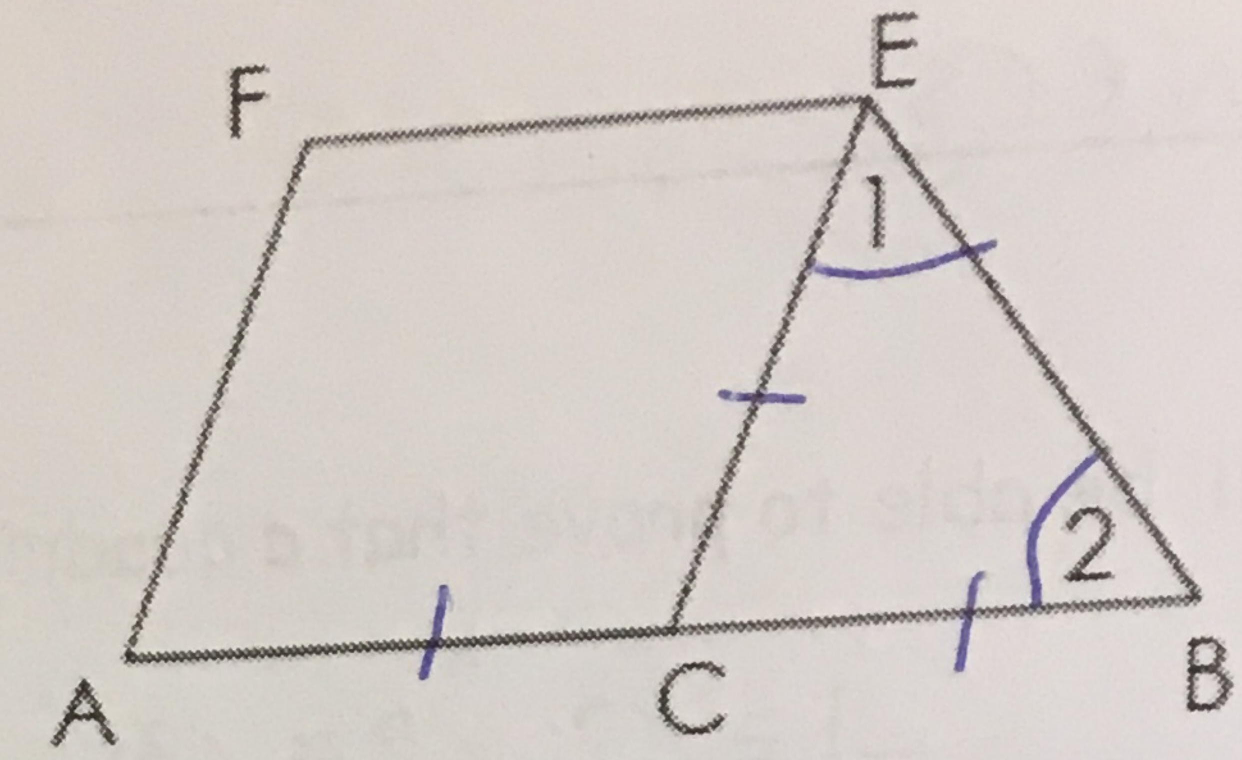
Prove: $\angle 1 \cong \angle 2$



S	R
1) Givens	1) Given
2) AC ≅ CE	2) Adjacent Sides of a rhombus a
3) BC ≅ CE	3) Sub/ Transitive
4) ΔBCE is isosceles	4) Legs are ≅.
5) ∠1 ≅ ∠2	5) Base ∡'s of an Isosceles Δ are ≅

2. Given: $ACEF$ is a parallelogram; $\overline{AC} \cong \overline{BC}$; $\angle 1 \cong \angle 2$

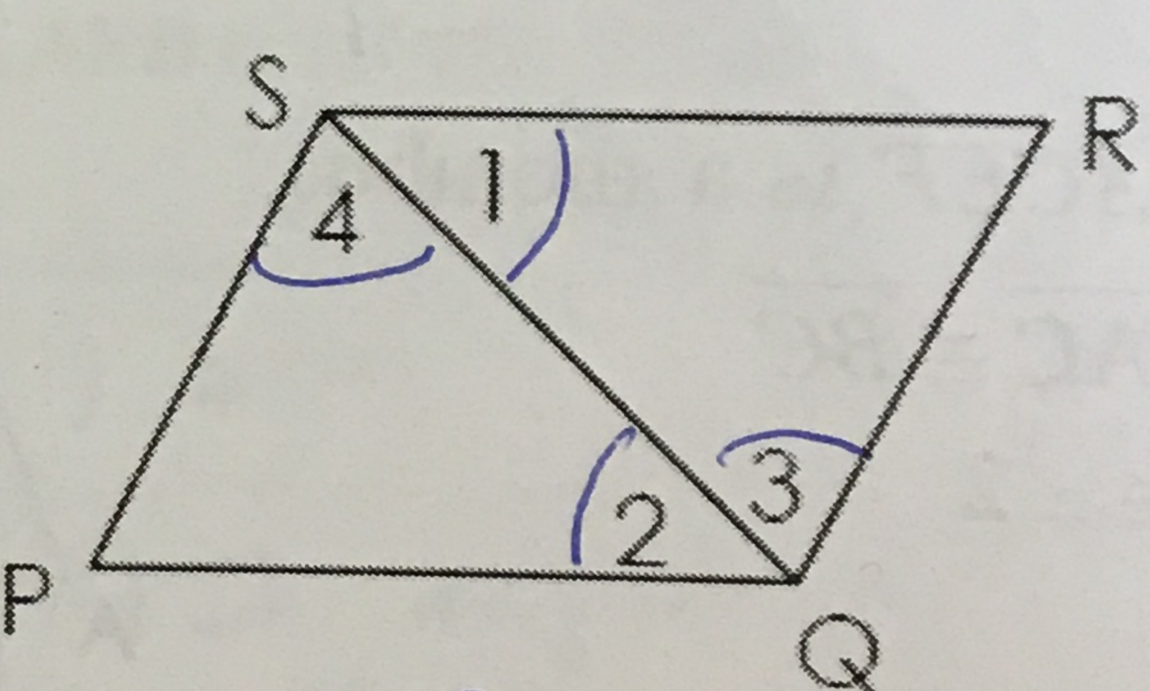
Prove: $ACEF$ is a rhombus



Statements	Reasons
1) Givens	1) Given
2) $\triangle BCE$ is isosceles	2) Base ∡'s are ≅,
3) $BC \cong CE$	3) Legs of an isosceles △
4) $AC \cong CE$	4) transitive / subst
5) $ACEF$ is a ▱ R	5) A ▱ P w/ ≅ consecutive sides is a rhombus

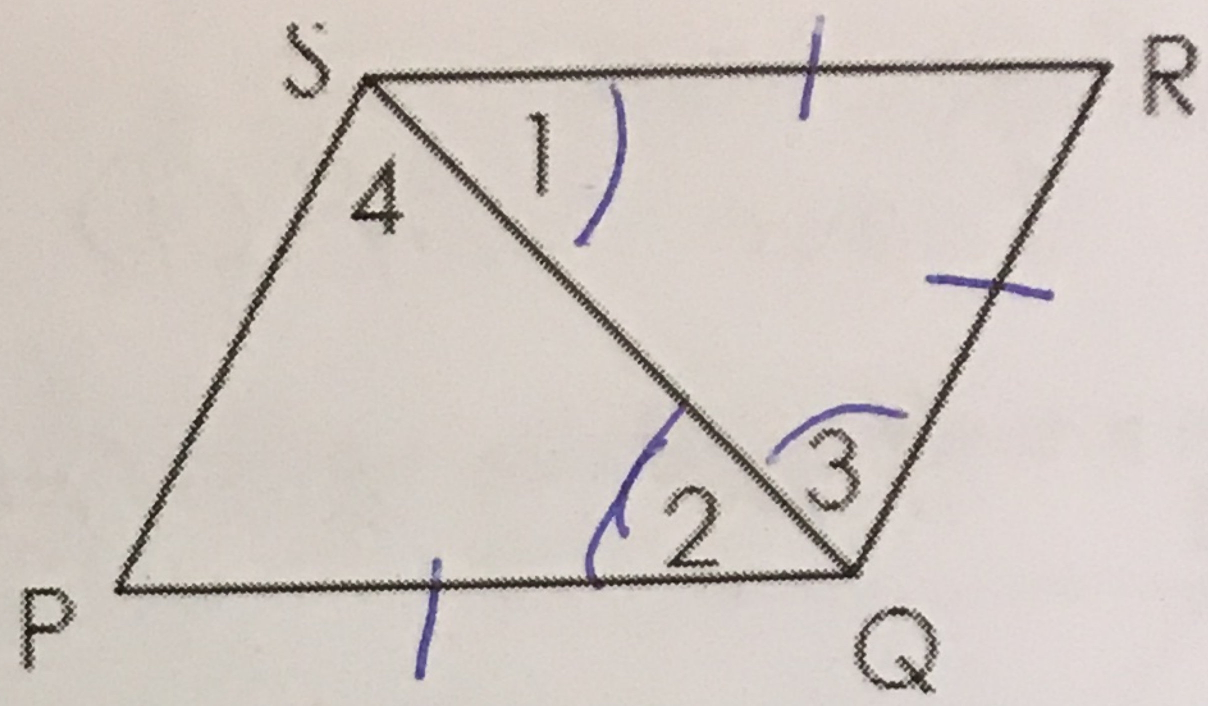
3) ~~6~~. Given: $\angle 1 \cong \angle 2$; $\angle 2 \cong \angle 3$; $\angle 3 \cong \angle 4$

Prove: $PQRS$ is a rhombus



S	R
1) Givens	1) Given
2) $SR \parallel PQ$, $PS \parallel QR$	2) If Alt Interior ∡'s are ≅, then sides are ∥.
3) $PQRS$ is a parallelogram	3) Opposite sides are ∥.
4) $\triangle QRS$ is isosceles	4) Base ∡'s are ≅.
5) $SR \cong QR$	5) Legs of an isosceles △.
6) $PQRS$ is a rhombus	6) If a parallelogram has ≅ adjacent sides, its a rhombus.

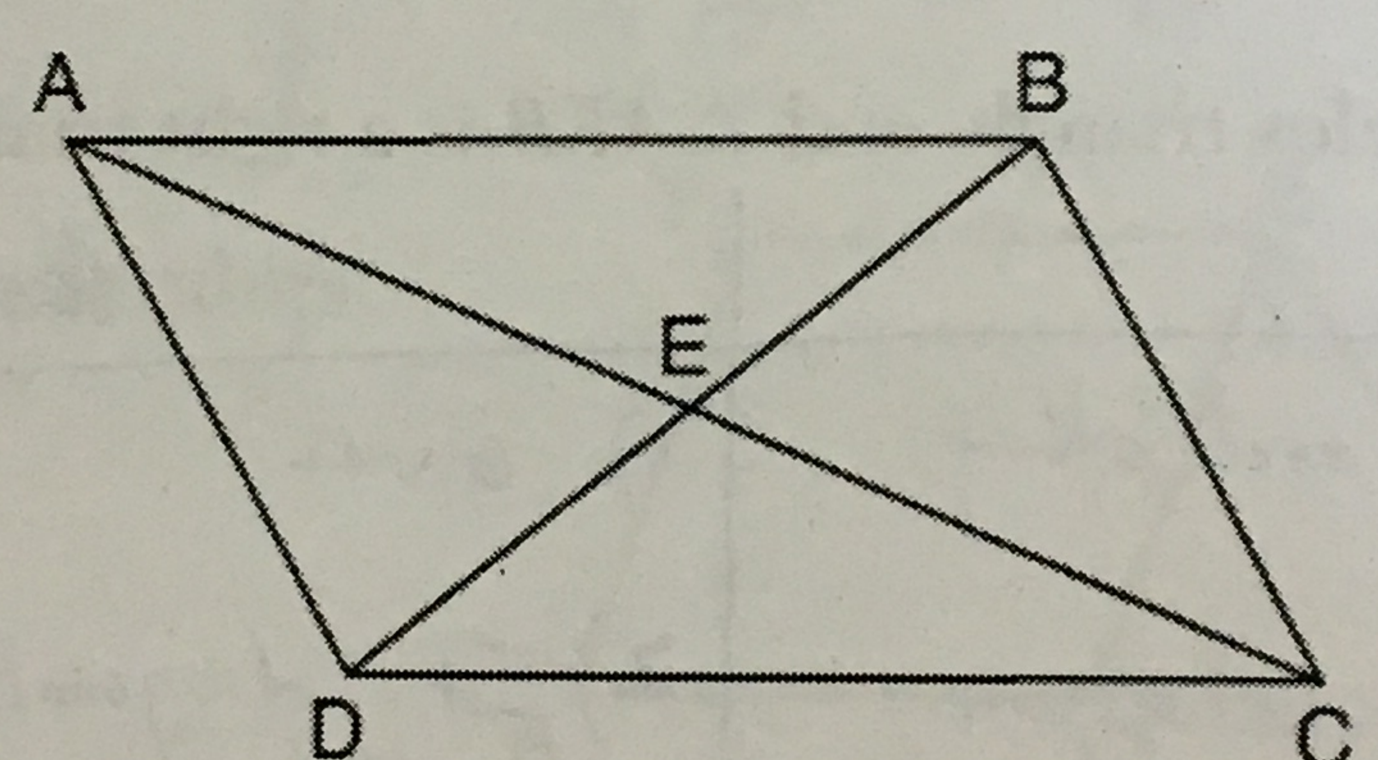
4) ~~16~~. Given: $\angle 1 \cong \angle 2$; $\angle 2 \cong \angle 3$; $\overline{PQ} \cong \overline{RS}$



Prove: $PQRS$ is a rhombus

S	R
1) $\angle 1 \cong \angle 2$, $\angle 2 \cong \angle 3$, $PQ \cong RS$	1) Given
2) $PQ \parallel RS$	2) If alternate interior ∠'s are ≅, then the lines are ∥.
3) PQRS is a parallelogram	3) One pair of opposite sides is ≅ and ∥
5) △QRS is isosceles	5) If base ∠'s are ≅, then △ is isosceles
4) $\angle 1 \cong \angle 3$	4) Transitive Property
6) $SR \cong QR$	6) Legs of an isosceles △ are ≅.
7) PQRS is a rhombus	7) A ▱ w/ congruent adjacent sides is a rhombus.

5) Given: Quadrilateral $ABCD$ is a parallelogram with diagonals $\overline{AC}$ and $\overline{BD}$ intersecting at E



Prove: $\triangle AED \cong \triangle CEB$