

$P(x) = (1 + x^1 + x^2 + \dots + x^{99} + x^{100})^3$ polinomunda parantezler açıldıktan sonra, x^{111} 'in katsayısı ne olacaktır?
 A) 6432 B) 6328 **C) 6130** D) 5640 E) 5600

$$3a - 4r + 5r = 111$$

$$x^{100} \cdot \left\{ \begin{array}{l} x^{11} \cdot x^0 \\ x^{10} \cdot x^1 \\ x^9 \cdot x^2 \\ \vdots \\ x^0 \cdot x^{11} \end{array} \right\} 12$$

$$x^{99} \cdot \left\{ \begin{array}{l} x^{12} \cdot x^0 \\ \vdots \\ x^0 \cdot x^{12} \end{array} \right\} 13$$

↓ Artar

$$x^{11} \cdot \left\{ \begin{array}{l} x^{100} \cdot x^0 \\ \vdots \\ x^0 \cdot x^{100} \end{array} \right\} 101$$

$$x^{10} \cdot \left\{ \begin{array}{l} x^{100} \cdot x^1 \\ \vdots \\ x^1 \cdot x^{100} \end{array} \right\} 100$$

↓ Azalır.

$$x^0 \cdot \left\{ \begin{array}{l} x^{100} \cdot x^{11} \\ \vdots \\ x^{11} \cdot x^{100} \end{array} \right\} 90$$

$$12 + 13 + \dots + 101 = \frac{101 \cdot 102}{2} - \frac{11 \cdot 12}{2}$$

$$= \underline{\underline{5085}}$$

$$100 + 99 + \dots + 90 = \frac{190}{2} \cdot 11 = \boxed{1045}$$

$$\begin{array}{r}
 5085 \\
 + 1045 \\
 \hline
 6130
 \end{array}$$