factor Concept

factor

F(12)

1, 2, 3, 4, 6, 12

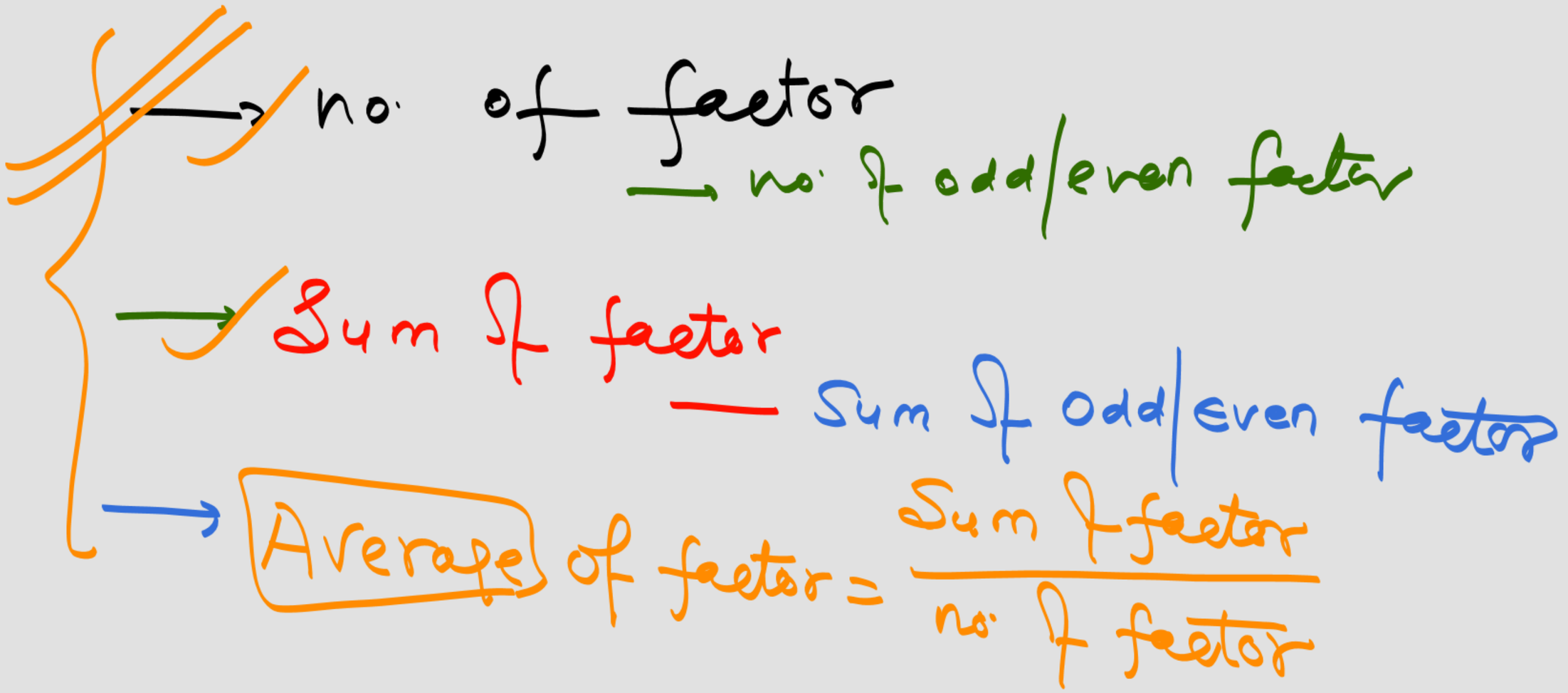
countable

Multiple

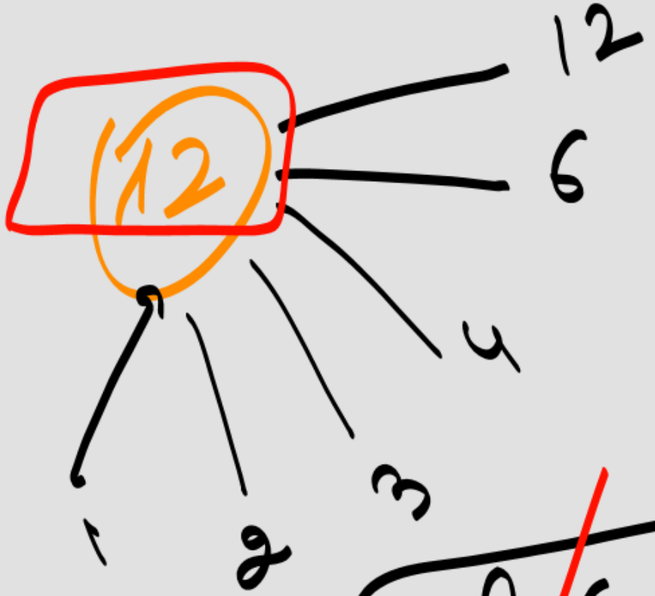
M[12] → 12 | 24 | 36 | 48 | ...

uncountable

↓ infinite


no. of factor
no. of odd/even factor
Sum of factor
Sum of odd/even factor
Average of factor = Sum of factor / no. of factor

No. of factor :-



no. of factor = 6

Prime factorization :-

2	12
2	6
3	3
	1

$12 = 2 \times 2 \times 3 = 2^2 \times 3^1$

no. of factor $= 3 \times 2 = 6$

⑧ find no. of factor of 1200.

2	1200
2	600
2	300
2	150
3	75
5	25
	5

$1200 = 2^4 \times 5^2 \times 3^1$

no. of factor $= 5 \times 3 \times 2$

30 Ans

1200
$= 12 \times 100$
$4 \times 3 \times 25 \times 4$
$2^4 \times 3 \times 5^2$

no of factor of —

(13) # 2500 = 25 × 100 = $5^2 \times 25 \times 4$

= $2^2 \times 5^4$

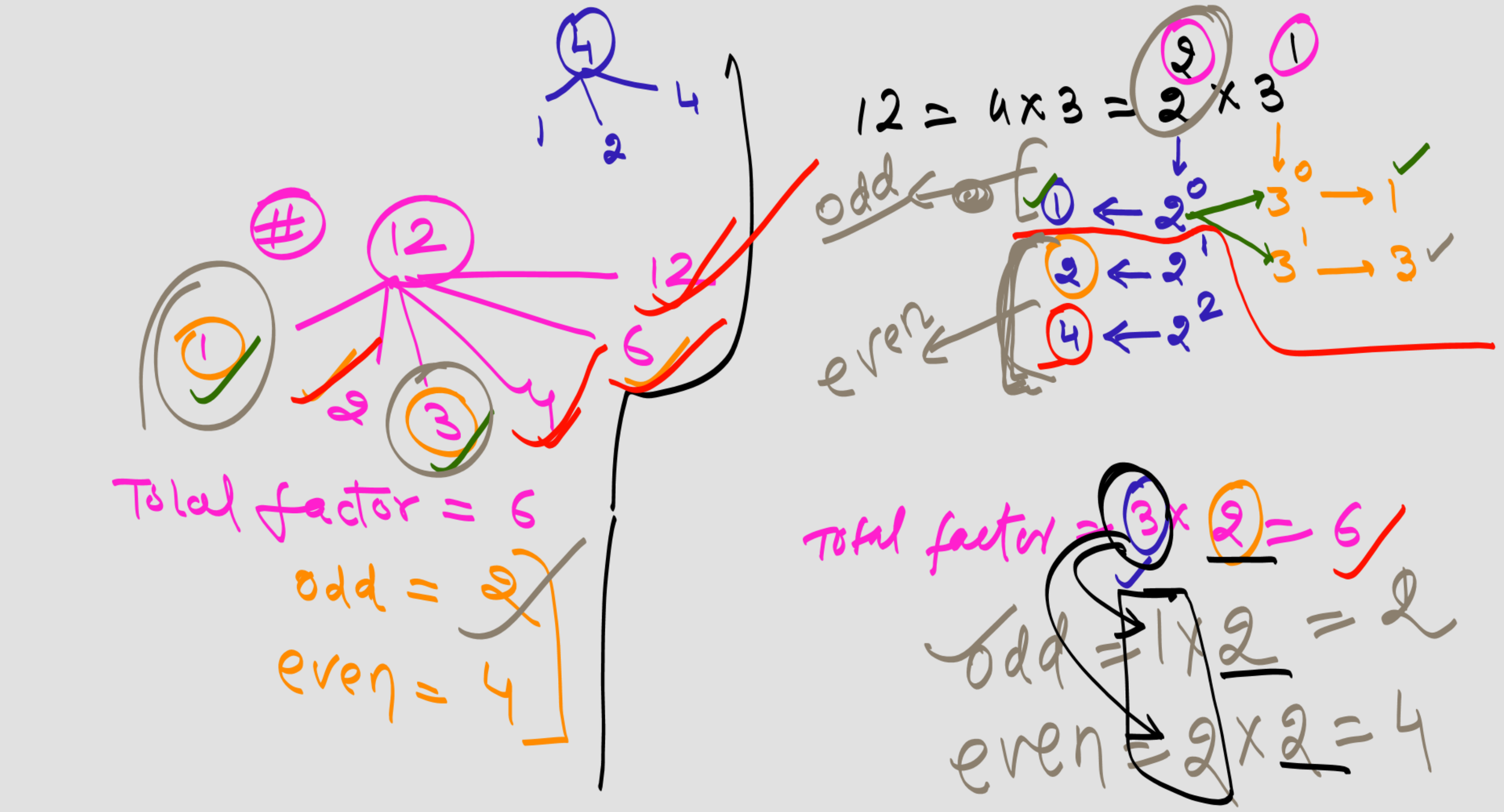
$3 \times 5 = 13$

1250 = 125 × 10 = 5 × 5 × 2 = 2 × 5 (4)

360 = 9 × 4 × 10 = $3 \times 2^3 \times 5$

$2 \times 5 = 10$

no. of factor = 3 × 4 × 2 = 24


4
1
2
4
#
12
1
2
3
4
12
6
Total factor = 6
odd = 2
even = 4
12 = 4 x 3 = 2 x 3
odd
even
1
2
4
2^0
2^1
2^2
$3^0 \rightarrow 1$
$3^1 \rightarrow 3$
Total factor = 3 x 2 = 6
odd = 1 x 2 = 2
even = 2 x 2 = 4

(11) $360 = 9 \times 4 \times 10 = 2^3 \times 3^2 \times 5^1$

Total factor $= (4) \times 3 \times 2 = (24)$

odd $= 1 \times 6 = 6$

even $= 3 \times 6 = 18$

find no. of even/odd and Total factor

Q- —

① $5000 = 5 \times 1000 = 2^3 \times 5^4$

$2^3 \quad 5^3$

$= 4 \times 5 = 20$

odd $= 1 \times 5 = 5$

even $3 \times 5 = 15$

$2 \times 3^1 \times 5^3 = 3 \times 1000$

$2^3 \quad 5^3$

② 3000

$2 \times 3^1 \times 5^3$

factor $= 4 \times 2 \times 4$

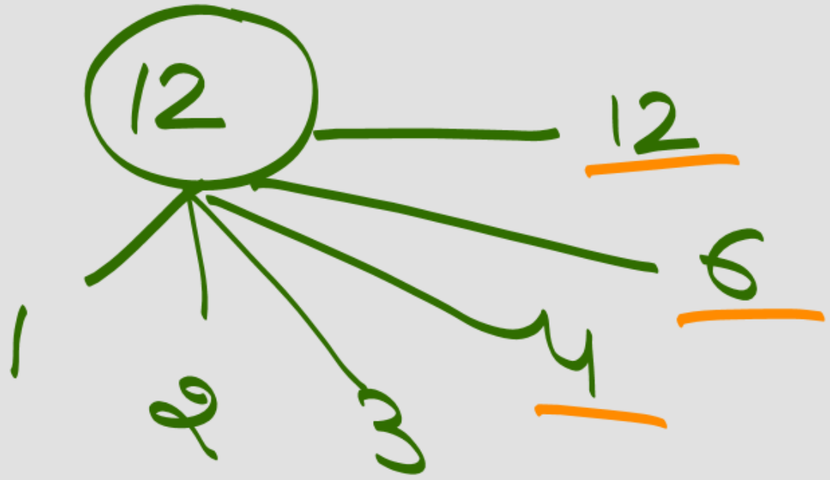
odd $= 1 \times 8 = 8$

even $= 3 \times 8 = 24$

② 540

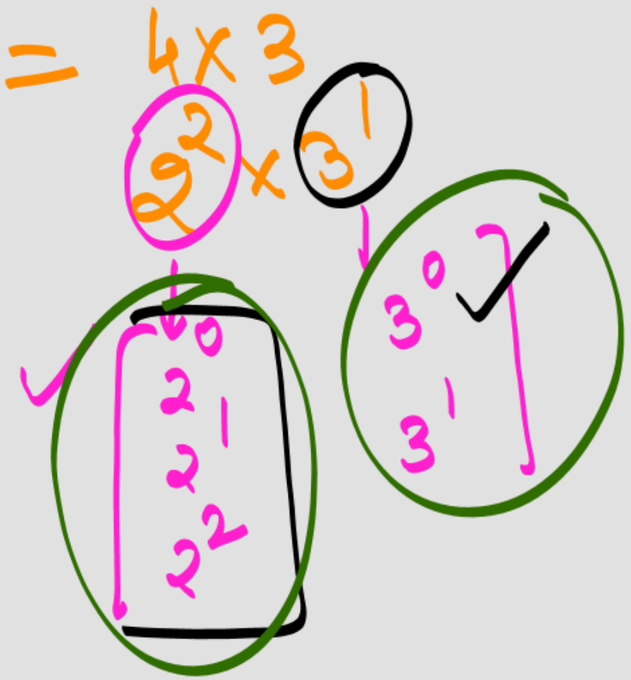
H.W

Sum of factor



Sum of factor = 28

12 = 4 × 3



Sum of factor = $(2^0+2^1+2^2)\ (3^0+3^1)$

7×4

28

find sum of factor of —

① 240

$8 \times 3 \times 10$

$= 2^4 \times 3^1 \times 5^1$

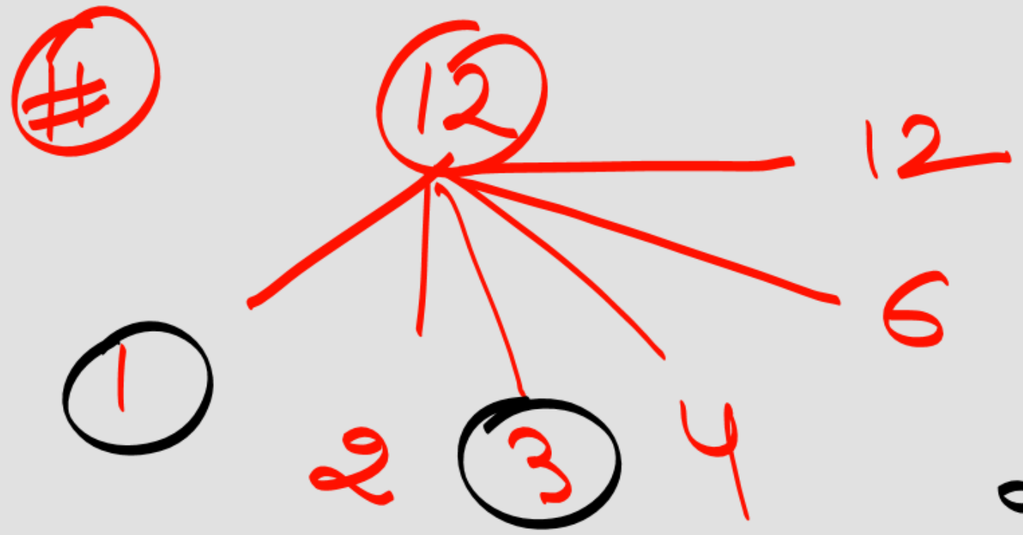
Sum of factor $= (2^0 + 2^1 + 2^2 + 2^3 + 2^4)(3^0 + 3^1)(5^0 + 5^1)$

$= 31 \times 4 \times 6 = 744$

840

840

2×420



Sum of factor = 28

" " odd factor = 4

" " even factor = 24

$2^2 \times 3$

Sum of factor $= (2^0+2^1+2^2)(3^0+3^1)$ (even)

(odd) $= 7 \times 4 = 28$

Sum of odd factor $= (2^0)(3^0+3^1) = 1 \times 4 = 4$

Sum of even factor $= (2^1+2^2)(3^0+3^1)$

$6 \times 4 = 24$

⊕ find Sum of even factor of

1240.

$= 124 \times 10$

$4 \times 31 \times 2 \times 5 = 2^3 \times 5^1 \times 31^1$

Sum of even factor $= (2^0 + 2^1 + 2^2 + 2^3)(5^0 + 5^1)(31^0 + 31^1)$

$= 15 \times 6 \times 32$

$90 \times 32 = 2880$

Ans $2880 - 192 = 2688$

Sum of odd factor $- (2^0) \times 6 \times 32 = 192$

Average of factor

$$\text{Average} = \frac{\text{Sum of factor}}{\text{No of factor}}$$

⑭ find Average of factor of 240.

$240 = 8 \times 3 \times 10$

$= 2^3 \times 3^1 \times 5^1$

no of factor $= 5 \times 2 \times 2 = 20$

Sum of factor $= (2^0+2^1+2^2+2^3+2^4)(3^0+3^1)(5^0+5^1)$

$= 31 \times 4 \times 6$

$Avg = \frac{31 \times 4 \times 6}{20}$

$= \frac{186}{5}$

$= 37.2$ Ans