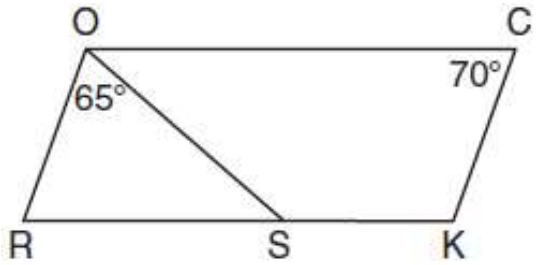
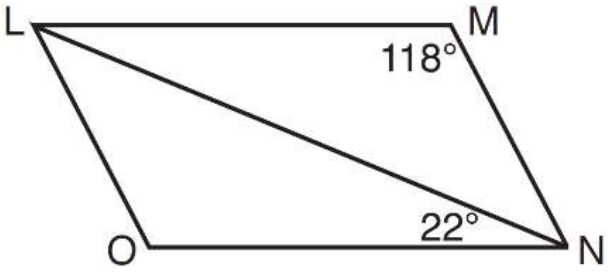
Name _____ Date _____
Mr. Schlansky Geometry

Complex Triangle Problems with Parallelograms

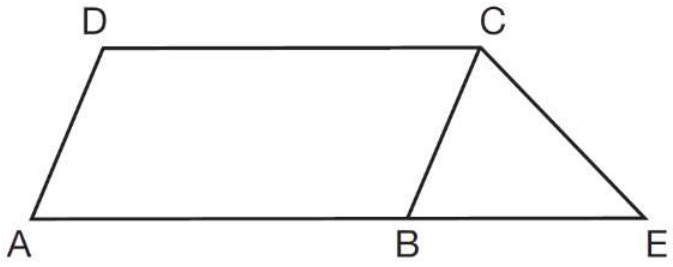
1. In the diagram below of parallelogram *ROCK*, $m\angle C$ is 70° and $m\angle ROS$ is 65°. What is $m\angle KSO$?



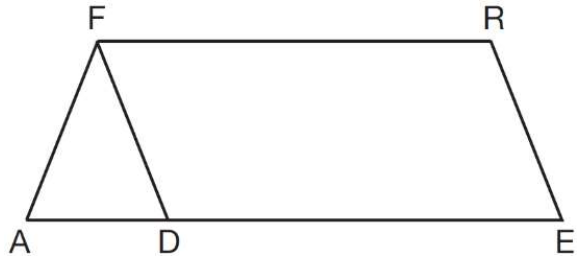
2. The diagram below shows parallelogram *LMNO* with diagonal $\overline{LN}$, $m\angle M = 118°$, and $m\angle LNO = 22°$. Find $m\angle NLO$.



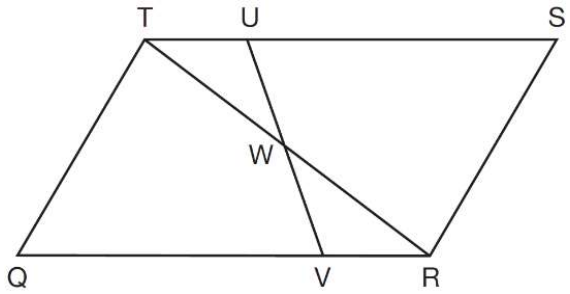
3. In the diagram below, *ABCD* is a parallelogram, $\overline{AB}$ is extended through *B* to *E*, and $\overline{CE}$ is drawn. If $\overline{CE} \cong \overline{BE}$ and $m\angle D = 112°$, what is $m\angle E$?



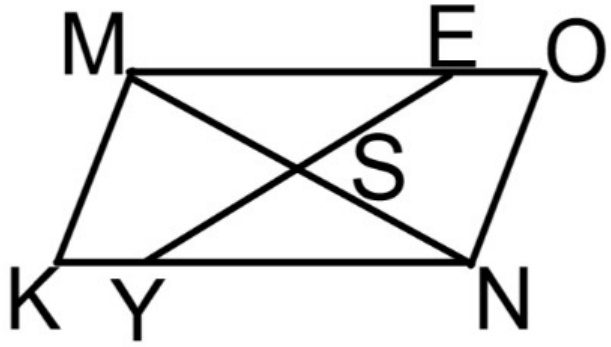
4. In the diagram of parallelogram *FRED* shown below, $\overline{ED}$ is extended to *A*, and $\overline{AF}$ is drawn such that $\overline{AF} \cong \overline{DF}$. If $m\angle R = 124°$, what is $m\angle AFD$?



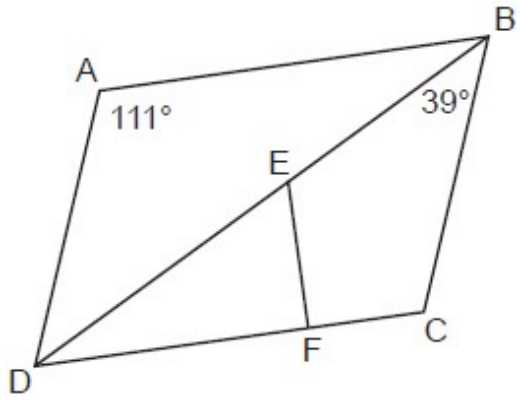
5. In parallelogram *QRST* shown below, diagonal $\overline{TR}$ is drawn, *U* and *V* are points on $\overline{TS}$ and $\overline{QR}$, respectively, and $\overline{UV}$ intersects $\overline{TR}$ at *W*. If $m\angle S = 60°$, $m\angle SRT = 83°$, and $m\angle TWU = 35°$, what is $m\angle WVQ$?



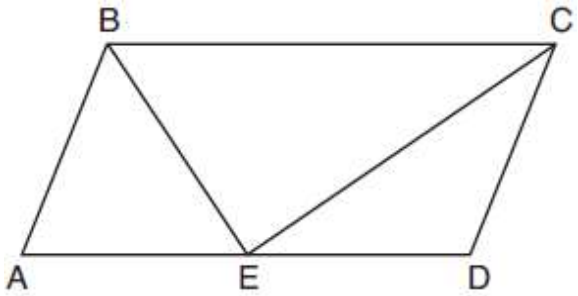
6. In parallelogram MONK shown below, diagonal $\overline{MN}$ is drawn, $\overline{MN}$ intersects $\overline{EY}$ at S. If $m\angle EMS = 20$ and $m\angle OES = 150$, find $m\angle NSY$.



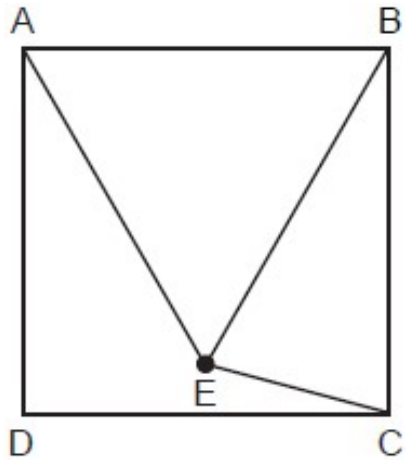
7. In the diagram below of parallelogram *ABCD*, diagonal $\overline{BED}$ and $\overline{EF}$ are drawn, $\overline{EF} \perp \overline{DFC}$, $m\angle DAB = 111°$, and $m\angle DBC = 39°$. What is $m\angle DEF$?



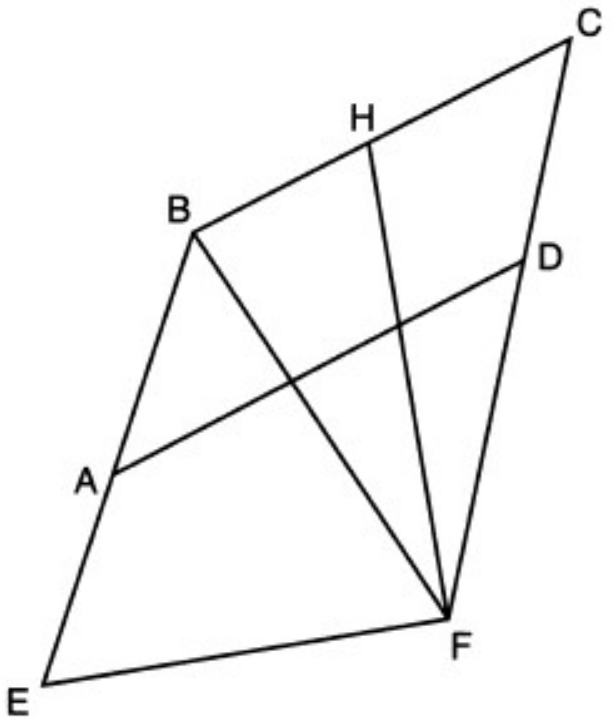
8. In parallelogram *ABCD* shown below, the bisectors of $\angle ABC$ and $\angle DCB$ meet at *E*, a point on $\overline{AD}$.
If $m\angle A = 68°$, determine and state $m\angle BEC$.



9. In the diagram below, point *E* is located inside square *ABCD* such that $\triangle ABE$ is equilateral, and $\overline{CE}$ is drawn. What is $m\angle BEC$?



10. Quadrilateral $EBCF$ and $\overline{AD}$ are drawn below, such that $ABCD$ is a parallelogram, $\overline{EB} \cong \overline{FB}$, and $\overline{EF} \perp \overline{FH}$. If $m\angle E = 62°$ and $m\angle C = 51°$, what is $m\angle FHB$?



11. Trapezoid $ABCD$, where $\overline{AB} \parallel \overline{CD}$, is shown below. Diagonals $\overline{AC}$ and $\overline{DB}$ intersect $\overline{MN}$ at E, and $\overline{AD} \cong \overline{AE}$. If $m\angle DAE = 35°$, $m\angle DCE = 25°$, and $m\angle NEC = 30°$, determine and state $m\angle ABD$.