LCM & HCF SOLUTION

1. (c) LCM (ल. स.) × HCF (म. स.) = Ist number (पहली संख्या) × IInd number (दूसरी संख्या) or

Product of number (संख्याओं का गुणनफल)

= HCF (म. स.) × LCM (ल. स.)

⇒ LCM = 864

HCF = 144

one number $x = 288$

one number be y (माना की अन्य संख्या y है)

xy = LCM × HCF

⇒ 288 × y = 864 × 144

$y = \frac{864 \times 144}{288}$ = **432**

∴ Other no. will be 432 (अन्य संख्या 432 होगी)

2. (c) LCM = 225

HCF = 5

one number (पहली संख्या) = 25

∴ Let other number be y (माना की अन्य संख्या y है)

∴ 25 × y = 255 × 5

$y = \frac{225 \times 5}{25} = 45$

∴ another no. is **45** (अन्य संख्या **45** है)

3. (c) LCM = 30

HCF = 5 (given)

One number (पहली संख्या) = 10

Let another number (माना की अन्य संख्या) = y

∴ 10y = 30 × 5

y = 15

4. (b) HCF = 13

LCM = 455

∴ Let numbers be $13x$ & 13y (माना की संख्याएँ $13x$ & 13y)

∴ LCM = 13 xy

∵ LCM = HCF × Product of other factor (अन्य गुणाक का गुणनफल)

$13xy = 455$

$xy = \frac{455}{13} = 35$

⇒ $xy = 35$

Possible co-prime Factors of x, y (सम्भावित असहभाज्य गुणक) ⇒ (35,1), (5,7)

∴ numbers may be (सम्भावित संख्याएँ)

⇒ 35 × 13, 1 × 13 = (455, 13)

or

⇒ 5 × 13, 7 × 13 = (65, 91)

⇒ But it is given that one number lies between (75 & 125) so. (लेकिन यह दिया गया है कि एक संख्या 75 और 125 के बीच में है)

⇒ numbers are (65, 91) and number between 75 & 125 is 91.

(65, 91) संख्याएँ हैं, (75 और 125 के बीच की संख्या 91 है)

5. (c) LCM of (4, 6, 8, 12, 16)

⇒ 16 × 3 = 48

∴ The number when divided by (4, 6, 8, 12, 16) leaves remender 2 is (वह संख्या जिसे 4, 6, 8, 12, 16 से भाग देने पर दो शेष बचता हो) = 48 + 2 = **50**

6. (d) LCM of (12, 15, 20, 54)

⇒ 4 × 3 × 5 × 9 = 540

The required number is (अभीष्ट संख्या) 540 + 4 = **544**

Because when divided by LCM each is divided completely. By adding 4 in LCM leaves remainder 4.

(क्योंकि ल.स. को विभाजित करने पर सभी संख्याओं से पूर्णत: विभाजित हो जाती है। लेकिन ल.स. में 4 जोड़ देने पर 4 शेष बचता है)

7. (a) 1001 pens, 910 pencils (given)

HCF of 1001, 910 is = 91

∴ maximum no. of students are (छात्रों की अधिकतम संख्या) = 91

8. (a) LCM of 4, 6, 8, 14 = 168 seconds

2	4, 6, 8, 14
2	2, 3, 4, 7
	1, 3, 2, 7

LCM = 3 × 2 × 7 × 2 × 2 = 168 seconds

$= \frac{168}{60} = 2\frac{48}{60}$ = 2 minute 48 seconds

∴ Ist they start ringing at 12.00 o clock

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(पहली बार वे एक साथ 12 बजे बजना शुरू करेंगी)
again they ring all together after 2 minutes 48 second at 12 hrs.
2 min. 48 second (वे पुन: एक साथ 2 मिनट के बाद 12 : 2 : 48 पर बजेंगी)

9. (d) LCM × HCF = 24
∴ Product of number (संख्याओं का गुणनफल) = 24
Let no. be = x, y
xy = 24
and x – y = 2 (given)
Factors of xy = 24 are (4, 6) (12, 2) (8, 3) (24, 1)
Now difference between numbers be (संख्याओं का अन्तर) = (x – y) = 2
So, factor is (गुणक) (4, 6)

10. (a) LCM = 495
HCF = 5 (given)
∴ Let numbers are (माना कि संख्याएँ) = 5x & 5y
∴ LCM = 5 xy
5 xy = 495
xy = 99
∴ possible co-prime factors are

(सम्भावित असहभाज्य गुणक) $\begin{bmatrix} 1, & 99 \\ 9, & 11 \end{bmatrix}$

∴ possible numbers are (सम्भावित संख्याएँ हैं)

5x, 5y = $\begin{bmatrix} 45, & 55 \\ 5, & 495 \end{bmatrix}$

Now given that sum of numbers (संख्याओं का योग दिया गया है) = 100
so, required numbers are (अभीष्ट संख्याएँ) = (45, 55)
∴ difference of numbers (संख्याओं का अन्तर) = 55 – 45 = **10**

11. (b) HCF = 29
∴ Let numbers are (माना कि संख्याएँ) 29x, 29y
LCM = 29xy
⇒ LCM = 4147 (given)
⇒ 29xy = 4147

$xy = \frac{4147}{29} = 143$

possible co-prime factors (सम्भावित असहभाज्य गुणक) = $\begin{pmatrix} 1, & 143 \\ 11, & 13 \end{pmatrix}$

∴ possible numbers are (सम्भावित संख्याएँ) = (29, 4147), (319, 377)
But both numbers are greater than 29 (लेकिन दोनों संख्याएँ 29 से बड़ी है) (given)
∴ Numbers are (संख्याएँ हैं) (319, 377)
∴ Sum of numbers (संख्याओं का योग) = 319 + 377 = **696**

12. (d) HCF = 8
⇒ Now, LCM should have a factor 8. (अब ल.स. का एक गुणाक 8 होना चाहिए)
So, check also the option we have only 60 which does not hava a factor 8. So, it will never be the LCM.
(अब विकल्पों को देखें केवल 60 का गुणांक 8 नहीं है, इसलिए यह ल.स. नहीं हो सकता है)

13. (a) Numbers, x = 28, y = 42
HCF (28, 42)
⇒ difference = 42 – 28 = 14
⇒ For HCF of any numbers take their difference. HCF will be either the factor of that difference or the difference itself.
(किसी भी संख्या के म.स. के लिए उन संख्याओं का अन्तर लें। म.स. या तो इस अन्तर का गुणांक होगा या अन्तर ही म.स. होगा)
Now,
LCM of 28, 42
∴ 14 × 2 × 3 = 84

⇒ LCM	:	HCF
84	:	14
6	**:**	**1**

14. (c) LCM = 1820
HCF = 26
Ist number = 130
⇒ LCM × HCF = Product of numbers (संख्याओं का गुणनफल)
⇒ Let the other number is x (माना कि अन्य संख्या x है)
∴ 130 × x = 1820 × 26

$x = \frac{1820 \times 26}{130} = 364$

15. (b) LCM = 1920
HCF = 16

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Ist number = 128

Let IInd number (माना कि दूसरी संख्या) = x

$x \times 128 = 1920 \times 16$

$x = \frac{1920 \times 16}{128} = 240$

x = **240**

16. (a) HCF = 478

Numbers are = 12906 and 14818

$\therefore$ LCM × HCF = 12906 × 14818

LCM × 478 = 12906 × 14818

LCM = 400086

17. (c) LCM (3, 5, 8, 12) ⇒ 3 × 5 × 8 × 3 = **120**

⇒ Now greatest five digit number is 99999

(पाँच अंकों की अधिकतम संख्या 99999 है)

on dividing 99999 by = 120 (LCM) we get remainder–

(99999 को 120 से भाग देने पर शेषफल होगा)

$= \frac{99999}{120}$

⇒ By subtracting remainder from 99999 we get the greatest five digit number which is completely divisible by given numbers (3, 5, 8, 12).

(99999 में से शेषफल को घटा देने पर हमें पाँच अंकों की वह अधिकतम संख्या प्राप्त होती है, जो 3, 5, 8 तथा 12 से विभाजित है)

$\therefore$ 99999 – 39 = 99960

⇒ Now, we required the greatest five digit number which when divided by (3, 5, 8, 12) leaves remainder 2 in each case.(अब हमें पाँच अंकों की वह अधिकतम संख्या ज्ञात करनी है। जिसे 3, 5, 8, 12 से भाग देने पर प्रत्येक स्थिति में 2 शेष बचता हो)

⇒ add 2 in the 99960 (99960 में 2 जोड़ने पर हमें यह संख्या प्राप्त होगी)

99960 + 2 = **99962**

18. (c) LCM (4, 5, 6, 7, 8)

= 4 × 5 × 6 × 7 = 840

⇒ required number (अभीष्ट संख्या)

= 840k + 2, which is divisible by 13. (जो 13 से विभाजित है)

For $\frac{840k + 2}{13}$, (remainder = 0)

Remainder = $\frac{840k + 2}{13}$

Put k = 3

Than, remainder = 0

for least multiple value of k is minimum (न्यूनतम होगा)

⇒ at k = 3 we get 840 k + 2

= 840 × 3 + 2

= 2520 + 2 = **2522**

19. (b) LCM (15, 18, 21, 24)

⇒ 5 × 3 × 6 × 7 × 4 = 2520

⇒ In such type of questions, we take the difference between given number and remainder of that number.

(इस प्रकार के प्रश्नों में हम दी संख्याओं का अन्तर तथा शेषफल लेंगें)

Number	Remainder
(15 – 11) = 4	It will be same always
(18 – 14) = 4	
(21 – 17) = 4	
(24 – 20) = 4	

Now: Largest 4 digit number is 9999 (चार अंकों की अधिकतम संख्या 9999 है)

⇒ On dividing 9999 by LCM (2520) we get remainder ⇒ 2439 (9999 को ल.स. 2520 से विभाजित करने पर 2439 शेषफल बचता है)

Subtract remainder from 9999 we get largest 4 digit number, which is divisible by given number

= 9999 – 2439 = 7560 (9999 में से शेषफल घटाने पर हमें चार अंकों की वह अधिकतम संख्या प्राप्त होगी जो दी गई संख्याओं से पूर्णत: विभाजित है।)

But required no. gives difference on dividing

so,

$\therefore$ our required number (अभीष्ट संख्या)

= 7560 – 4 (difference) = 7556

20. (d) LCM (30, 60, 90, 105)

$\therefore$ 15 × 2 × 2 × 3 × 7 = 1260 minutes

$\frac{1260}{60}$ = 21 hours

(they ring simultaneously after every 21 hours (वे प्रत्येक 21 घण्टे के बाद एक साथ बजेंगी)

They ring at 12 noon. So they again ring at 9 am (वे एक साथ 12:00 दोपहर बजी थी, इसलिए

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वे पुन: एक साथ 9:00 बजे रात को बजेंगी)

21. (a) LCM (5, 6, 8, 9) = 5 × 6 × 4 × 3
= 360 seconds

$= \frac{360}{60} = 6$ minutes

⇒ Bells will ring simultaneously.
after every 6 minutes. (घंटियाँ प्रत्येक 6 मिनट के बाद एक साथ बजेंगी।)

22. (c) 989 – 5 = 984
1327 – 7 = 1320
(Subtract the remainder from the number. (संख्या में से शेषफल को घटाने पर)
HCF = (984, 1320) = 24
for greatest number take HCF of the numbers (अधिकतम संख्या के लिए संख्याओं का म. स. लें)

23. (c) 75 litres, 45 litres
For maximum capacity take HCF
(अधिकतम क्षमता के लिए म.स. लें) (75, 45) = 15

24. (a) Let numbers be (माना कि संख्याएँ)
= x, y
x : y = 3 : 4 (given)
HCF = 4
∴Numbers are = x = 4 × 3 = 12
y = 4 × 4 = 16
LCM (12, 16) = 4 × 3 × 4 = **48**

25. (a) 18 – 7 = 11
21 – 10 = 11
24 – 13 = 11
take LCM (18, 21, 24)⇒ 9 × 2 × 7 × 4 = 504
⇒ required number = (504k – 11)
which is divided by 23.

∴For $\frac{504k-11}{23}$,

Remainder should be zero (शेषफल शून्य होना चाहिए)
Put minimum value of k so that it completly divides 23.
⇒ at k = 6, 504k – 11 = 3013
completly divisible by 23. (23 से पूर्णत: विभाजित है।)
∴required number is (अभीष्ट संख्या) = 3013.

26. (b) HCF = 16
LCM = 160
Ist number = 32
Let IInd number = x
Product of number = LCM × HCF
∴ 32 × x = 16 × 160

$x = \frac{16 \times 160}{32} = 80$

27. (b) HCF = 37
∴ Let the no. are (माना कि संख्याएँ)
= 37x & 37y
given, 37x × 37y = 4107
= xy = 3
possible factors of xy (xy के संभावित गुणक)
= (1, 3)
∴ number are (37, 37 × 3) = (37, 111)
greater number is (बड़ी संख्या) = **111**

28. (c) LCM of (21, 36, 66)
= 21 × 12 × 11
= 7 × 3 × 4 × 3 × 11
= 7 × 3 × 2 × 2 × 3 × 11
for perfect square multiply by 7 × 11
(पूर्ण वर्ग के लिए 7 × 11 से गुणा करें)
So that pairs of number from perfect square
(अत: पूर्ण वर्ग से संख्याओं के जोड़े)
∴ 7 × 7 × 3 × 3 × 2 × 2 × 11 × 11
required result is (अभीष्ट परिणाम)
⇒ **213444**
(which is perfect square (जो एक पूर्ण वर्ग है)

29. (a) 4 – 1 = 3
5 – 2 = 3
6 – 3 = 3
LCM (4, 5, 6) = 4 × 5 × 3 = 60
∴required number is (अभीष्ट संख्या)
60 – 3 = 57

30. (b) LCM (4, 6, 10, 15)
LCM = 2 × 2 × 3 × 5 = 60
least number of six digit
(6 अंकों की न्यूनतम संख्या) = 100000
divide 100000 by 60 we get remainder 40 (100000 को 60 से भाग देने पर शेषफल 40 प्राप्त होता है)
least six digit number which is divisible is (6 अंकों की न्यूनतम संख्या जो 4, 6, 10, 15 से विभाजित है)
= (100000 + (60 – 40)) = 100020
N 100020 + 2 = 100022
Sum of digits (अंकों का योग)

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$= 1 + 0 + 0 + 0 + 2 + 2 = 5$

31. (b) LCM (12, 18, 21, 30)

$4 \times 3 \times 6 \times 7 \times = 2520$

So, required number (अभीष्ट संख्या)

$= \frac{2520}{2} = \mathbf{1260}$

32. (c) LCM (10, 16, 24)

$= 5 \times 2 \times 8 \times 3 = 240$

$\Rightarrow$ for square no. split the LCM into its factors (वर्ग संख्या के लिए ल.स. को गुणनखंडों में लिखें)

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

$= \underbrace{5 \times 5} \times \underbrace{2 \times 2} \times \underbrace{2 \times 2} \times \underbrace{3 \times 3}$

= 36000

33. (c) Distance (दूरी) = 5 km

Speed of A (A की गति) = $2\frac{1}{2}$ km/hr

Time taken by A (A के द्वारा लिया गया समय)

$= \frac{5}{5} \times 2 = 2$ hours

$\Rightarrow$ Speed of B (B की गति) = 3 km/hr

Time taken by B (B के द्वारा लिया गया समय) =

$\frac{5}{3}$ hours

$\Rightarrow$ Speed of C (C की गति) = 2 km/hour

$\therefore$ Time taken by C (C के द्वारा लिया गया समय)

$= \frac{5}{2}$ घण्टे

$$\frac{\text{LCM of numerator}}{\text{HCF of denomintor}} = \frac{\frac{5}{5}}{2}, \frac{5}{3}, \frac{5}{2}$$

$$= \frac{10}{5}, \frac{5}{3}, \frac{5}{2}$$

LCM = $\frac{10}{1}$ = **10**

They will meet again after **10 hours** (वे पुनः 10 घण्टे बाद मिलेंगी)

34. (d) Required no. of tiles are (टाइलो की अभीष्ट संख्या) = $\frac{\text{area of floor}}{\text{area of tiles}}$

Sides of tiles is HCF (1517, 902) = 41

$\therefore$ area of tiles (टाइल्स का क्षेत्रफल) = 41×41

$\therefore$ No. of tiles (टाइल्स की संख्या)

$= \frac{1517 \times 902}{41 \times 41} = \mathbf{814}$

35. (c) Let numbers are A & B respectively (माना कि संख्याएँ क्रमशः A तथा B हैं।)

A	:	B	
$2x$	:	$3x$	(given)

LCM = $2 \times 3 \times x = 6x$

According to the questions,

$6x = 54$

$x = 9$

$\therefore A = 2x = 2 \times 9 = 18$

$B = 3x = 3 \times 9 = 27$

$\therefore$ sum of numbers (संख्याओं का योग)

$= A + B = 18 + 27 = 45$

$(3x + 2x) = 5x = 5 \times 9 = 45$

36. (c) Let numbers are A & B respectively (माना कि संख्याएँ क्रमशः A तथा B हैं।)

A	:	B	
4x	:	5x	(given)

$\therefore$ LCM = $4 \times 5 \times x = 20x$

$\therefore 20x = 120$

$x = 6$

$\therefore A = 4x = 4 \times 6 = 24$

$B = 5x = 5 \times 6 = 30$

37. (c) Let numbers are a, b, c (माना कि संख्याएँ क्रमशः a, b, तथा c हैं।)

= a, b, c are co-prime numbers (असहभाज्य संख्या)

HCF of co-prime numbers (असहभाज्य संख्याओं का म.स.) = 1

$\therefore$ HCF (a, b, c) = 1

$\therefore a \times b = 551, \quad b \times c = 1073$

$$\Rightarrow \frac{a \times b}{b \times c} = \frac{1073}{551} = \frac{37 \times 29}{19 \times 29}$$

$$\Rightarrow \frac{a}{c} = \frac{37}{19}$$

$\Rightarrow$ common 'b' factor is cancel out.

$\therefore a = 37, \quad b = 29 \quad c = 19$

$\therefore$ Sum of numbers (संख्याओं का योग)

$= a + b + c = 37 + 29 + 19 = 85$

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38. (c) HCF of numbers (संख्याओं का म.स.) = 7

$\therefore$ Let the numbers are $7x$ and 7y

(माना कि संख्याएँ $7x$ तथा 7y हैं।)

LCM = $7xy$

$7xy = 140$

$xy = 20$

$\Rightarrow$ possible co-prime factors of xy

(xy के संभावित असहभाज्य गुणक)

= (1, 20), (4, 5)

$\Rightarrow$ numbers are between 20 and 45

(संख्याएं 20 तथा 45 के बीच में हैं।)

$\therefore$ Required numbers are

$= 4 \times 7 = 28$ and $5 \times 7 = 35$

$\Rightarrow$ sum of numbers are = 28 + 35 = **63**

39. (b) HCF = 15

LCM = 300

1st number = 60

Let 2nd number (माना कि दूसरी संख्या) = x

HCF × LCM = 1st number × 2nd number

$15 \times 300 = 60 \times x$

$x = 75$

$\therefore$ Other number (अन्य संख्या) = **75**

40. (d) HCF = 23

$\therefore$ Let numbers are (माना कि संख्याएँ)

= $23x$, 23y

$\therefore$ LCM = $23xy$

$\Rightarrow$ Now given that factor of LCM are 13, 14 (दिया गया है कि ल.स. के गुणज 13 तथा 14 हैं।)

$\therefore$ LCM = $23 \times 13 \times 14$

numbers are = 23×13

= 299 and 23×14

= 322

larger = 322

41. (b) LCM (6, 8, 10) = $3 \times 2 \times 4 \times 5 = 120$

42. (b) LCM (4, 6, 8, 9) = $2 \times 2 \times 3 \times 2 \times 3 = 72$

$\therefore$ Required result should be (अभीष्ट उत्तर) = 72

43. (b) LCM (3, 4. 5, 6, 7, 8)

$3 \times 4 \times 5 \times 7 \times 2 = 840$

$\Rightarrow$ divide 10000 by LCM

$\Rightarrow \frac{10000}{840}$, we get remainder = 760

Now two possibilities are (अब दो संभावनाएँ इस प्रकार हैं) = 10000 – 760 = 9240

or 10000 + (840 – 760) = 10080

So, nearest number is (अत: निकटतम संख्या) = 10080

44. (a) 1305, 4665, 6905 are three numbers greatest number which leaves same remainder in each case. To find this take difference of numbers

(1305, 4665, 6905 तीन संख्याएँ हैं। प्रत्येक स्थिति में बराबर शेषफल देने वाली अधिकतम संख्या ज्ञात करने के लिए दी गई संख्याओं का अंतर निकालें)

$\Rightarrow$ 1305 $\xrightarrow{-3360}$ 4665 $\xrightarrow{-2240}$ 6905

1305 $\xrightarrow{\mathbf{-1120}}$ 6905

$\therefore$ 1120 is the no. which leaves the same remainder when divide 130, 4665, 6905

$\therefore$ Sum of number digit (संख्या के अंकों का योग) $\Rightarrow 1 + 1 + 2 + 0 = 4$

45. (c) HCF = 4

$\therefore$ Let numbers are $4x$ and 4y (माना कि संख्याएँ $4x$ तथा 4y हैं।)

given sum = $4x + 4y = 36$ and $x + y = 9$

possible pairs (संभावित जोड़े) $\Rightarrow$ (1 + 8), (2 +7), (4+5), numbers should be coprime. Hence only 3 pairs (असहभाज्य संख्याएँ होनी चाहिए। अत: केवल 3 जोड़े ही संभव हैं।)

46. (d) $\left.\begin{array}{l} 122 - 2 = 120 \\ 243 - 3 = 240 \end{array}\right\}$ (subtract difference from number)

HCF = (120, 240) = 120

$\therefore$ answer = 120

47. (d) HCF = 16

$\therefore$ Let numbers are $16x$ and 16y (माना कि संख्याएँ $16x$ तथा 16y हैं।)

$16xy = 480$

$xy = 30$

$\therefore$ possible pairs (संभावित जोड़े)

= (1, 30), (2, 15), (6, 5)

possible numbers are (संभावित संख्याएँ)

= (16, 480), (32, 240), (80, 96)

$\therefore$ 80, 96 is the answer in the given options of 2 digit.

48. (b) $12 - 5 = 7$

$16 - 9 = 7$

Remainder always remains same in such questions, (इस प्रकार के प्रश्नों में शेषफल हमेशा बराबर होता है।)

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$\therefore$ LCM (12, 16) = 48

$\therefore$ Required result = 48 – 7 = 41

49. (c) 10 – 9 = 1

9 – 8 = 1

$\therefore$ LCM (10, 9, 8) = 5 × 2 × 9 × 4 = 360

$\therefore$ required result = 360 – 1 = 359

50. (d) LCM (5, 6, 8) = 5 × 6 × 4 = 120

$\Rightarrow$ Required number gives remainder 3 when divided by (5, 6, 8) and zero remainder when divided by 9

(अभीष्ट संख्या में 5, 6, 8 से भाग देने पर 3 शेष बचता है तथा 9 से भाग देने पर 0 शेष बचता है)

$$\therefore \frac{120K+3}{9} = \frac{3K+3}{9}$$

at k = 2, $\frac{3K+3}{9} \Rightarrow$ Remainder = 0

we get 120K + 3 = 120 × 2 + 3 = 243 which is the required number.

51. (b) LCM (3, 5, 6, 8, 10, 12)

= 3 × 5 × 2 × 4 = 120

Required number is (अभीष्ट संख्या)

$$= \frac{120K+2}{22} = \frac{10K+2}{22}$$

at k = 2, $\frac{10K+2}{22} \Rightarrow$ Remainder = 0

The given condition satisties

= 240K + 2 = 240 + 2 = 242

52. (a) 307 – 3 = 304

330 – 7 = 323

$\Rightarrow$ HCF (304, 323)

304 $\xrightarrow{-19}$ 323

$\therefore$ HCF = 19

The greatest no. is (अधिकतम संख्या) = 19

53. (d) Let HCF = x

$\therefore$ LCM = $84x$

$\therefore$ given HCF + LCM = $84x + x = 680$

$85x = 680$

$x = 8$

$\therefore$ HCF = 8

LCM = 84 × 8 = 672

$\Rightarrow$ 56 × y = 672 × 8

$$y = \frac{672\times8}{56} = 96$$

54. (d) Let HCF = x

$\therefore$ LCM = $20x$

sum of HCF + LCM = 2520

$= x + 20x = 2520$

$21x = 2520$

$x = 120$

$\therefore$ HCF = 120

LCM = 120 × 20 = 2400

$\therefore$ one number = 480

Let another number (माना कि अन्य संख्या) = y

$\therefore$ y × 480 = 120 × 2400

$$y = \frac{120\times2400}{480} = 600$$

55. (b) LCM (12, 15, 18, 27)

$\Rightarrow$ 4 × 3 × 5 × 3 × 3 = 540

$\Rightarrow$ largest 4 digit number (4 अंकों की अधिकतम संख्या) = 9999

अंकों की अधिकतम संख्या में 540 से भाग देने पर शेषफल होगा)

$$= \frac{9999}{540}$$

remainder is = 279

$\therefore$ required number = 9999 – 279

56. (d) 3026 – 11 = 3015

5053 – 13 = 5040

$\Rightarrow$ HCF (3015, 5040)

$\Rightarrow$ 3015 $\xrightarrow{-2025 = (45\times45)}$ 5040

$\Rightarrow$ take difference between numbers. The HCF may be difference itself or may be difference. (संख्याओं का अन्तर लें। म.स. या तो संख्याओं का अन्तर होगा या उस अंतर का कोई गुणक)

HCF = 45

57. (a) 1657 – 6 = 1651

2037 – 5 = 2032

2037 – 1651 $\Rightarrow$ 381 = 127 × 3

HCF = 127

58. (a) Product of two numbers

(दो संख्याओं का गुणनफल) = 1280

HCF = 8

$$\text{LCM} = \frac{1280}{8} = 160$$

59. (d) LCM (6, 9, 15, 18) = 3 × 2 × 3 × 5 = 90

Required no. gives remainder 4 when divided by (6, 9, 15 and 18) and zero

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remainder when divided by '7' (अभीष्ट संख्या में 6, 9, 15 तथा 18 से भाग देने पर शेषफल 4 प्राप्त होता है तथा उसी संख्या में 7 से भाग देने पर शेषफल शून्य प्राप्त होता है।)

$\frac{90k + 4}{7} = \frac{6k + 4}{7}$

at K = 4, $\frac{6k + 4}{7} \Rightarrow$ remainder = 0

So, number is 90K + 4 = 90 × 4 + 4 = 364
we get **364** which is the required no.

60. (b) LCM (16, 24, 30, 36)
= 8 × 2 × 3 × 5 × 3 = 720
Largest 5 digit number is 99999
divide 99999 by LCM (720)

$= \frac{99999}{720}$, we get remainder = 639

So, The largest 5 digit number which divides completely the given number is (5 अंकों की वह अधिकतम संख्या जो दी गई संख्या से विभाजित है)
= 99999 – 639 = **99360**
required no. is 99360 + 10 = **99370**

61. (b) LCM (16, 20, 24)
= 8 × 2 × 5 × 3

= 2 × 2 × 2 × 2 × 5 × 3 × 5 × 3

multiply by 5 × 3 to make pair
∴The least perfect square is (न्यूनतम पूर्ण वर्ग है) = 4 × 4 × 15 × 15 = 3600

62. (b) LCM (25, 50, 75) = 25 × 2 × 3 = 150
⇒ Remainder when 43582 divided by 150

$\frac{43582}{150}$, we get remainder = 82

⇒ Two possiblities are (दो संभावनाएं इस प्रकार हैं)
= 43582 – 82 = 43500
or
43582 + (150 – 82) = 43650
Nearest (निकटतम) = **43650**

63. (a) HCF (336, 240, 96)

336 $\xrightarrow{-96}$ 240 $\xrightarrow{-144}$ 96

$\xrightarrow{-48}$

HCF = 48

∴Stacks of English = $\frac{336}{48} = 7$

stacks of Maths = $\frac{240}{48} = 5$

stacks of Science = $\frac{96}{48} = 2$

∴total no. of stacks = 7 + 5 + 2 = 14

64. (a) Let numbers are (माना कि संख्याएं)
= $2x$, $3x$, $4x$
given, LCM $(2 \times 3 \times 2)x = 12x$
$12x = 240$ (given)
$x = 20$
∴numbers are = 2 × 20 = 40
3 × 20 = 60
4 × 20 = 80
∴smaller is 40 (छोटी संख्या 40 है)

65. (c) A + B = 45

$A - B = \frac{45}{9} = 5$

∴A = 25, B = 20
∴LCM (25, 20) = 5 × 5 × 4 = 100

66. (c) HCF = 17
∴Let numbers are (माना कि संख्याएँ)
= $17x$, $17y$
LCM = $17xy$ = 714 (given)
$xy = 42$
possible pairs are (संभावित जोड़े)
(1, 42), (2, 21), (3, 14), (6, 7)
possible numbers are (संभावित संख्याएँ)
(17, 714), (34, 357), (51, 238), (102, 119)
but given that both numbers are of three digits (लेकिन दिया गया है कि संख्याएँ 3 अंकों की हैं।)
∴numbers are = (102, 119)
∴sum of numbers (संख्याओं का योग)
= 102 + 119 = 221

67. (c) HCF = 15
Product of two numbers
(दो संख्याओं का गुणनफल) = 6300
∴Let numbers are $15x$, 15y
∴$15x \times 15y = 6300$ (given)

$xy = \frac{6300}{15 \times 15} = 28$

possible pairs are = (1, 28), (7, 4)
∴Total pairs = 2

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68. (b) LCM (5, 10, 12, 15)
$= 5 \times 2 \times 6 = 60$
smallest no. divided by (5, 10, 12, 15) leaves remainder 2 and when divided by 7 leaves no remainder is $\frac{60K+2}{7} = \frac{4K+2}{7}$

at k = 3, $\frac{4K+2}{7} \Rightarrow$ Remainder = 0

No. = 60K + 2 = 60 × 3 + 2 = 182

69. (c) LCM (9, 10, 15)
$= 3 \times 3 \times 10 = 90$

$\frac{1936}{90}$, remainder $\Rightarrow$ 46

$\therefore$ least number when is subtracted from 1936 which gives remainder 7 when divided by (9, 10, 15) is (वह न्यूनतम संख्या जिसे 1936 में से घटाने पर प्रत्येक स्थिति में 7 शेष बचेगा यदि उसे 9, 10, 15 से भाग दिया जाए) = (46 – 7) = 39

70. (a) 18 – 5 = 13
27 – 14 = 13
36 – 23 = 13
$\therefore$ LCM (18, 27, 36) = 9 × 2 × 3 × 2 = 108
required number = 108 – 13 = 95

71. (c) LCM (24, 32, 36, 64)
$\Rightarrow 8 \times 3 \times 4 \times 3 \times 2 = 576$
required no is = 576 – 5 = 571

72. (c) Let the number are x and y respectively (माना कि संख्याएं क्रमशः x तथा y हैं)

$\therefore$ x : y
3 : 4 (given)

$\Rightarrow$ Let 3m : 4m

$\Rightarrow$ LCM = 3 × 4 × m = 240 (given)

$\Rightarrow m = \frac{240}{12} = 20$

$\therefore$ numbers are = A = 3 × 20 = 60
B = 4 × 20 = 80

$\therefore$ least number is 60 (न्यूनतम संख्या 60 है।)

73. (c) Let numbers are m and n
LCM × HCF = 24 (given)
LCM × HCF = m × n
$\therefore$ 24 = m ×n, But m – n = 2 given
so, such value is (6, 4) and greater no. = 6

74. (b) HCF = 27
$\therefore$ Let numbers are $27x$ and 27y respectively
$\therefore 27x + 27y = 216$ given

$\Rightarrow (x + y) = \frac{216}{27} = 8$

only possible factors are (संभावित गुणक हैं)।
= (1, 7), (3, 5)

75. (a) Let HCF = x
LCM = $12x$ (given)
$\therefore$ HCF + LCM = $13x = 403$
$x = 31$
$\therefore$ HCF = 31
LCM = 12 × 31
one number (पहली संख्या) = 93 given
Let other number is (माना कि दूसरी संख्या) y
$\therefore 93 \times y = 31 \times 31 \times 12$
y = 4 × 31 = 124

76. (d) Let No. are a and b
a × b = 20736
HCF = 54
we know that (a × b) = (HCF × LCM)
20736 = 54 × LCM

$LCM = \frac{20736}{54}$

= 384

77. (a) 12 – 2 = 10
16 – 6 = 10
24 – 14 = 10
LCM (12, 16, 24) = 6 × 2 × 4 × 1 = 48
greatest number of four digits (4 अंकों की अधिकतम संख्या) = 9999
$\therefore$ when it is divided by 48 we get remainder (जब इसे 48 से भाग दिया जाता है तो शेषफल) = 15
$\Rightarrow$ The greatest number of 4 digits which completely divides the given number is (4 अंकों की वह अधिकतम संख्या जो दी गई संख्याओं से पूर्णतः विभाजित है।)
= 9999 – 15 = 9984
$\therefore$ number is = 9984 – 10 = 9974

78. (a) LCM (15, 20, 35)
$= 5 \times 3 \times 4 \times 7$
= 420
required number = 420 + 8 = 420

79. (d) Let the numbers are = $3x$, $4x$ respectively
$\therefore$ HCF = x
LCM = $3 \times 4 \times x = 12x$
given that = HCF × LCM = $x \times 12x = 2028$
$12x^2 = 2028$

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$x^2 = 169$
$x = 13$
sum of number = $3x + 4x = 7x$
$= 7x = 7 \times 13 = 91$

80. (c) HCF = 48
$\therefore$ Let number are $48x$ & 48 y respectively
$48x + 48y = 384$

$(x + y) = \frac{384}{48} = 8$

so, possible pairs of coprime no. are (सह अभाज्य संख्याओं के संभावित जोड़े)
(1, 7), (3, 5)
$\therefore$ numbers are (48, 336) or (144, 240)
$\therefore$ difference between numbers is (संख्याओं के बीच का अंतर) = 336 – 48
= 288 and 240 – 144 = 96

81. (c) Let numbers be $12x$ and 12y respectively
LCM = 12 xy
$12xy = 1056$ (given)
$xy = 88$
$\therefore$ possible pairs are (1, 88) (8, 11)
possible numbers are
= (12, 1056) (96, 132)
given that one number is 132 so other is 96

82. (a) We, know that $\Rightarrow$ (a × b) = (HCF and LCM)
396 × 576 = HCF × 6336
HCF = 36

83. (d) HCF = 8
LCM = 48
One number = 24
Let other number ne = y
$\therefore 24y = 48 \times 8$
y = 16

84. (b) HCF = 12
LCM = 336
One number = 84
Let another number be = y
$\therefore 84y = 12 \times 336$
y = 48

85. (d) Product of number (संख्याओं का गुणनफल) = 216
HCF = 6

LCM = $\frac{216}{6} = 36$

86. (a) HCF = 18
LCM = 378
One number = 54
Let another number be (माना अन्य संख्या) = y
$\therefore 54y = 18 \times 378$

$y = \frac{18 \times 378}{54} = 126$

87. (b) LCM (20, 28, 32, 35)
$\Rightarrow 4 \times 5 \times 7 \times 8 = 1120$
LCM = (20, 28, 32, 35) = 1120
$\therefore$ 1120 divided by 20, 28, 32, 35 completely
$\therefore$ Let x be substracted from 5834,
$\therefore 5834 - x = 1120$
$x = 5834 - 1120 = 4714$

88. (d) LCM (6, 12, 18)
LCM = 6 × 2 × 3 = 36
$\Rightarrow$ To find perfect square split the LCM into factors and make pair of factors so that it becomes the square. (पूर्ण वर्ग ज्ञात करने के लिए ल.स. को गुणनखण्डों में विभाजित करें और उनके जोड़े बनाएं इस प्रकार यह वर्ग हो जाता है)
$\Rightarrow$ LCM = 2 × 3 × 2 × 3 = 36
$\underbrace{2 \times 2} \times \underbrace{3 \times 3}$
$\Rightarrow$ which is already a perfect square (जो कि पहले से ही एक पूर्ण वर्ग है।)

89. (c) Let numbers are = $3x$ & $4x$ respectively
LCM = 84 (given)
$\therefore$ LCM of number = common factor (other factors)
$= x \times 3 \times 4 = 12x$
$12x = 84$
x = 7
$\therefore$ numbers are = $3x = 7 \times 3 = 21$
$4x = 7 \times 4 = 28$
greater number is (बड़ी संख्या है) 28

90. (b) HCF = 12
Let numbers are $12x$ & 12y respectively (माना कि संख्याएँ क्रमशः $12x$ तथा 12y है।)
$\therefore$ given that $(12x + 12y) = 84$

$\Rightarrow x + y = \frac{84}{12} = 7$

$\therefore x + y = 7$
$\Rightarrow$ possible factor are (संभावित गुणक हैं)
(1 + 6), (2 + 5), (3 + 4)
$\therefore$ Total factors are **3**

91. (c) HCF = 3

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$\therefore$ Let numbers are $3x$ & $3y$ respectively

LCM $\Rightarrow$ $3xy = 105$ (given)

$\Rightarrow xy = \frac{105}{3} = 35$

$\Rightarrow$ also given = $(3x + 3y) = 36$

$\therefore$ $x + y = 12$

$\therefore$ we required sum of receprocols of numbers (हमें संख्याओं के व्युत्क्रम के योग की आवश्यकता है।)

$\Rightarrow \frac{1}{3x} + \frac{1}{3y} = \frac{x+y}{3xy}$

$\Rightarrow \frac{12}{3\times35} = \frac{4}{35}$

92. (a) Let HCF = x

LCM = $44x$

given HCF + LCM = $44x + x = 45x$

$45x = 1125$

$x = \frac{1125}{45} = 25$

$\therefore$ HCF = 25,

LCM = 25×44

$\Rightarrow$ also given that one number = 25

Let another number = y

$\therefore 25y = 25 \times 25 \times 44$

y = s

= 1100

93. (c) HCF = 12

Let numbers are $12x$ & $12y$ respectively

LCM $\Rightarrow$ $12xy = 924$ (given)

$\Rightarrow xy = 77$

$\Rightarrow$ possible pairs are

$= (1 \times 77)\ (7 \times 11)$

$\therefore$ only two pairs are possible

94. (a) LCM = 520

HCF = 4

one number = 52

Let other number is = y

$\therefore 52y = 4 \times 520$

y = 40

95. (d) HCF = 96

LCM = 1296

one number = 864

Let other number is = x

$\therefore 864 \times x = 96 \times 1296$

$x = 144$

96. (b) Let HCF = x

$\therefore$ LCM = $4x$

$\therefore$ given HCF – LCM = 125

$x + 4x = 125$

$x = 25$

$\therefore$ HCF = 25

LCM = 4×25

given one number = 100

$\Rightarrow$ Let other number is = y

$\Rightarrow 100y = 25 \times 100$

y = 25

97. (b) HCF = 13

Let number are $13x$ & $13y$ respectively (माना कि संख्याएं क्रमशः $13x$ तथा 13y है।)

$\therefore$ also given $13x \times 13y = 2028$

$13 \times 13 \times xy = 2028$

$xy = \frac{2028}{13\times13} = 12$

$\therefore$ possible pairs are (संभावित जोड़े)

$= (1, 12)\ (3, 4)$

only two pairs are possible (केवल दो जोड़े संभव हैं।)

98. (d) LCM = 120 (given)

LCM is the product of one common factor and other different factors of the given numbers. (ल.स. एक उभयनिष्ठ गुणनखण्ड तथा दी गई संख्याओं के अन्य गुणनखण्डों का गुणनफल है।)

$\therefore$ factorize the given LCM

(ल.स. का गुणनखण्ड करें) = 120

$= \underbrace{2 \times 2 \times 3 \times 5 \times 2}_{4(3 \times 5 \times 2)}$

= Here 4 is common factor

(यहाँ 4 उभयनिष्ठ गुणनखण्ड है।)

(common factor is the HCF of the given number) (उभयनिष्ठ गुणनखण्ड दी गई संख्या का म. स. है।)

$\therefore$ HCF = 4

So, for the given numbers the HCF should be multiple of 4 (अतः दी गई संख्याओं का म.स. 4 का गुणज होना चाहिए।)

$\Rightarrow$ Hence go through options which is not a multiple of 4 is 35

(अतः विकल्पों को ध्यान से देखें और यह पता लगाएं कि कौन सी संख्या 4 का गुणज नहीं है।)

Hence answer is **35**.

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99. (d) LCM (16, 18, 20, 25)

$\Rightarrow 4 \times 4 \times 9 \times 5 \times 5 = 3600$

$\Rightarrow$ 3600 will be completely divisible by the given number so, 4 remainder obtained by adding '4' in the LCM (3600 दी गई संख्याओं 16, 18, 20, 25 से पूर्णत: विभाजित होगी किन्तु शेषफल 4 प्राप्त करने के लिए इसमें 4 जोड़ा जाएगा।)

$\Rightarrow$ But it should not leave any remainder when divided by 7 (किन्तु 7 से भाग देने पर शेषफल शून्य प्राप्त होता है।)

So, given number should be

$$\Rightarrow \frac{(3600k+4)}{7} = \frac{2K+4}{7}$$

$\frac{2K+4}{7}$ at k = 5 remainder = 0

at given condition satisfy.

$\Rightarrow$ No. = 3600K + 4 = 3600 × 5 + 4
= 18000 + 4 = 18004

100. (b) LCM (24, 36, 54)

$\Rightarrow 12 \times 2 \times 3 \times 3 = 216$ seconds

$\Rightarrow$ They will changes imultaneously after every 216 seconds (वे प्रत्येक 216 सेकण्ड के पश्चात् एक साथ बदलेंगी।)

$$\Rightarrow \frac{216}{60} \Rightarrow 3\frac{36}{60} = 3 \text{ minute } 36 \text{ second}$$

They change 1st at 10 : 15 : 00 am

So, again they change at = 10:18:36 am

101. (b) For HCF of fractions take HCF of numerations and LCM of denominators (भिन्नों के म.स. ज्ञात करने के लिए अंशो का म.स. निकालें तथा हरों का ल.स. निकालें।)

HCF of 3, 5, 6 = 1

LCM of 4, 6, 7 = 84

Hence, HCF of fractions (अत: भिन्नों का म.स.)

$= \frac{1}{84}$

102. (a) LCM (200, 300, 360, 450)

$\Rightarrow 10 \times 4 \times 5 \times 3 \times 3 = 1800$ seconds

$\Rightarrow$ They meet at the starting point after every 1800 seconds (वे प्रत्येक 1800 सेकण्ड के बाद आरंभिक बिंदुओं पर मिलेंगे)

103. (b) LCM (20, 30, 40)

$\Rightarrow 4 \times 5 \times 3 \times 2 = 120$ minutes

$\Rightarrow \frac{120}{60} = 2$ hours

They 1st bell at 11 am.

So,

the again bell after 2 hours at 11 + 2 = 1 pm.

104. (c) Cows = 945

Sheep = 2475

$\Rightarrow$ For largest flocks take HCF (सबसे बड़े झुण्ड के लिए म.स. निकालें)

$\Rightarrow$ 945 2475 (−1530)

$\Rightarrow$ For HCF take difference of number HCF will either be the difference or its factor (म.स. के लिए संख्याओं का अंतर ज्ञात करें। म. स. या तो यह अंतर होगा या फिर इस अंतर का गुणनखण्ड होगा।)

$\Rightarrow 1530 = 17 \times 3 \times 3 \times 5 \times 2$
$= 17 \times 2 \times 45$

HCF = 45

$\therefore$ Maximum animals in each flock = **45**

$\therefore$ No. of flocks of cows are

(गाय के झुण्डों की संख्या)

$= \frac{945}{45} = 21$

$\Rightarrow$ No. of flocks of sheep are (भेड़ों के झुण्डों की संख्या) $= \frac{2475}{45} = 55$

Total number of flocks (कुल झुण्डों की संख्या)

= 21 + 55 = **76**

(45, 76)

105. (b) LCM (10, 15, 20)

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

$\Rightarrow$ Largest 4 digit number (4 अंकों की अधिकतम संख्या) = 9999

divide 9999 by LCM of given number (9999 में दी गई संख्याओं के ल.स. से भाग दें)

$\Rightarrow$ We get remainder = 39

$\Rightarrow$ So, to divide completely subtract it from

(9999 – 39) = 9960

$\therefore$ 9960 is the largest four digit number which is completely divided by the given numbers (9960)

वह अधिकतम संख्या है, जो दी गई संख्याओं से पूर्णत: विभाजित है।

106. (c) 411 – 3 = 408

684 – 4 = 680

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821 – 5 = 816

Take HCF of given number to get required greatest number (अभीष्ट अधिकतम संख्या ज्ञात करने के लिए दी गई संख्याओं के म.स. ज्ञात करें।)

408 680 816

d_1 d_2

272 136

d_3

136

HCF = 136

take difference of the numbers

107. (b) HCF = 5

Ratio of numbers is (3 : 4) given

So, numbers are = 15 & 20

$\therefore$ LCM = 5 × 3 × 4 = 60

108. (d) HCF = A (given)

LCM = B

given numbers are x & y respectively

(Product of numbers is (संख्याओं के गुणनफल)

$\Rightarrow$ Product of LCM × HCF)

$\Rightarrow xy = AB$

Now $\Rightarrow A + B = x + y$ (given)

Take cube on both sides (दोनों पक्षों का घन करने पर)

$\Rightarrow (A + B)^3 = (x + y)^3$

$\Rightarrow A^3 + B^3 + 3AB (A + B)$

$= x^3 + y^3 + 3xy (x + y)$

$\Rightarrow A^3 + B^3 + 3xy (x + y)$

$= x^3 + y^3 + 3xy (x + y)$

$\therefore A^3 + B^3 = x^3 + y^3$

(Put AB = xy from above)

109. (c) HCF = 44

LCM = 264

Let numbers are = x & y

$\therefore$ given = $\frac{x}{2} = 44$

$x = 88$

$\therefore y = \frac{HCF \times LCM}{x} \Rightarrow \frac{44 \times 264}{88} \Rightarrow$ **132**

110. (c) For maximum distance covered (तय की गई अधिकतम दूरी ज्ञात करने के लिए ल.स. निकालें।)

LCM (63, 70, 77)

= 9 × 7 × 10 × 11 = **6930**

111. (d) For greatest number divide to take HCF

HCF

200 320

ss

120 = 40 × 3

(for HCF take difference or take factor of difference)

HCF = 40

(for greatest number divided by take LCM)

112. (c) HCF = (84, 90, 120)

$\Rightarrow$ 84 90 120

– –

6 30

–

24

$\Rightarrow 6 \times 4$

HCF = 6

$\therefore$ maximum no. of books in each stack = 6

113. (b) 729 – 9 = 720

901 – 5 = 896

HCF (720, 896)

720 896

176

$\Rightarrow$ 11 × 6

$\Rightarrow$ HCF = 16

114. (a) HCF = 12

given ratio of numbers (संख्याओं का दिया गया अनुपात) = A : B : C

1 : 2 : 3

$\therefore$ numbers are = A = 12

B = 12 × 2 = 24

C = 12 × 3 = 36

(12, 24. 36)

115. (d) HCF = z

given ratio of the numbers = x : y

$\Rightarrow$ LCM = z × x × y = xyz

LCM is the product of HCF and other factors (म.स. तथा अन्य गुणनखण्डों का गुणनफल ल.स होता है।)

116. (b) Let two consecutive positive even numbers

are $(2x + 2)$ and $(2x + 4)$ (माना कि दो लगातार धनात्मक सम संख्याएं क्रमशः $(2x + 2)$ और $(2x + 4)$

HCF = 2 (given)

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common (factor)

LCM = $2(x + 1)(x + 2)$

$\Downarrow$

HCF (other factors)

$\Rightarrow$ LCM = 84 (given)

$\therefore 2(x + 1)(x + 2) = 84$

$(x + 1)(x + 2) = 42$

$\Rightarrow x^2 + 3x + 2 = 42$

$x^2 + 3x + 2 - 42 = 0$

$x^2 + 8x - 5x - 40 = 0$

$\Rightarrow x(x + 8) - 5(x + 8) = 0$

$(x - 5)(x + 8) = 0$

$x = +5$

$x = -8$

But numbers are even, so ($x = 5$)

$\therefore$ Number are $= 2 \times 5 + 2 = 12$

and $2 \times 5 + 4 = 14$

$\Rightarrow$ sum of numbers are $= 12 + 14 = 26$

117. (b) $P = 2^3 . 3^{10} . 5$

$Q = 2^5 3 . 7$

HCF (P, Q) = (common factor of P & Q) = $2^3 . 3$

118. (a) Let fraction is $\frac{x}{y}$

$\therefore \frac{x-4}{y+1} = \frac{1}{6}$ (given)

$\Rightarrow$ cross multiply the equation

$\Rightarrow 6x - 24 = y + 1$

$6x - y - 25 = 0$ ....(i)

again, $\frac{x+2}{y+1} = \frac{1}{3}$ (given)

$\Rightarrow 3x + 6 = y + 1$

$3x - y + 5 = 0$ ....(ii)

From equation (i) and (ii)

$6x - y = 25$

$3x - y = -5$

$x = 10$

$\therefore y = 35$

$\therefore \frac{x}{y} = \frac{10}{35} = \frac{2}{7}$

Fraction $= \frac{x}{y} = \frac{2}{7}$

numerator = 2

denominator = 7

LCM (numerator, denominator)

$\Rightarrow 2 \times 7 = 14$

119. (b) HCF of fractional numbers is (भिन्नों के म. स.)

$$\left(\frac{\text{HCF of numerator}}{\text{LCM of denominator}}\right)$$

$$\therefore \text{HCF}\left(\frac{2}{3}, \frac{4}{5}, \frac{6}{7}\right)$$

$$\Rightarrow \left(\frac{\text{HCF } 2, 4, 6}{\text{LCM } 3, 5, 7}\right) = \frac{2}{3 \times 5 \times 7} = \frac{2}{105}$$

120. (b) $110 - 2 = 108$

$128 - 2 = 126$

$\therefore$ HCF (108, 126) = 18

121. (b) For least or minimum number of canes we should have maximum capacity canes for required quantity (केनों की न्यूनतम की संख्या के लिए हमारे पास अधिकतम क्षमता के केन होने चाहिए।)

$\Rightarrow$ For this we take HCF of given quantities. (इसके लिए हम दी गई मात्राओं का म. स. ज्ञात करेंगे)

HCF (21, 42, 63) = 21

$\therefore$ Maximum capacity of a cane (एक केन की अधिकतम संख्या) = 21 litres

$\therefore$ Number of canes of cow milk (गाय के दूध के केनों की संख्या) $= \frac{21}{21} = 1$

$\therefore$ Number of canes of toned milk (टोन्ड दूध के केनों की संख्या) $= \frac{42}{21} = 2$

$\therefore$ Number of canes of double toned milk (डबल टोन्ड दूध के केनों की संख्या)

$= \frac{63}{21} = 3$

$\therefore$ Total number of canes (केनों की कुल संख्या) $= 1 + 2 + 3 = 6$

122. (c) G.C.D. = Greatest common divisor or Highest common factor (HCF) (म.स.)

Let G.C.D. = a

$\therefore$ Let number are ax and ay

($ax > ay$)

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LCM = axy

$\Rightarrow$ LCM = 2 × larger number

$\therefore a\,xy = 2 \times a\,x$

$\therefore y = 2$

also given that

$\Rightarrow$ smaller number – G.C.D. (म.स) = 4

$\Rightarrow ay - a = 4$

$2a - a = 4$

$a = 4$

G.C.D. = a = 4

$y = 2$

$\therefore$ smaller number (छोटी संख्या)

$= ay \Rightarrow 2 \times 4 = 8$

123. (d) HCF (GCD) of a, b number is 12 and a > b > 12 (given)

$\therefore$ smaller value of a & b are (36, 24)

124. (a) HCF of co prime number is always 1 (असहभाज्य संख्याओं का म.स. हमेशा 1 होता है।)

$\therefore$ Let numbers are = x & y respectively

Product of number (संख्याओं का गुणनफल) = xy

$xy = 117$ (given)

$\therefore$ Product of number (संख्याओं का गुणनफल) = LCM × HCF

$\Rightarrow$ LCM × 1 = 117

LCM = 117

125. (b) HCF = 12

Let numbers are 12x & 12y

Product of two number = 12x, 12y = 144xy

$\Rightarrow 144xy = 2160$

$\Rightarrow xy = 15$

possible pairs are (1, 15), (3, 5), factors should be co-prime. Two pairs are possible.

126. (a) HCF = 27
LCM = 2079
one number = 189 } given

Let another number be y (माना कि अन्य संख्या y है।)

$\Rightarrow$ Product of numbers = LCM × HCF

$\therefore 189 \times y = 27 \times 2079$

$y = 297$

127. (c) LCM (6, 7, 8, 9, 12)

LCM = 3 × 2 × 7 × 4 × 3 = 504

They will toll after every 504 seconds (वे प्रत्येक 504 सेकण्ड के बाद बजेंगी)

128. (b) LCM of any fraction is (किसी भिन्न का ल.स.म.)

$$\Rightarrow \frac{\text{LCM of numerator}}{\text{HCF of denominator}}$$

$$\Rightarrow \text{LCM}\left(\frac{2}{3}, \frac{4}{9}, \frac{5}{6}\right)$$

$$\Rightarrow \frac{\text{LCM}(2, 4, 5)}{\text{HCF}(3, 9, 6)} = \frac{20}{3} \Rightarrow \frac{20}{3} \text{ Ans.}$$

129. (c) LCM of 6, 9, 12, 15 and 18 = 180

If 180 is divided by these given number remainder will be 0

(यदि 180 को इस संख्या से भाग दिया जाए तो शेषफल शून्य बचेगा।)

$\Rightarrow$ To leave the same remainder 2

$\Rightarrow$ The number will be = 180 + 2 = 182

130. (c) $x^6 - 1 \Rightarrow (x^2)^3 - 1^3$

Using $\Rightarrow a^3 - b^3 = (a - b)(a^2 + b^2 + ab)$

$\Rightarrow (x^2 - 1)(x^4 + 1 + x^2 \times 1)$

$\Rightarrow (x^2 - 1)(x^4 + 1 + x^2)$.....(i)

Again,

$x^4 + 2x^3 - 2x - 1$

$\Rightarrow x^4 - 1 + 2x(x^2 - 1)$

$\Rightarrow (x^2)^2 - 1^2 + 2x(x^2 - 1)$

$\Rightarrow (x^2 - 1)(x^2 + 1) + 2x(x^2 - 1)$

$\Rightarrow (x^2 - 1)(x^2 + 1 + 2x)$ .....(ii)

$\Rightarrow$ from equation (i) and (ii)

H.C.F is common term

H.C.F = $(x^2 - 1)$

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