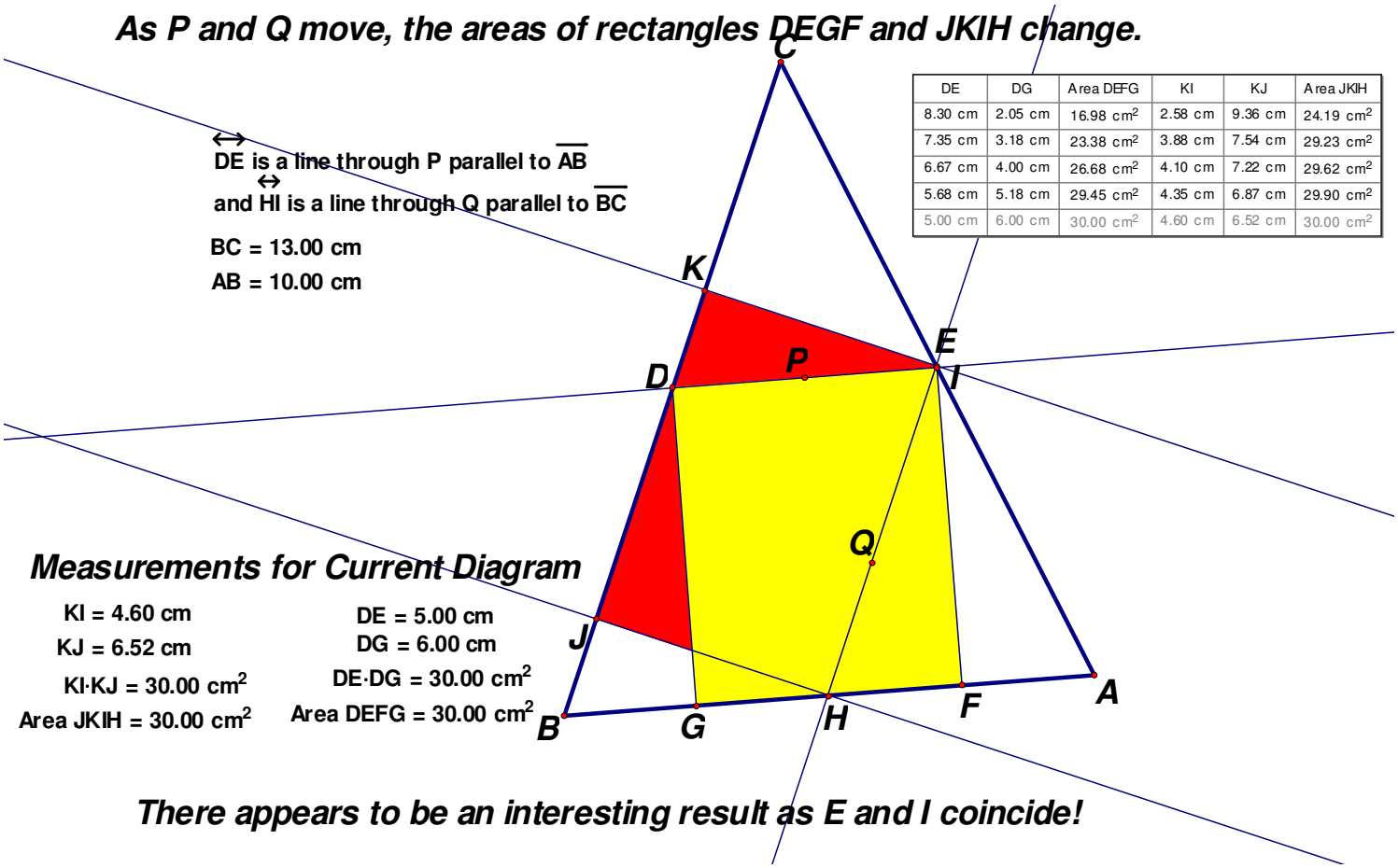
MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 2 - NOVEMBER 2008 Addendum

For Team question C, the following Sketchpad diagram suggests that the rectangle of maximum area has an area of 30 square units regardless of whether a side lies along the base or the leg of the isosceles triangle. Is this a "coincidence"? Try proving (or disproving) your contention and sharing your ideas with your teammates and coaches.

As P and Q move, the areas of rectangles DEGF and JKIH change.



DE	DG	Area DEFG	KI	KJ	Area JKIH
8.30 cm	2.05 cm	16.98 cm^2	2.58 cm	9.36 cm	24.19 cm^2
7.35 cm	3.18 cm	23.38 cm^2	3.88 cm	7.54 cm	29.23 cm^2
6.67 cm	4.00 cm	26.68 cm^2	4.10 cm	7.22 cm	29.62 cm^2
5.68 cm	5.18 cm	29.45 cm^2	4.35 cm	6.87 cm	29.90 cm^2
5.00 cm	6.00 cm	30.00 cm^2	4.60 cm	6.52 cm	30.00 cm^2

$\overleftrightarrow{DE}$ is a line through P parallel to $\overline{AB}$
$\overleftrightarrow{HI}$ is a line through Q parallel to $\overline{BC}$

BC = 13.00 cm
AB = 10.00 cm

Measurements for Current Diagram

KI = 4.60 cm
KJ = 6.52 cm
KI·KJ = 30.00 cm^2
Area JKIH = 30.00 cm^2

DE = 5.00 cm
DG = 6.00 cm
DE·DG = 30.00 cm^2
Area DEFG = 30.00 cm^2

There appears to be an interesting result as E and I coincide!