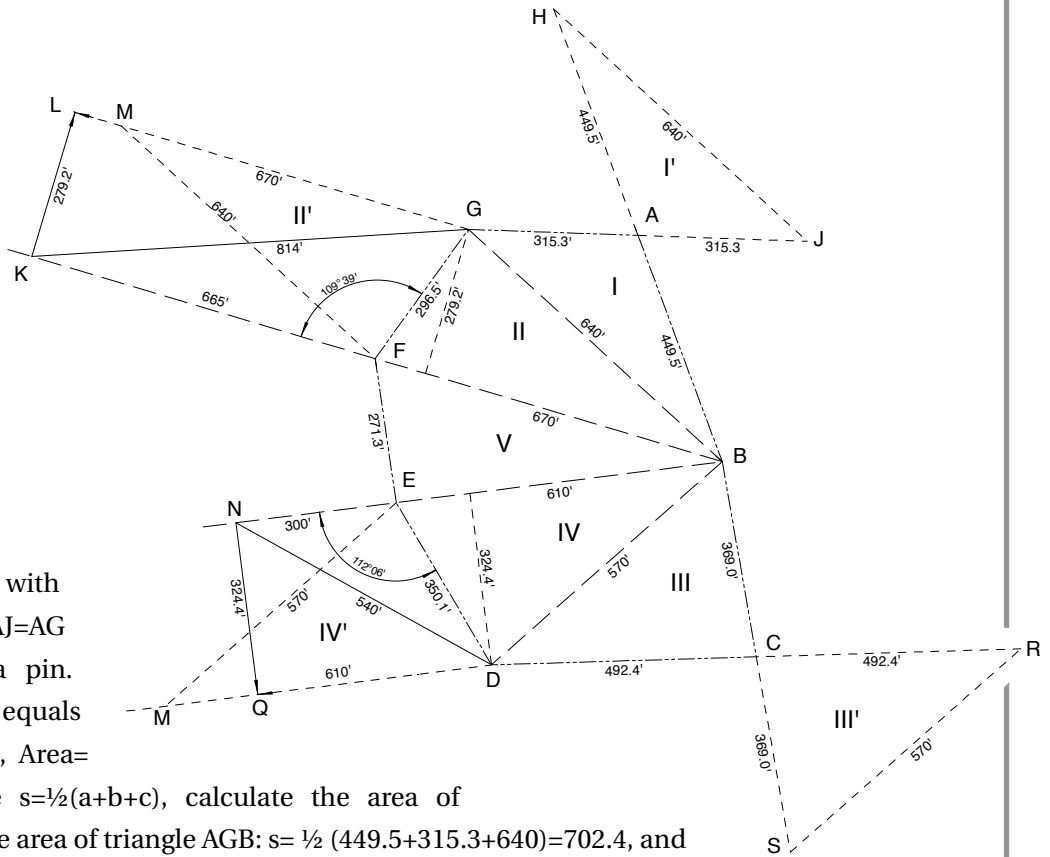


# Solution 236

by David Lindell, LS



Lay off AH=AB in line with AB. Place a pin. Lay off AJ=AG in line with AG. Place a pin. Measure HJ (640'), which equals BG. Using Heron's formula, Area=

$\sqrt{s(s-a)(s-b)(s-c)}$ , where  $s=\frac{1}{2}(a+b+c)$ , calculate the area of triangle AHJ, which equals the area of triangle AGB:  $s=\frac{1}{2}(449.5+315.3+640)=702.4$ , and the area= $\sqrt{702.4(252.9)(387.1)(62.4)}=65,504$  sq. ft or 1.50 Ac.

Next, prolong BF to some point K at, say, 665' from F. Measure GK (814'). By Law of Cosines calculate angle GFK (109°39') and the perpendicular distance from G to line FB:  $296.5 \cdot \cos 19^\circ 39' = 279.2'$ . At K construct a right angle and layoff 279.2' and set a pin at point L. From F intersect a distance of 640' with a line from G to L at point M. Measure GM (670'), which is equal to BF. The area of triangle GFM equals the area of triangle GFB, which is  $\frac{1}{2}(279.2)(670) = 93,532$  sq. ft. or 2.15 Ac.

Lay off CR = DC in line with DC. Place a pin. Lay off CS = BC in line with BC. Set a pin. Measure SR (570'), which equals BD, and the area of triangle CRS equals the area of triangle BCD:  $s=\frac{1}{2}(492.4+570+369)=715.7$ , and the Area =  $\sqrt{715.7(223.3)(346.7)(145.7)} = 89,850$  sq. ft., or 2.06 Ac.

Next, prolong BE to some point N at, say, 300' from E. Measure ND (540') and calculate angle NED (112°06') and the perpendicular distance from D to line EB:  $350.1 \cdot \cos 22^\circ 06' = 324.4'$ . At point N construct a right angle and lay off 324.4' and set a pin at point Q. Intersect a distance of 570' from E with a line through DQ produced at point M. Measure DM (610'), which equals BE and the area of triangle MED equals the area of triangle DEB:  $\frac{1}{2}(324.4)(610) = 98,942$  sq. ft., or 2.27 Ac. Finally, calculate the area of triangle FEB (by Heron's formula):  $\sqrt{775.65(504.35)(105.65)(165.65)} = 82,743$  sq. ft., or 1.90 Ac.

The total area is 65,504 sq. ft. (1.50 Ac.) + 93,532 sq. ft. (2.15 Ac.) + 89,850 sq. ft. (2.06 Ac.) + 98,912 sq. ft. (2.27 Ac.) + 82,743 Sq. ft. (1.90 Ac.) = 430,571 sq. ft. or 9.88 acres.

Alternatively, the angles may be found by the first step above using just 100' distances.