永中鍵定欄

DATE 2024 .10 .11 NO. 三校數 73

三校數修 54

ex.2 1~200 正整數中

1) How many 2 or 3 or 7 倍數

$\left\lfloor\frac{200}{2}\right\rfloor+\left\lfloor\frac{200}{3}\right\rfloor+\left\lfloor\frac{200}{7}\right\rfloor-\left\lfloor\frac{200}{2\cdot3}\right\rfloor-\left\lfloor\frac{200}{3\cdot7}\right\rfloor-\left\lfloor\frac{200}{2\cdot7}\right\rfloor+\left\lfloor\frac{200}{2\cdot3\cdot7}\right\rfloor$

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

$=142$ #

2) How many 2 or 3 倍數, but not 7 倍

$\left\lfloor\frac{200}{2}\right\rfloor+\left\lfloor\frac{200}{3}\right\rfloor-\left\lfloor\frac{200}{2\cdot3}\right\rfloor-\left\lfloor\frac{200}{2\cdot3\cdot7}\right\rfloor$

$=100+66-33+4$

$=137$ #

3) How many 2 倍, but not 3 or 7 倍

$\left\lfloor\frac{200}{2}\right\rfloor-\left\lfloor\frac{200}{2\cdot3}\right\rfloor-\left\lfloor\frac{200}{2\cdot7}\right\rfloor+\left\lfloor\frac{200}{2\cdot3\cdot7}\right\rfloor$

$=100-33-14+4$

$=57$ #

4) How many 與 42 互質

$200-\left(\left\lfloor\frac{200}{2}\right\rfloor+\left\lfloor\frac{200}{3}\right\rfloor+\left\lfloor\frac{200}{7}\right\rfloor-\left\lfloor\frac{200}{2\cdot3}\right\rfloor-\left\lfloor\frac{200}{3\cdot7}\right\rfloor-\left\lfloor\frac{200}{2\cdot7}\right\rfloor+\left\lfloor\frac{200}{2\cdot3\cdot7}\right\rfloor\right)$

$=200-142$

$=58$ #

5) 所有與 42 互質數字和

1, 5, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 55, 59, …

… 1, 9 … 38, … , 42+1, 42+5, 42+11, 42+13, 42+17, …

$38\cdot5.5\cdot4+42\cdot11\cdot(1+2+3)+42\cdot4\cdot9+1+5+11+13+17+19+23+29+31$

$=836+2772+1512+149$

$=5269$ #