MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 6 - MARCH 2016
ROUND 5 PLANE GEOMETRY: ANYTHING

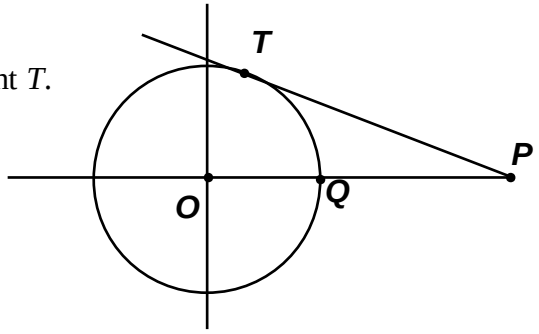
ANSWERS

A) _____

B) _____

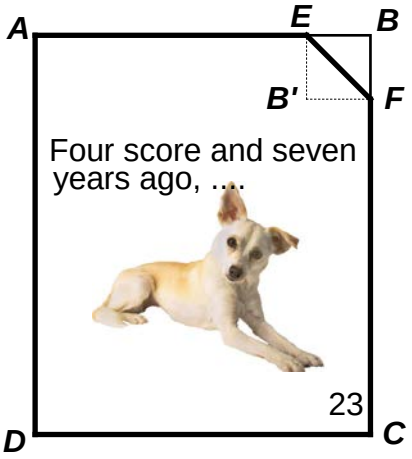
C) _____

A) A tangent line through point *P* intersects circle *O* at point *T*. *PQ* = 25, *PT* = 35. Compute the radius of the circle.



B) Formerly, it was common practice for people were to fold over the corner of the page in a book to hold their place. The page was said to be "dog-eared". The pentagon *AEFCD* in the diagram at the right is the dog-eared placeholder of page *ABCD*. I will continue my reading at page 23, when I next pick up the book.

Page *ABCD* is a rectangle with $AB = 5\frac{1}{4}$ inches and $AD = 6\frac{1}{2}$ inches. If *BEF* is an isosceles triangle and the area of *AEFCD* is 33 square inches, compute *BE* (in inches).



C) *ABCD* is an isosceles trapezoid with bases $\overline{AB}$ and $\overline{CD}$. $AB:CD = 1:8$. Let the perpendicular from *A* to $\overline{CD}$ intersect $\overline{CD}$ at point *M* and $DM = 14$. The midpoints of the 4 sides of the trapezoid (*P*, *Q*, *R*, and *S*) are connected. If the area of ΔSAP is 24, compute the area of quadrilateral *PQRS*.