MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 2 - NOVEMBER 2007
ROUND 6 PLANE GEOMETRY: ANGLES, TRIANGLES AND PARALLELS
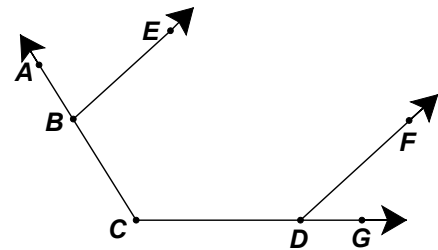
ANSWERS

A) _____ °

B) _____

C) _____

A) Given: $\overrightarrow{BE} \parallel \overrightarrow{DF}$, m$\angle GDF = 24°$ and m$\angle ABE = 88°$
    Find m$\angle BCD$.

B) In equilateral ΔABC, altitude $\overline{AD}$ intersects angle bisector $\overrightarrow{CE}$ at point P.
    D lies on side $\overline{BC}$ and E lies on side $\overline{AB}$.
    <u>Compute</u> the length of a side of ΔABC, if $AP = 12$.

C) Given a regular 15-gon, if <u>k</u> more sides were added (producing a regular polygon with $15 + k$
    sides), then the measure of each interior angle would increase by $(k + 1)$ degrees.
    Find <u>all</u> possible values of k.