

5. LCM AND HCF

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Class: VI. MATHEMATICS

FOUNDATION: SOLUTIONS

TEACHING TASK
JEE MAINS LEVEL

2025/26

01. 72, 108, 210

$$\begin{array}{r} 72 \overline{) 108} (1 \\ \underline{72} \\ 36 \overline{) 72} (2 \\ \underline{72} \\ 0 \end{array}$$

$$\begin{array}{r} 36 \overline{) 210} (5 \\ \underline{180} \\ 30 \overline{) 36} (1 \\ \underline{30} \\ 6 \overline{) 30} (5 \\ \underline{30} \\ 0 \end{array}$$

$\therefore \text{HCF} = 6$

Ans: A

02 LCM of { 20, 24, 36, 40 }

$$20 = 2^2 \times 5, 24 = 2^3 \times 3, 36 = 2^2 \times 3^2, 40 = 2^3 \times 5$$

$$\text{LCM} = 2^3 \times 3^2 \times 5 = 360$$

Now, smallest 4-digit no = 1000

$$\text{Now, } \frac{1000}{360} \approx 2.78 \Rightarrow \text{Next whole no} = 3$$

$\therefore \text{Required no} = 360 \times 3 = 1080$

Ans: B

03 LCM { 63, 90, 135 } = 1890.

Required no = 1890 + 11 = 1901.

Ans: A

04 $110 - 2 = 108, 125 - 5 = 120.$

$\text{HCF of } 108, 120 = 12$

Ans: C

05 $LCM \{24, 36, 40\} = 360$

Ans: C

06 $252 = 2 \times 2 \times 3 \times 3 \times 7$

Ans: A

07 $HCF \{36, 84\} = 12$

Ans: A

08 $HCF \{48, 36, 72, 24\} = 12$
 $LCM \{48, 36, 72, 24\} = 144$
 $\therefore LCM = 12 \times HCF$

Ans: A

09 462

Ans: C

10 $LCM \times HCF = \text{product}$
 $12 \times HCF = 24 \Rightarrow HCF = 2$

Ans: B

ADVANCED LEVEL

01. Conceptual

Ans: A, B

- 02 A) $HCF \{2, 3\} = 1$
 B) $HCF \{5, 7\} = 1$
 D) $HCF \{11, 13\} = 1$

Ans: A, B, D

03 Statement I: Conceptual (True)
Statement II: Conceptual (True)

Ans: A

04. Statement I: Conceptual (True)
Statement II: Conceptual (False)

Ans: C

05. Assertion: Conceptual (True)

(3)

Reason: Conceptual (False)

Ans: C

06. Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

07. $0.4 \times 10 = 4$; $0.6 \times 10 = 6$

Ans: A

08. $0.4 = \frac{4}{10} = \frac{2}{5}$; $0.6 = \frac{6}{10} = \frac{3}{5}$

$\therefore \text{LCM} \left\{ \frac{2}{5}, \frac{3}{5} \right\} = \frac{\text{LCM} \{ 2, 3 \}}{\text{HCF} \{ 5, 5 \}} = \frac{6}{5} = 0.2$

Ans: A

09. Co-primes = $\{ 9, 10 \}$, $\{ 7, 20 \}$

Ans: A, C

10. Conceptual

Ans: C

11. $\text{HCF} \times \text{LCM} = \text{product}$

$5 \times 180 = x \times 15$

$\Rightarrow x = 60$

Ans: D

12. $N = 2^2 \times 3^3 \times 5^1$

No. of divisors = $(2+1) \times (3+1) \times (1+1)$
 $= 3 \times 4 \times 2 = 24$

Ans: 24

13. a) $\{ 8, 15 \}$ (v) | c) $12, 18$ (s)
b) $5, 7$ (p) | d) $11, 13$ (r)

Ans: v, p, s, r

14 a) $HCF \left\{ \frac{2}{3}, \frac{4}{9} \right\} = \frac{HCF\{2,4\}}{LCM\{3,9\}} = \frac{2}{9} (p)$

b) $LCM \left\{ \frac{1}{2}, \frac{3}{4} \right\} = \frac{LCM\{1,3\}}{HCF\{2,4\}} = \frac{3}{2} (q)$

c) $HCF \left\{ \frac{5}{8}, \frac{15}{32} \right\} = \frac{HCF\{5,15\}}{LCM\{8,32\}} = \frac{5}{32} (s)$

d) $LCM \left\{ \frac{3}{5}, \frac{7}{10} \right\} = \frac{LCM\{3,7\}}{HCF\{5,10\}} = \frac{21}{10} (r)$

Ans: p, q, s, r

LEARNERS TASK (CURIS)

01. Conceptual

Ans: D

02

$$\begin{array}{r} 8 \overline{) 12} (1 \\ \underline{8} \\ 4 \overline{) 8} (2 \\ \underline{8} \\ 0 \end{array}$$

$HCF = 4$

Ans: D

03 Conceptual

Ans: B

04 6

Ans: B

05 Conceptual

Ans: C

06 $100 = 2^2 \times 5^2$

Ans: C

07 Conceptual

Ans: B

08 Conceptual

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Ans: A

09 Conceptual

Ans: B

10. Conceptual

Ans: B

JEE MAINS LEVEL

01

$$5 = 5^1$$

$$10 = 2 \times 5$$

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

$$20 = 2^2 \times 5$$

$$\text{LCM} = 2^2 \times 5 \times 3 = 60$$

Ans: D

02

$$\text{HCF} \{150, 225\} = 75$$

Ans: B

03

$$\text{LCM} \{16, 24, 40\} = 240$$

Greatest 4-digit no = 9999

$$\frac{9999}{240} = 41.6625 \rightarrow \text{Next whole no} = 42$$

$$\therefore \text{Required no} = 42 \times 240 = 10080$$

Ans: B

04.

$$\text{HCF} \{45, 135, 105\} = 15 \text{ cm}$$

Ans: A

* 06

$$\text{HCF} \{325, 225\} = 25 \text{ cm} = 0.25 \text{ m}$$

Ans: A

* 05

$$\text{LCM} \{20, 24, 36, 40\} = 360$$

Smallest 5 digit no = 10000

$$\frac{10000}{360} \approx 27.72 \rightarrow \text{next whole no: } 28$$

$$28 \times 360 = 10080$$

Ans: C

07. 999987

Ans. C
(6)

08 20 lit, 30000 ml = 30 lit

$$\text{HCF} \{20, 30\} = 10 \text{ lit}$$

Ans. A

09 $171 - 3 = 168$, $251 - 6 = 245$

$$\text{HCF} \{168, 245\} = 7$$

Ans. C

10. LCM of $\left\{ \frac{36}{225}, \frac{48}{150}, \frac{72}{65} \right\}$

$$= \frac{\text{LCM} \{36, 48, 72\}}{\text{HCF} \{225, 150, 65\}} = \frac{144}{5}$$

Ans. C

ADVANCED LEVEL

01. Conceptual

Ans: A, B, C, D

02. Conceptual

Ans: A, C, D

03 Statement I: Conceptual (True)

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Statement II: Conceptual (False)

Ans: C

04 Statement I: Conceptual (True)Statement II: Conceptual (False)

Ans: C

05 Assertion: Conceptual (True)Reason: Conceptual (False)

Ans: C



06. Assertion: Conceptual (True)
Reason: Conceptual (True)

(7)

Ans: A

07 Conceptual

Ans: B

08 A) $18 = 2 \times 3^2$ ✓ c) $28 = 2^2 \times 7$ ✓

Ans: A, C

09 $\text{LCM} \{5, 7\} = 35$

Ans: C

10 $\text{LCM} \{8, 12\} = 24$

Ans: A

11. Prime factors of $\{210\} = \{2, 3, 5, 7\}$

$$\text{Sum} \rightarrow 2 + 3 + 5 + 7 = 17$$

Ans: 17

12 $\text{HCF} \times \text{LCM} = \text{product}$

$$8 \times \text{LCM} = 768$$

$$\Rightarrow \text{LCM} = 96$$

Ans: 96

13 a) $12 = 2^2 \times 3^1$

$$\text{No. of factors} = (2+1) \times (1+1) = 3 \times 2 = 6 \text{ (P)}$$

b) $\text{Sum} = 2 + 3 = 5 \text{ (Q)}$

c) $12 = 2^2 \times 3 \text{ (R)}$

d) 2 (S)

Ans: P, Q, R, S

$$14 \quad a) \text{LCM}\{0.2, 0.4\} = \left\{\frac{2}{10}, \frac{4}{10}\right\} = \left\{\frac{1}{5}, \frac{2}{5}\right\} \quad (8)$$

$$\frac{\text{LCM}\{1, 2\}}{\text{HCF}\{5, 5\}} = \frac{2}{5} = 0.4 (r)$$

$$b) 0.3 = \frac{3}{10}, \quad 0.6 = \frac{6}{10} \quad \text{(circled 3)}$$

$$\text{LCM}\left\{\frac{3}{10}, \frac{6}{10}\right\} = \frac{\text{LCM}\{3, 6\}}{\text{HCF}\{10, 10\}} = \frac{6}{10} = 0.6 (q)$$

$$c) 0.5 = \frac{5}{10} = \frac{1}{2} \quad ; \quad 0.75 = \frac{75}{100} = \frac{3}{4}$$

$$\therefore \text{LCM}\left\{\frac{1}{2}, \frac{3}{4}\right\} = \frac{\text{LCM}\{1, 3\}}{\text{HCF}\{2, 4\}} = \frac{3}{2} = 1.5 (p)$$

$$d) 0.1 = \frac{1}{10} \quad ; \quad 0.25 = \frac{25}{100} = \frac{1}{4}$$

$$\therefore \text{LCM}\left\{\frac{1}{10}, \frac{1}{4}\right\} = \frac{\text{LCM}\{1, 1\}}{\text{HCF}\{10, 4\}} = \frac{1}{2} = 0.5 (s)$$

Ans: r, q, p, s

$\Rightarrow$ THE END $\Leftarrow$