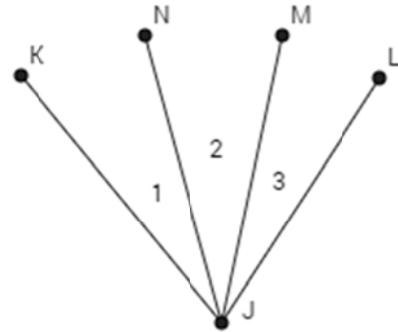


Name: _____ Period: _____ Date: _____

2.5-6 Proofs about Segments, Angles and Geometric Relationships

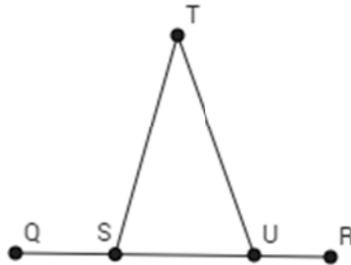
1) Prove $AB = BC$ given $AC = AB + BC$.

2) Prove $m\angle NJL = m\angle KJM$ given $m\angle 1 = m\angle 3$.

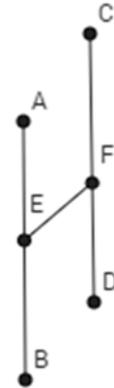


3) Prove $AB = 2AM$ given M is the midpoint of segment AB.

4) Given $m\angle TSU = m\angle TUS$, prove $\angle QST$ and $\angle TUS$ are supplementary.



5) Given $CF = EB$ and segment EF bisects AB and CD, prove $BC = DF$.

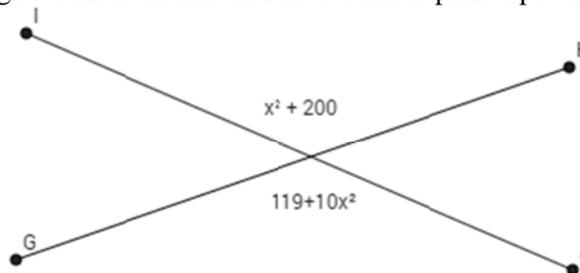


6) Prove the Congruent Complements Theorem (you do not have to prove the congruent supplements theorem since it is essentially the same proof, but just know it is also true). Given $\angle 1$ and $\angle 2$ are complementary and $\angle 2$ and $\angle 3$ are complementary, then prove $\angle 1 = \angle 3$.

7) Prove the vertical angles theorem. Given two intersecting lines create four angles $\angle 1$, $\angle 2$, $\angle 3$ and $\angle 4$ and $\angle 1$ and $\angle 3$ are vertical, prove they are congruent using the linear pair postulate.

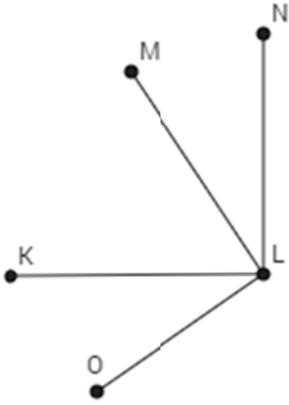
8) Why is the rule for vertical angles a theorem and the rule for linear pairs a postulate?

9) Prove $x = 3$.

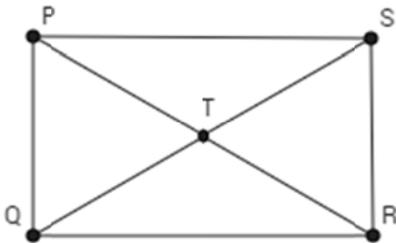


10) How do you disprove something?

11) Given $\angle KLN$ and $\angle MLO$ are right, prove $m\angle KLO = m\angle MLN$.



12) Given $PT = QT$ and $TS = TR$, prove $PR = QS$. Bonus: Is this enough to show triangles PQT and RST are congruent?



13) Prove that the four lines would create a rectangle.

$$y_1 = 10 - 3x$$

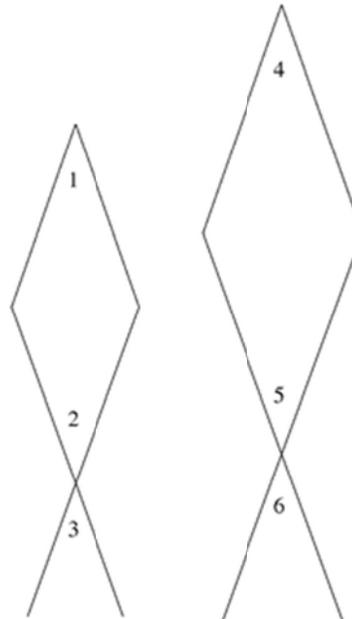
$$y_2 = -(3x + 2)$$

$$y_3 = (1/3)(x + 4)$$

$$y_4 = (-3)(7 - (1/9)x)$$

(Hint: A rectangle is a quadrilateral where opposite sides are perpendicular)

14) Given $m\angle 1 = m\angle 3$, $m\angle 4 = m\angle 6$, $m\angle 1 = m\angle 4$, prove $m\angle 2 = m\angle 5$.



15) Challenge: Let $ABCD$ be a quadrilateral. Let $EFGH$ be the quadrilateral formed by connecting the midpoints of sides $ABCD$. Prove $EFGH$ is a parallelogram.