

If $3^p + 3^4 = 90$, $2^r + 44 = 76$, and $5^3 + 6^s = 1421$, what is the product of p , r , and s ?

(A) 27 (B) 40 (C) 50 (D) 70 (E) 90

$$3^4 = 81 \Rightarrow 3^p = 9$$

$$\Rightarrow p = 2$$

$$76 - 44 = 32$$

$$\text{So } 2^r = 32 \Rightarrow r = 5$$

$$5^3 = 125$$

$$\text{So } 6^s = 1421 - 125$$

$$= 1296$$

$$\Rightarrow s = 4$$

$$\text{So } p r s = 2 \times 5 \times 4 = 40$$