2. MULTIPLES AND FACTORS

Class: VI : MATHEMATICS

INTEGRATED† : SOLUTIONS

TEACHING TASK (2025|26)

JEEMAINS LEVEL

01.	13	Ans: A
02	7	Ans: C
03	5	Ans: A
04	$14 \times 9 = 126$	Ans: B
05	Option verification A) $1+6=7$ ✓ B) $3+4=7$ ✓ C) $1+9=10$ ✗	Ans: D
06	Let $a=2$, $b=4$, $c=8$ Now $2 \times 4 = 8$ $a \quad b \quad c$ A) False B) True C) True D) True	Ans. A
07.	1995	Ans: B
08	1002	Ans: A
09	Conceptual	Ans: C
10	Conceptual	Ans: D

JEE ADVANCED LEVEL

11. Conceptual — Ans. A, B, C, D

12. Statement I: Conceptual (true)
Statement II: Conceptual (true) — Ans. A

13. 1 — Ans. A

14. Conceptual — Ans. D

15. 1 — Ans. A

16. 31 — Ans: 31

17. Factors of $143 = \{1, 11, 13, 143\}$
prime Numbers = 11, 13.
Sum = $11 + 13 = 24$ — Ans: 24

18. a) 11 (P)
b) 2 (q)
c) 6 (s)
d) 28 (t) — Ans P, q, s, t

LEARNERS TASK (CUQ's)

01. 1 — Ans. A

02. Conceptual — Ans. C

03. Conceptual — Ans. D

04. Conceptual — Ans. A

05 Does not exists — Ans. D

06 6, 28 — Ans. D

07 Can't say — Ans. D

08 6 — Ans. C

09 factors of 100 = {1, 2, 4, 5, 10, 20, 25, 50, 100}

Sum = 1 + 2 + 5 + 10 + 20 + 25 + 50 + 100

= 217

Ans: D

10 Infinite — Ans B

JEE MAINS LEVEL

01. A) 1543 = 73 x ——

B) 1533 = 73 x 21

Ans. B

02. Factors of 1024 = {1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024}

∴ Total = 11

Formula method:- $1024 = 2^{10}$

∴ No. of factors = 10 + 1 = 11

Ans. A

03 100^{th} multiple of 10 = 100 × 10 = 1000

least factor of 10 = 1.

Sum = 1000 + 1 = 1001

Ans: A

04 Conceptual — Ans. D

05 $(a+b)(a-b) = C$ — Ans: C

06 $8 > 4$ and 2 is a common factor of 8 and 4

$a = 8, \quad b = 4, \quad c = 2$

A) $ac = 8 \times 2 = 16$, $bc = 4 \times 2 = 8$

16 is multiple of 8 (True)

B) 8 is factor of 16 (True)

C) 8 is multiple of 16. (False)

Ans: A, B

07 $\frac{x}{y} = z \Rightarrow \frac{8}{4} = 2$

Let $x = 8, \quad y = 4, \quad z = 2$

A) 8 is not multiple of $4 \times 2 = 8$ (False)

B) 8 is not a factor of 4 (True)

C) 8 is a multiple of 4 and 2 (True)

Ans: B, C

08 $\frac{xyz}{abc} = \frac{(ab)(bc)(ca)}{abc} = abc$

factors of $abc = \{1, a, b, c, abc, ab, bc, ca\}$

Ans: A, D

09. NOTE: In the question remove the word 'Common'

least factor of $x = 1$

greatest factor of $x = x$

product $= 1 \times x = x$

Ans. B

10 Let the natural number be 2

multiples of 2 are 2, 4, 6, 8, 10
x, y, z, w, r

$x+y+w+r = 2+4+8+10 = 24 = 6 \times 4 = 4z$

Ans: C

4 times

11. Let the number be x

Consecutive multiples of x are $x, 2x, 3x, 4x, 5x$

$Sum = x+2x+3x+4x+5x = 45$

$15x = 45$

$\Rightarrow x = 3$

Next, multiple $= 6x = 6 \times 3 = 18$

Ans: C

12 ~~16 is factor of 8~~

Let 2 is factor of 4

4 is factor of 8

8 is factor of 16

here, $a=2$, $b=4$, $c=8$, $d=16$

A) $ab+bc+ca = 2.4+4.8+8.2 = 8+32+16 = 56$

16 is not factor of 56 (False)

B) $abc = 2.4.8 = 64$.

64 is factor of 16 (True)

c) $a+b+c = 2+4+8 = 14$

14 is not factor of 16 (False)

Ans. B

JEE ADVANCED LEVEL

01. The factors of x are a, b and c

i.e. x should have only three factors

option verification

A) factors of $4 = \{1, 2, 4\}$. (True)

B) multiples of $2 = \{2, 4, 6, \cdots\}$. (False)

6 can not have three factors.

C) factors of $6 = \{1, 2, 3, 6\}$ (False)

D) factors of $8 = \{1, 2, 4, 8\}$ (False)

Ans: A

02 option verification:

A) factors of $16 = \{1, 2, 4, 8, 16\}$

Sum $= 1+2+4+8+16$

$= 31$ ✗

B) Factors of $28 = \{1, 2, 4, 7, 14, 28\}$

Sum $= 1+2+4+7+14+28$

$= 56$ ✗

C) Factors of $18 = \{1, 2, 3, 6, 9, 18\}$

Sum $= 1+2+3+6+9+18$

$= 39$ multiple of 3

D) Factors of $10 = \{1, 2, 5, 10\}$

Sum $= 1+2+5+10 = 18$, multiple of 3

Ans: C, D

03 A) 2, 4, 6, 8 — $4^2 = 2 \times 8$ (True)
a, b, c, d — $b^2 = a \times d$

B) 3, 6, 9, 12 — $6^2 = 3 \times 12$ (True)
a, b, c, d — $b^2 = a \times d$

C) 5, 10, 15, 20 — $10^2 = 5 \times 20$ (True)
a, b, c, d

Ans: A, B, C

04. Statement I: $a = 1$, 1 is not even number (False)

Statement II: Conceptual (True) Ans. D

05 Statement I: $2x = 2 \times 2 = 4$
$2y = 2 \times 3 = 6$
$2z = 2 \times 4 = 8$
6 is not factor of 8 (False)

Statement II: factors of 6 = {1, 2, 3, 6}

$a = 3$ (False)(True) Ans: D

06 Statement I:
factors of 12 = {1, 2, 3, 4, 6, 12}
Sum of the factors = 1 + 2 + 3 + 4 + 6
= 16 (False)

Statement II: Conceptual (True) Ans. D

07 $18 = 2^1 \times 3^2$

No. of factors $= (1+1)(2+1)$
$= 2 \times 3$
$= 6$

2 | 18
3 | 9
3

Ans: C

08 $180 = 2 \times 90 = 2 \times 2 \times 45 = 2 \times 2 \times 3 \times 15$

$= 2 \times 2 \times 3 \times 3 \times 5$

$\therefore 180 = 2^2 \times 3^2 \times 5^1$

No. of factors $= (2+1)(2+1)(1+1)$

$= 3 \times 3 \times 2$

$= 18$

Ans: A

09 A) $16 = 2^4$.

No. of factors $= 4+1 = 5$ (True)

B) $68 = 2^2 \times 17^1$

No. of factors $= (2+1)(1+1)$

$= 3 \times 2 = 6$ (True)

C) $102 = 2^1 \times 3^1 \times 17^1$

No. of factors $= (1+1)(1+1)(1+1)$

$= 2 \times 2 \times 2 = 8$ (False)

d) $127 = 127^1$

No. of factors $= 1+1 = 2$ (True)

Ans. C

10 $y = 2^3$

No. of factors of $= 3+1 = 4$

Ans. 4

11 $(2+1)(P+1) = 24 \Rightarrow P = 7$

Ans. 7

12 a) 99 (t)

b) 10 (q)

c) 996 (p)

d) 100 (r)

Ans: t, q, p, r

$\Rightarrow$ THE END $\Leftarrow$