

永中自定义树

DATE 2024

.10

.11

NO. 三极数 73

三极数 54

ex.2 1~200 正整数中

1) How many 2 or 3 or 7 倍数

$$\lfloor \frac{200}{2} \rfloor + \lfloor \frac{200}{3} \rfloor + \lfloor \frac{200}{7} \rfloor - \lfloor \frac{200}{2 \cdot 3} \rfloor - \lfloor \frac{200}{3 \cdot 7} \rfloor - \lfloor \frac{200}{2 \cdot 7} \rfloor + \lfloor \frac{200}{2 \cdot 3 \cdot 7} \rfloor$$

$$= 100 + 66 + 28 - 33 - 9 - 14 + 4$$

$$= 142 \#$$

2) How many 2 or 3 倍数, but not 7 倍

$$\lfloor \frac{200}{2} \rfloor + \lfloor \frac{200}{3} \rfloor - \lfloor \frac{200}{2 \cdot 3} \rfloor - \lfloor \frac{200}{2 \cdot 7} \rfloor - \lfloor \frac{200}{3 \cdot 7} \rfloor + \lfloor \frac{200}{2 \cdot 3 \cdot 7} \rfloor$$

$$= 100 + 66 - 33 - 14 - 9 + 4$$

$$= 114 \#$$

3) How many 2 倍, but not 3 or 7 倍

$$\lfloor \frac{200}{2} \rfloor - \lfloor \frac{200}{2 \cdot 3} \rfloor - \lfloor \frac{200}{2 \cdot 7} \rfloor + \lfloor \frac{200}{2 \cdot 3 \cdot 7} \rfloor$$

$$= 100 - 33 - 14 + 4$$

$$= 57 \#$$

4) How many 与 42 互质

$$200 - (\lfloor \frac{200}{2} \rfloor + \lfloor \frac{200}{3} \rfloor + \lfloor \frac{200}{7} \rfloor - \lfloor \frac{200}{2 \cdot 3} \rfloor - \lfloor \frac{200}{3 \cdot 7} \rfloor - \lfloor \frac{200}{2 \cdot 7} \rfloor + \lfloor \frac{200}{2 \cdot 3 \cdot 7} \rfloor)$$

$$= 200 - 142$$

$$= 58 \#$$

5) 所有与 42 互质数字和 42

$$1, 5, 11, 13, 17, 19, 23, 25, 29, 31, 37, 41, 43, 47, 53, 55, 59, \dots$$

$$\dots \lfloor \frac{42}{2} \rfloor \dots, 42+1, 42+5, 42+11, 42+13, 42+17, \dots$$

$$5 \cdot 42 \cdot 6 + 42 \cdot (0+1+2+3+4) \cdot 12 - 42 \cdot 4 \cdot 2 - 37 \cdot 41$$

$$= 1260 + 42 \cdot 120 - 42 \cdot 8 - 78$$

$$= 1260 + 5040 - 336 - 78 = 5886 \#$$