Solution to Problem 134

by Dave Lindell, L.S.

Angle A = 43°42'42", so line Ae = N 66°41'17" E
Angle B = 66°38'02", so line Bf = S 11°30'55" W
Angle C = 69°39'16", so line Cd = N 56°37'44" W

Let point A be North 0, East 0
By bearing-bearing (or azimuth-azimuth) intersection
Point d = North 606.2995, East 602.7591,
point e = North 544.5690, East 1263.7497 and
point f = North 21.4632, East 844.3634

From which Ad = 854.9372, dB = 643.5662, Be = 558.0454, eC = 546.3660, Cf = 622.5048, and fA = 844.6361

Be / Ce = 558.0454 / 546.3660 = 1.021376513
AB / AC = 1498.5034 / 1467.1410 = 1.021376541

Cf / Af = 622.5048 / 844.6361 = 0.737009465
BC / BA = 1104.4114 / 1498.5034 = 0.737009606

Ad / Bd = 854.9372 / 643.5662 = 1.328437075
AC / B C = 1467.1414 / 1104.4110 = 1.328437030
(The ratios calculated are comparable to one another within 1:10,000,000±.)
The angle bisector always divides the opposite side into the same ratio as the adjacent sides.

Solution to Problem 135

by Benjamin Bloch, Ph.D.

Every positive number can be placed in one of nine columns headed by the single digits **1** through **9**.

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45

A) The answer is the **9** column. Any **9** column number added to any number from any column, including the **9** column, does not change its Single Digit Quality. 9 + **1** =>**1**, 9 + 2 =>2, …, 9 + **9** =>**9**. Thus, 117(9) + 82(**1**) => 199(**1**).

B) Again the answer is the **9** column. The number of degrees in every one of these figures has a SDQ of **9**. Thus, straight line 180=>**9**, right angle 90=>**9**, triangle 180 =>**9**, square 360 =>**9**, circle 360 =>**9**, pentagon 540=>**9**, and hexagon 720=>**9**.

C) Each has a SDQ of **9**.

D) Interchanging digits does not alter the SDQ. For example, the obviously different numbers 35,786 and 53,786 have the same SDQ of **2**.