

①

4. LCM AND HCF

Class: VI; MATHEMATICS

FOUNDATION⁺ SOLUTIONS

2025-26

TEACHING TASK

TEEMAINS LEVEL

01. 6 Ans. D

02. 8 Ans. D

03 NOTE! Please note, HCF = 3
option verification technique.

option: C

$$\begin{array}{r} 3 \text{ and } 21 \\ 3 \overline{) 21} \quad (7 \\ \underline{21} \\ 0 \end{array}$$

$$\begin{aligned} \text{H.C.F} &= 3 \\ \text{product} &= 3 \times 21 = 63 \end{aligned}$$

Ans: C

04. Conceptual Ans. A

$$\begin{aligned} 24 &= 2^3 \times 3 \\ 36 &= 2^2 \times 3^2 \\ \text{H.C.F} &= 2^2 \times 3 = 4 \times 3 = 12 \end{aligned}$$

Ans. B

$$\begin{array}{r} 45 \overline{) 75} \quad (1 \\ \underline{45} \\ 30 \\ 30 \overline{) 45} \quad (1 \\ \underline{30} \\ 15 \\ 15 \overline{) 30} \quad (2 \\ \underline{30} \\ 0 \end{array}$$

$$\text{H.C.F.} = 15$$

Ans: C

07. $12 = 2^2 \times 3$
 $18 = 2 \times 3^2$
 $L.C.M = 2^2 \times 3^2 = 4 \times 9 = 36$

(2)
 Ans. D

08 option verification

D: 108, 135

$108 : 135 = 4 : 5$

$H.C.F(108, 135) = 27$

09 option: B $119) 187 (1$

$\frac{119}{68} 119 (1$

$\frac{68}{51} 68 (1$

$\frac{51}{17} 51 (3$
 $\frac{51}{0}$

$\therefore H.C.F = 17$

$Sum = 119 + 187 = 306$

10 option: D, 56, 126, 182.

Product: $56 \times 126 \times 182 = 20580$

H.C.F. $56) 126 (2$
 $\frac{112}{14}$

$14) 56 (4$
 $\frac{56}{0}$

$14) 182 (13$
 $\frac{182}{0}$

$\therefore H.C.F = 14$, Verified

11.

3

$$\begin{array}{r}
 4 \overline{) 20, 24, 36, 40} \\
 5 \overline{) 5, 6, 9, 10} \\
 3 \overline{) 1, 6, 9, 2} \\
 2 \overline{) 1, 2, 3, 2} \\
 1, 1, 3, 1
 \end{array}$$

$$\therefore \text{L.C.M} = 4 \times 5 \times 3 \times 2 \times 3 = 360.$$

$$\text{four digit number} = 360 \times 3 = 1080$$

Ans. B

12 L.C.M. of 63, 90, 135

$$\begin{array}{r}
 3 \overline{) 63, 90, 135} \\
 3 \overline{) 21, 30, 45} \\
 5 \overline{) 7, 10, 15} \\
 7, 2, 3
 \end{array}$$

$$\therefore \text{L.C.M} = 3 \times 3 \times 5 \times 7 \times 2 \times 3 = 1890$$

$$\therefore \text{Required No} = 1890 + 11 = 1901 \quad \text{Ans: A}$$

13 option: C : 12

$$\begin{array}{r}
 12 \overline{) 110} \quad 9 \overline{) 12} \quad 125 \overline{) 10} \\
 \underline{108} \quad \underline{120} \\
 2 \quad 5
 \end{array}$$

Verified Ans: 12

14

$$\begin{array}{r}
 2 \overline{) 24, 36, 40} \\
 2 \overline{) 12, 18, 20} \\
 3 \overline{) 6, 9, 10} \\
 2 \overline{) 3, 10} \quad 1 \overline{) 1, 3, 5}
 \end{array}$$

$$\text{L.C.M} = 2 \times 4 \times 3 \times 1 \times 6 \times 5 =$$

14

$$\begin{array}{r}
 2 \overline{) 24, 36, 40} \\
 2 \overline{) 12, 18, 20} \\
 2 \overline{) 6, 9, 10} \\
 3 \overline{) 3, 9, 5} \\
 1, 3, 5
 \end{array}$$

$$\begin{aligned}
 \text{L.C.M} &= 2 \times 2 \times 2 \times 3 \times 1 \times 3 \times 5 \\
 &= 360
 \end{aligned}$$

Ans: C

(4)

15

$$\begin{array}{r}
 2 \overline{) 252} \\
 2 \overline{) 126} \\
 3 \overline{) 63} \\
 3 \overline{) 21} \\
 7
 \end{array}$$

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

Ans: A

$$\begin{aligned}
 16 \quad \text{HCF} \{48, 36, 72, 24\} &= 12 \\
 \text{LCM} \{48, 36, 72, 24\} &= 144 = 12 \times 12 \quad \text{Ans: A}
 \end{aligned}$$

17

$$459 - 462$$

Ans: C

18

$$\begin{aligned}
 \text{L.C.M} \times \text{H.C.F} &= \text{Product of the no.} \\
 12 \times \text{H.C.F} &= 24 \\
 \Rightarrow \text{H.C.F} &= 2
 \end{aligned}$$

Ans: B

ADVANCED LEVEL

$$\begin{array}{l}
 90 = 2 \times 3^2 \times 5 \\
 120 = 2^3 \times 3 \times 5
 \end{array}
 \left. \vphantom{\begin{array}{l} 90 \\ 120 \end{array}} \right\} \begin{aligned}
 \text{H.C.F} &= 2 \times 3 \times 5 \\
 &= 30
 \end{aligned}$$

Ans: B

02

$$420 \overline{) 504} \begin{array}{r} 1 \\ 420 \\ \hline 84 \end{array}$$

$$84 \overline{) 420} \begin{array}{r} 5 \\ 420 \\ \hline 0 \end{array}$$

(5)

$$\therefore \text{H.C.F} = 84$$

Ans: D

03

Conceptual

Ans: D

04

Conceptual

Ans: A, C

05

$$40 = 2^3 \times 5$$

$$60 = 2^2 \times 3 \times 5$$

$$\text{L.C.M} = 2^3 \times 3 \times 5$$

Ans: B

06

$$720 \overline{) 900} \begin{array}{r} 1 \\ 720 \\ \hline 180 \end{array}$$

$$180 \overline{) 720} \begin{array}{r} 4 \\ 720 \\ \hline 0 \end{array}$$

$$\text{H.C.F} = 180$$

Ans: C

07

$$\text{L.C.M} \left\{ \frac{1}{4}, \frac{3}{5}, \frac{2}{3} \right\} = \frac{\text{L.C.M} \{1, 3, 2\}}{\text{H.C.F} \{4, 5, 3\}}$$

$$= \frac{6}{1} = 6$$

Ans: D

08

Statement I:

$$2 \overline{) 120, 20} \begin{array}{r} 60, 10 \\ 2 \overline{) 60, 10} \begin{array}{r} 30, 5 \\ 5 \overline{) 30, 5} \begin{array}{r} 6, 1 \end{array} \end{array} \end{array}$$

$$\text{L.C.M} = 2 \times 2 \times 5 \times 6 = 120$$

(True)

Statement II: Conceptual (True)

Ans: A



9.	Statement I: True Statement II: Conceptual (True)	Ans: A
10	Assertion A: Conceptual (True) Reason: Conceptual (True)	Ans: A
11.	Assertion: Conceptual (True) Reason: Conceptual (True)	Ans: A
12	Assertion: $48 \nmid 72$ ($\vee$) $\begin{array}{r} 48 \\ 24 \overline{) 48} \end{array} \begin{array}{l} 2 \\ 48 \\ \underline{48} \\ 0 \end{array}$ H.C.F = 24 (True) Reason: Conceptual (True)	Ans: A
13	Assertion: Conceptual (True) Reason: Conceptual (True)	Ans: A
14	5	Ans: A
15	$p = a \times b \times c \times d$ $q = b \times c \times d \times 4$ H.C.F = bcd	Ans: A
16	H.C.F $\{15, 25, 35\} = 5$	Ans: A
17	H.C.F $\{15, 25, 20\} = 5$	Ans: C

$$18 \quad \text{H.C.F.} \{ 3, 4 \} = 3 \times 4 = 12$$

Ans: 12

$$19 \quad \text{H.C.F.} \{ 8, 12, 16 \} = 4$$

(1)

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

$$\begin{array}{r} 4 \overline{) 16} \quad (4 \\ \underline{16} \\ 0 \end{array}$$

Ans: 4

$$20 \quad 18 = 2 \times 3^2$$

$$24 = 2^3 \times 3$$

$$36 = 2^2 \times 3^2$$

$$\text{H.C.F.} = 2 \times 3 = 6$$

Ans: 6

$$21 \quad \text{We have } 510 = 24 \times 21 + 6$$

$$270 = 24 \times 11 + 6$$

$\therefore$ Clearly 6 should be subtracted Ans: 6

$$22 \quad a) \text{HCF} \{ 5, 7 \} = 35 (r)$$

$$b) \text{product} (p)$$

$$c) \text{LCM} \{ 8, 9, 25 \} = 1800 (s)$$

$$d) \text{HCF} \{ 8, 9, 25 \} = 1 (r)$$

Ans: r, p, s, r

$$23 \quad a) \text{HCF} \times \text{LCM} (r)$$

$$b) \text{co-primes} (r)$$

$$c) \text{twin primes} (s)$$

$$d) \text{Co-primes} (r)$$

Ans: r, r, s, r

LEARNERS TASK (CUG'S) (8)

01. Conceptual

Ans: A

02

$$45 \overline{) 150}$$

$$\underline{45}$$

$$30 \overline{) 45}$$

$$\underline{30}$$

$$15 \overline{) 30}$$

$$\underline{30}$$

$$H.C.F = 15$$

Ans: B

03

$$24 = 2^3 \times 3$$

$$36 = 2^2 \times 3^2$$

$$H.C.F = 2^2 \times 3 = 12$$

Ans: B

04

$$45 = 3^2 \times 5$$

$$60 = 2^2 \times 3 \times 5$$

$$H.C.F = 3 \times 5 = 15$$

Ans: C

05

$$63 \overline{) 84}$$

$$\underline{63}$$

$$21 \overline{) 63}$$

$$\underline{63}$$

$$\underline{0}$$

$$H.C.F = 21$$

Ans: C

06

$$80 \overline{) 200}$$

$$\underline{80}$$

$$40 \overline{) 80}$$

$$\underline{80}$$

$$\underline{0}$$

$$H.C.F = 40$$

Ans: C

07

$$14 = 2 \times 7$$

$$28 = 2^2 \times 7$$

$$L.C.M = 2^2 \times 7 = 28$$

Ans: B

08 Conceptual

Ans: C

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

$$H.C.F = 4$$

(9)

Ans: D

Ans: B

10 Conceptual

Ans: B

11 6

Ans: C

12 Conceptual

Ans: C

$$13 \quad 100 = 2^2 \times 5^2$$

Ans: B

14 Conceptual

Ans: A

15 Conceptual

Ans: B

16 Conceptual

17 Conceptual

Ans: B

$$\begin{array}{r} 2 \overline{) (72, 90, 120)} \\ 2 \overline{) (36, 45, 60)} \\ 2 \overline{) (18, 45, 30)} \\ 3 \overline{) (9, 45, 15)} \\ 3 \overline{) (3, 15, 5)} \\ 5 \overline{) (1, 5, 5)} \\ 1, 1, 1 \end{array}$$

$$\begin{aligned} L.C.M &= 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 1 \\ &= 360 \end{aligned}$$

Ans: B

JEE MAINS LEVEL

(10)

Q1 NOTE: Please change the question as what is the least Factor?

1

Ans: A

Q2 10

Ans: D

Q3 Option Verification:
Let the other number = 40.
 $H.C.F. \{32, 40\} = 8.$

Ans: D

Q4. $56 = 2^3 \times 7$
 $72 = 2^3 \times 3^2$
 $H.C.F. = 2^3 = 8$

Ans: C

Q5. $84 = 2^2 \times 3 \times 7$
 $126 = 2 \times 3^2 \times 7$
 $H.C.F. = 2 \times 3 \times 7 = 42$

Ans: A

Q6
$$\begin{array}{r} 36 \overline{) 54} \quad 1 \\ \underline{36} \\ 12 \overline{) 36} \quad 3 \\ \underline{36} \\ 0 \end{array}$$

 $H.C.F. = 12$

Ans: C

Q7 Option Verification: D (23, 69)
 $69 - 23 = 46$
 $H.C.F. \{23, 69\} = 23$

Ans: D

08 option Verification: D(341, 31)

(11)

$$341 + 31 = 372$$

$$H.C.F \{ 341, 31 \} = 31$$

Ans: D

09 option Verification: B(48, 64, 96)

NOTE: please, change product 294912

$$\therefore \text{product} = 48 \times 64 \times 96 = 294912$$

$$H.C.F \{ 48, 64, 96 \} = 16$$

Ans: B

10 option Verification: B(87, 116)

$$\text{Difference} = 116 - 87 = 29. \text{ (failed)}$$

option C (29, 87)

$$\text{Difference} = 87 - 29 = 58$$

$$H.C.F \{ 29, 87 \} = 29$$

Ans: C

11 option Verification: B(55, 1) NOTE: please, change

$$L.C.M (55, 1) = 385$$

$$H.C.F = 1$$

$$H.C.F (55, 1) = 1$$

Ans: B

$$12 \quad L.C.M \{ 16, 24, 40 \} = 240$$

Largest 4-digit number - 9999

$$\left[\frac{9999}{240} \right] = 41.$$

$$\text{Now } 240 \times 41 = 9840.$$

Ans: B

~~13 L.C.M { 45,~~

13 H.C.F. of $\{45, 135, 105\} = 15$ Ans: A

14 L.C.M of $\{20, 24, 36, 40\} = 360$ (12)

The smallest 5-digit number = 10000

$$\therefore \left[\frac{10000}{360} \right] = [27.78] = 28$$

Now, $360 \times 28 = 10080$

Ans: C

15 G.C.D $\{325, 225\} = 25 \text{ cm} = 0.25 \text{ m}$ Ans: A

Ans: C

16 999987

17 20 lit = $20 \times 1000 = 20000 \text{ ml}$.

G.C.D $\{20000, 30000\} = 10000 \text{ ml}$.
= 10 lit

Ans: —

18 option verification: c(7)

$$\begin{array}{r} 7 \overline{) 171} \quad (24 \\ \underline{168} \\ 3 \end{array}$$

$$\begin{array}{r} 7 \overline{) 251} \quad (35 \\ \underline{245} \\ 6 \end{array}$$

Ans: C

19 L.C.M of $\left\{ \frac{36}{225}, \frac{48}{150}, \frac{72}{65} \right\}$

= L.C.M $\{36, 48, 72\}$

= $\frac{\text{H.C.F.} \{225, 150, 65\}}$

= $\frac{144}{5}$

Ans: C

JEE ADVANCED LEVEL

(12)

01

$$HCF \{ 324, 432 \} = 108$$

$$\begin{array}{r} 324 \overline{) 432} (1 \\ \underline{324} \\ 108 \end{array} \quad \begin{array}{r} 108 \overline{) 324} (8 \\ \underline{324} \\ 0 \end{array}$$

Ans. D

02

$$LCM \{ 56, 72 \}$$

$$\begin{array}{r} 2 \overline{) 56, 72} \\ 2 \overline{) 28, 36} \\ 2 \overline{) 14, 18} \\ 7, 9 \end{array}$$

$$L.C.M = 2 \times 2 \times 2 \times 7 \times 9 = 504$$

Ans. B

03

Conceptual:

Ans. D

04

$$\begin{array}{r} 864 \overline{) 972} (1 \\ \underline{864} \\ 108 \end{array} \quad \begin{array}{r} 108 \overline{) 864} (8 \\ \underline{864} \\ 0 \end{array}$$

Ans. C

05

Statement I: Conceptual (True)

Statement II: Conceptual (False)

Ans. C

06

Statement I: Conceptual (True)

Statement II: $H.C.F \times L.C.M = \text{product}$
 $37 \times L.C.M = 4107$

(False) $L.C.M = 111$. Ans. C

07 Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

08 Assertion: Conceptual (True)

Reason: Consecutive numbers have 1 as
Common factor (False)

Ans: C

09

Assertion:

$$\begin{array}{r} 35 \overline{) 140} \\ \underline{35} \\ 14 \overline{) 35} \\ \underline{28} \\ 7 \overline{) 14} \\ \underline{14} \\ 0 \end{array}$$

$$H.C.F = 7$$

(True)

Ans: A

Reason: Conceptual (True)

10

Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

11.

Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

12

$$L.C.M \{ 15, 20, 30 \} = 60$$

Ans: D

13

$$L.C.M \{ 15, 20, 30, 25 \} = 300$$

Ans: A

14.

$$35$$

Ans: C

15

$$\begin{array}{r} 2 \overline{) 8, 12} \\ 2 \overline{) 4, 6} \\ 2, 3 \end{array}$$

$$L.C.M = 2 \times 2 \times 2 \times 3 = 24$$

Ans: A

16.

$$36 \overline{) 84} (2$$

$$\begin{array}{r} 72 \\ \underline{12} \\ 36 \end{array} (3$$

$$H.C.F. = 12$$

Ans: 12

17

$$2 \overline{) 20, 30, 40}$$

$$2 \overline{) 10, 15, 20}$$

$$5 \overline{) 5, 15, 10}$$

$$1, 3, 2$$

$$L.C.M = 2 \times 2 \times 5 \times 3 \times 2$$

$$= 120$$

Ans: 120

18

$$90 = 2 \times 3^2 \times 5$$

$$120 = 2^3 \times 3 \times 5$$

$$H.C.F = 2 \times 3 \times 5 = 30$$

Ans: 30

19

a) Factors of 18 = {1, 2, 3, 6, 9, 18}

Factors of 24 = {1, 2, 3, 4, 6, 8, 12, 24}

Common factors = {1, 2, 3, 6}

total = 4

$$b) 55 \overline{) 121} (2$$

$$\begin{array}{r} 110 \\ \underline{11} \\ 55 \end{array} (5$$

$$H.C.F = 11 (s)$$

c)

$$2 \overline{) 12, 24}$$

$$2 \overline{) 6, 12}$$

$$3 \overline{) 3, 6}$$

$$1, 2$$

$$L.C.M = 2 \times 2 \times 3 \times 2$$

$$= 24 (t)$$

d) Factors of 38 = $\{1, 2, 19, 38\}$
 Factors of 57 = $\{1, 3, 19, 57\}$
 Common factors = $\{1, 19\}$
 total: 2

(16)

Ans: —, s, t, —

20 a) L.C.M of 0.2, 0.4

$$\text{L.C.M of } \frac{2}{10}, \frac{4}{10} = \frac{2}{5}, \frac{2}{5}$$

$$= \frac{\text{L.C.M of } 1, 2}{\text{H.C.F of } 5} = \frac{2}{5} = 0.4 \text{ (x)}$$

b) $0.3 = \frac{3}{10}$
 $0.6 = \frac{6}{10} = \frac{3}{5}$

$$\text{L.C.M of } \frac{3}{10}, \frac{3}{5} = \frac{\text{L.C.M of } 3, 3}{\text{H.C.F of } 10, 5} = \frac{3}{5} = 0.6 \text{ (y)}$$

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

$$\text{L.C.M of } \frac{1}{2}, \frac{3}{4} = \frac{\text{L.C.M of } 1, 3}{\text{H.C.F of } 2, 4} = \frac{1}{2} = 0.5 \text{ (s)}$$

d) $0.1 = \frac{1}{10}, 0.25 = \frac{1}{4}$

$$\text{L.C.M of } \frac{1}{10}, \frac{1}{4} = \frac{\text{L.C.M of } 1, 1}{\text{H.C.F of } 10, 4} = \frac{1}{2} = 0.5 \text{ (s)}$$

⇒ THE END ⇐

Ans: x, y, s, s