MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 1 - OCTOBER 2014
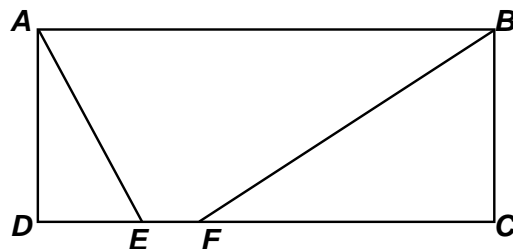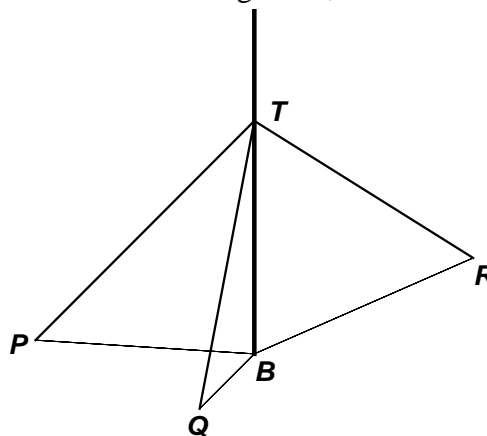## ROUND 2 PYTHAGOREAN RELATIONS IN RECTILINEAR FIGURES

ANSWERS

A) _____

B) _____

C) _____

A) In rectangle $ABCD$, $AB = 24$, $AD = 8$, $AE = 10$ and $BF = 17$. Compute the area of $ABFE$.

B) Three wires support a newly planted oak tree at a point T, 20 feet above the ground, and anchored at points P, Q and R.
$BQ = 15$, $BP = 21$ and P, B and Q are noncollinear.
If the length of $\overline{PQ}$ is an integer, what is the
maximum perimeter of ΔTPQ ?

C) A rectangular flag has exactly 7 stripes of equal width.
The flag designer was not specific when asking the manufacturer to embroider an X on the flag. The manufacturer made two models as shown in the diagrams below, where one model has one X and the other has an X on every stripe. The diagonal in the diagram on the left is 2 less than 3 times a diagonal in the diagram on the right. The total length of all the embroidered "X"s on both flags is 256 inches and the dimensions of the flags are integers. Compute the area of the flag (in inches^2).