Factors and Multiples Question Set (Easy-Medium)

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YouTube Video Link to this Post is Here

Seven solved problems are covered in the video.

Q1. If 26 is a factor of n, then is 6 a factor of n?

Sol: 26 is a factor of n => n is a multiple of 26
=> n = 26k where k is an integer

For 6 to be a factor of n, 26k should be divisible by 6
We need a 2 and a 3 for 6, but we have only 2 in 26k (=2 * 13k)

So, 26k will be divisible by 6 only when k is divisible by 3, which might not be true always
=> **We CANNOT say for sure if 6 is a factor of n**.

Q2. If 90 is a factor of n, then is 20 a factor of n?

Sol: 90 is a factor of n => n is a multiple of 90
=> n = 90k where k is an integer

For 20 to be a factor of n, 90k should be divisible by 6
We need a 2 and a 10 for 20, but we have only 10 in 90k (=10 * 9k)

So, 90k will be divisible by 20 only when k is divisible by 2, which might not be true always
=> **We CANNOT say for sure if 20 is a factor of n**.

Q3. If 24 is a factor of n, then is n a multiple of 8?

Sol: 24 is a factor of n => n is a multiple of 24
=> n = 24k where k is an integer

n = 24k = 8 * 3k
=> **Clearly, n is a multiple of 8 => TRUE**.

Q4. If 4 and 6 are factors of x, then which of the following will be a factor of x for sure
A. 8
B. 12
C. 24
D. 36
E. 48

Sol: 4 and 6 are factors of n => n is a multiple of LCM(4,6)
=> n = LCM(4,6) * k where k is an integer
= 12k
=> n is a multiple of 12 for sure

=> **So, Answer will be D**.

Q5. Is 192 divisible by x?
A. x is divisible by 12
B. x is divisible by 16

Sol:
STAT A: x is divisible by 12
=> x will be a multiple of 12.
=> x can be 12, 24, 192 or even 192 *10.
When x is 12, 24, 192 then 192/x is an integer but when x is 1920 then 192/x is not an integer.
=> **NOT SUFFICIENT**

STAT B:x is divisible by 16.
=> x will be a multiple of 16.
=> x can be 16, 32, 192 or even 192 *10.
When x is 16, 32, 192 then 192/x is an integer but when x is 1920 then 192/x is not an integer.
=> **NOT SUFFICIENT**

Taking both the statements together we get

Combining both also gives us that x will be a multiple of LCM(12,16)= 48k.
=> x can be 48,..192, 1920.
When x is 48, 96, 192 then 192/x is an integer but when x is 1920 then 192/x is not an integer.
=> **NOT SUFFICIENT**

=> **So, Answer will be E**.

Q6. If 12 is a factor of x and 16 is a factor of y, then
6.1 Is 48 a factor of xy?
6.2 Is 96 a factor of xy?
6.3 Is 192 a factor of xy?

Sol: 12 is a factor of x
=> x is a multiple of 12 => x = 12a
16 is a factor of y
=> y is a multiple of 16 => y = 16b
xy = 12a * 16b = 192 ab

So, xy is a multiple of
48 because xy = 48*4*ab
96 because xy = 96*2 *ab
192 because xy= 192*1*ab

So, Answer will be TRUE for all three problems

Q7. In a competition, gold medal gives 7 points, Silver gives 5 points and bronze gives 3 points. Roger participated in the competition in various events and the product of all the points earned by him is 33075. Then find the number of gold, silver and bronze medal earned by Roger

Sol: Bronze = x, Silver = y, Gold = z
Product of all the points = 33075
=> 33075 = $3^x * 5^y * 7^z$

33075 = $3^3 * 5^2 * 7^2$

$3^3 * 5^2 * 7^2 = 3^x * 5^y * 7^z$

So, Answer will Roger won: Gold – 2, Silver – 2, Bronze - 3

Hope it helps!
Good Luck!