

ANSWERS AND EXPLANATIONS

EXERCISE

1. (d) Product of numbers = HCF \times LCM
 \Rightarrow The other number = $\frac{4800 \times 160}{480} = 1600$
 2. (c) Let the numbers be $7x$ and $8x$.
 \Rightarrow Their HCF = x
 Now, LCM \times HCF = Product of Numbers
 i.e. $280 \times x = 56x^2$ or $x = 5$
 Hence, the numbers are 35 and 40.
 3. (c) Required distance = L.C.M of $\left(\frac{12}{5}, \frac{24}{7}\right)$

$$= \frac{\text{L.C.M. of } (12, 24)}{\text{H.C.F. of } (5, 7)} = \frac{24}{1} \text{ m}$$

Hence, carriage will travelled 24m so that its chalk marks may be again on the ground at the same time.
 4. (b) Required no. = LCM of (8, 11, 24) - 5 = 264 - 5 = 259
 5. (d) Suppose least no. be x
 $1856 - x = n(\text{LCM of } 7, 12, 16) + 4$
 or $1856 - x = n(336) + 4$
 we should take $n = 5$ so that $n(336)$ is nearest to 1856 and $n(336) < 1856$
 $1856 - x = 1680 + 4 = 1684$
 $x = 1856 - 1684 = 172$
 6. (b) Required number
 = H.C.F of (148 - 4), (246 - 6) and (623 - 11)
 = H.C.F of 144, 240 and 612 = 12
 7. (b) L.C.M of 18, 24 & 32 = 288
 Hence they would chime after every 288 min. or 4 hrs 48 min
 8. (c) Let the numbers be x and $4x$.
 Then, $84 \times 21 = x \times 4x$
 or $4x^2 = 1764$
 or $x^2 = 441$ or $x = 21$
 $\Rightarrow 4x = 4 \times 21 = 84$
- Thus the larger number = 84
9. (b) \therefore Product of numbers = (LCM \times HCF)
 $\Rightarrow 480 \times \text{second number} = 2400 \times 16$
 $\Rightarrow \text{second number} = 80$
 10. (b) Let the third number be x .
 Product of numbers = LCM \times HCF
 Therefore, $3240 \times 3600 \times x = 36 \times 2^4 \times 3^5 \times 5^2 \times 7^2$
 $\Rightarrow x = \frac{36 \times 2^4 \times 3^5 \times 5^2 \times 7^2}{(2^3 \times 3^4 \times 5) \times (2^4 \times 3^2 \times 5^2)}$
 or $x = \frac{(2^2 \times 3^2) \times 2^4 \times 3^5 \times 5^2 \times 7^2}{2^3 \times 3^4 \times 5 \times 2^4 \times 3^2 \times 5^2}$
 or $x = \frac{2^6 \times 3^7 \times 5^2 \times 7^2}{2^7 \times 3^6 \times 5^3} = 2^2 \times 3^5 \times 7^2$
 11. (d) Required number = HCF of 429 and 715 = 143
 12. (b) Required number
 = HCF of (115 - 3), (149 - 5) and (183 - 7)
 = HCF of 112, 144 and 176 = 16
 13. (d) Required number = 3000 - LCM of 7, 11, 13
 = 3000 - 1001 = 1999
 14. (c) Let numbers be x and y .
 \therefore Product of two numbers = their (LCM \times HCF)
 $\Rightarrow xy = 630 \times 9$
 Also, $x + y = 153$ (given)
 since $x - y = \sqrt{(x + y)^2 - 4xy}$
 $\Rightarrow x - y = \sqrt{(153)^2 - 4(630 \times 9)}$
 $= \sqrt{23409 - 22680} = \sqrt{729} = 27$
 15. (b) H.C.F of co-prime numbers is 1.
 So, L.C.M. = $117/1 = 117$.
 16. (c) L.C.M. of 5, 6, 4 and 3 = 60. On dividing 2497 by 60, the remainder is 37.
 \therefore Number to be added = $(60 - 37) = 23$.



17. (c) First number = $(50 \times 2) = 100$. Second number
 $= \left(\frac{50 \times 250}{100} \right) = 125$.

18. (c) Let the numbers be x and $(2000 - x)$. Then, their
 L.C.M. = $x(2000 - x)$.

So, $x(2000 - x) = 21879$
 $\Rightarrow x^2 - 2000x + 21879 = 0$
 $\Rightarrow (x - 1989)(x - 11) = 0$
 $\Rightarrow x = 1989$ or 11 .

Hence, the numbers are 1989 and 11.

19. (d) H.C.F. of two numbers divides their L.C.M.
 exactly. 8 is not a factor of 60.

20. (d) Since H.C.F. is always a factor of L.C.M., we
 cannot have three numbers with H.C.F. 35 and
 L.C.M. 120.

21. (a) L.C.M. of 8, 16, 40 and 80 = 80.

$$\frac{7}{8} = \frac{70}{80}; \frac{13}{16} = \frac{65}{80}; \frac{31}{40} = \frac{62}{80}$$

Since, $\frac{70}{80} > \frac{65}{80} > \frac{63}{80} > \frac{62}{80}$, so $\frac{7}{8} > \frac{13}{16} > \frac{63}{80} > \frac{31}{40}$.

So, $\frac{7}{8}$ is the largest.

22. (d) Least number of 5 digits is 10,000 L.C.M. of 12,
 15 and 18 is 180.

On dividing 10000 by 180, the remainder is 100.

\therefore Required number
 $= 10000 + (180 - 100) = 10080$.

23. (c) Greatest number of 4 digits is 9999. L.C.M. of
 15, 25, 40 and 75 is 600.

On dividing 9999 by 600, the remainder is 399.

\therefore Required number = $(9999 - 399) = 9600$.

24. (c) Required time = LCM of 48, 64 and 72

2	48,	64,	72
2	24,	32,	36
2	12,	16,	18
2	6,	8,	9
3	3,	4,	9
	1,	4,	3

LCM = $2 \times 2 \times 2 \times 2 \times 3 \times 4 \times 3 = 576$ seconds.

25. (b) Required time

= L.C.M of 24, 36 and 48

= 144 seconds

= 2 minutes 24 seconds

26. (b) Required time = L.C.M of 24, 36 and 30

= 360 seconds = 6 minutes

27. (c) They will be together at the starting point after
 the

L.C.M of 36, 48 and 42

L.C.M. of 36, 48, 42 = 1008 seconds

28. (c) LCM of 3 and 5 = 15

$\therefore \frac{300}{15} = 20$ numbers

