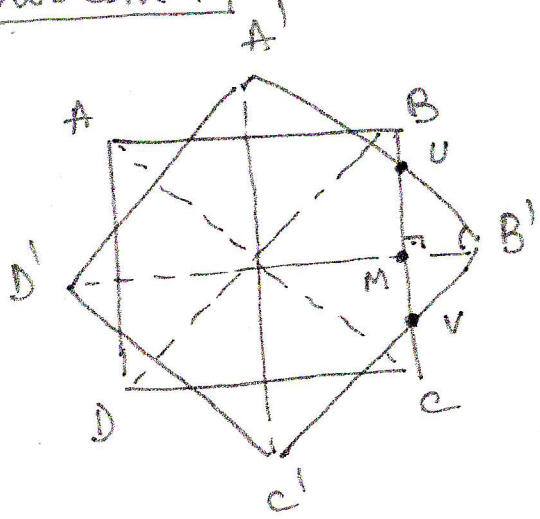


Problem 19



$$B'M = 5\sqrt{2} - 5 = 5(\sqrt{2} - 1)$$

$$\left. \begin{aligned} \Delta B'MU : B'M = MU \\ \Delta B'VM : B'M = MV \end{aligned} \right\} \Rightarrow$$

$$UV = 10(\sqrt{2} - 1)$$

$$S_{\Delta UB'V} = \frac{10(\sqrt{2} - 1) \cdot 5(\sqrt{2} - 1)}{2} = 25(\sqrt{2} - 1)^2$$

$$S = 100 + 4 \cdot 25 \cdot (\sqrt{2} - 1)^2 \approx 117 \quad \text{ANSWER : A}$$

Problem 20

$$a^2 + (a+1)^2 + \dots + (a+99)^2 = (a+100)^2 + (a+101)^2 + \dots + (a+199)^2$$

$$a^2 = (a+100)^2 - (a+1)^2 + (a+101)^2 - (a+2)^2 + \dots + (a+198)^2 - (a+99)^2$$

$$a^2 = (a+100+a+1)(a+100-a-1) + (a+101+a+2)(a+101-a-2) + \dots + (a+198+a+99)(a+198-a-99)$$

$$a^2 = (2a+101) \cdot 99 + (2a+103) \cdot 99 + \dots + (2a+297) \cdot 99$$

$$a^2 = 99 \left[ 2a \cdot 99 + \overbrace{(100 + \dots + 198)}^{199} + \underbrace{(1+2+\dots+99)}_{199} \right]$$

$$a^2 = 2 \cdot 99^2 \cdot a + 199 \cdot 99$$

$$a^2 - 2 \cdot 99^2 \cdot a - 99^2 \cdot 199 = 0$$

$$a_{1,2} = 99^2 \pm 99 \cdot 100$$

$$a = 99^2 + 99 \cdot 100 = 19701$$

ANSWER : 19701