考点1：等比数列通项公式

$$a_n = a_1 q^{n-1}$$

结合题目，看T_n定义

$$\begin{aligned} T_n &= a_1 a_2 a_3 \cdots a_n \\ &= a_1 \underbrace{a_1 q}_{a_2} \underbrace{a_1 q^2}_{a_3} \cdots \underbrace{a_1 q^{n-1}}_{a_n} \end{aligned}$$

$$= \underbrace{a_1 a_1 a_1 \cdots a_1}_{n个a_1相乘} \underbrace{q q^2 q^3 \cdots q^{n-1}}_{q一直乘到q^{n-1}}$$

$$= a_1^n q^{1+2+3+\cdots n-1} \quad (1+2+3+\cdots+n-1，用等差数列求和的相关公式)$$

$$= a_1^n q^{\frac{n(n-1)}{2}}$$

结合题目，用题目条件

$$T_2 = a_1^2 q$$
$$T_9 = a_1^9 q^{36}$$
$$T_2 = T_9$$

代入计算

$$a_1^2 q = a_1^9 q^{36}$$
$$1 = a_1^7 q^{35} = (a_1 q^5)^7$$
$$即 1 = a_1 q^5$$
$$即 a_1 = \frac{1}{q^5} \quad 即 (\frac{1}{q^5})^2 q = 512$$
$$即 q^{-9} = 512 \quad 即 q = \frac{1}{2}$$

代入T_n计算式子中

$$\begin{aligned} T_n &= a_1^n q^{\frac{n(n-1)}{2}} \\ &= (\frac{1}{q^5})^n q^{\frac{n(n-1)}{2}} \\ &= q^{-5n} q^{\frac{n(n-1)}{2}} \\ &= q^{\frac{n(n-11)}{2}} \end{aligned}$$

$$代入 q = \frac{1}{2}$$
$$\begin{aligned} 即 T_n &= (\frac{1}{2})^{\frac{n(n-11)}{2}} \\ &= 2^{\frac{n(11-n)}{2}} \end{aligned}$$

n取5或者n取6时，T_n最大值取2^{15}，选择**A**

a_1=32且$q = \frac{1}{2}$