

# CHAPTER 6

## PLAYING WITH NUMBERS

### *More Questions for Practice*

- Write down all the multiplication pairs for each of the following numbers:  
(a) 60                      (b) 120.  
[Hint:  $3 \times 5$  and  $5 \times 3$  is one pair.]
- Use the multiplication pairs for the following numbers and write down all their factors:  
(a) 30                      (b) 48                      (c) 100.
- Write down at least one number with six factors.
- Write each of the following numbers as a product of its prime factors:  
(a) 180                      (b) 324.
- Answer the following:  
(a) Is there a number which has no factor?  
(b) How many numbers are there having exactly one factor?  
(c) How many numbers are there between 1 and 100 which have exactly three factors?  
[Hint: (c) Think of numbers, each of which when multiplied by itself gives another number.]
- Write the prime factorisation of each of the following numbers:  
(a) 32                      (b) 63                      (c) 135                      (d) 160                      (e) 244.
- Which of the following statements are *true*?  
(a) 2470 is divisible by 5.                      (b) 1371 is divisible by 3.  
(c) 1478 is not divisible by 2.                      (d) 1155 is not divisible by 9.  
(e) 2025 is divisible by 5 and not by 10.
- Write a 2-digit number which is divisible by 2, 3, 5, 9 and also by 10.
- Find the prime factorisation of each of the following numbers:  
(a) 36                      (b) 48                      (c) 234                      (d) 1197                      (e) 4641                      (f) 9000  
(g) 13915.  
[Hint: (c)  $234 = 2 \times 3 \times 3 \times 13$ ;  
(d)  $1197 = 3 \times 3 \times 7 \times 19$ ;  
(g)  $13915 = 5 \times 11 \times 11 \times 23$ .]
- Find the prime factors of 1729. Arrange these factors in ascending order and find the relation between two consecutive prime factors.
- Using *Prime Factorisation Method*, determine the HCF of the numbers in each of the following:  
(a) 32, 36, 40                      (b) 13, 39, 52                      (c) 144, 180, 192  
(d) 106, 159, 265.
- Using *Continued Division Method*, determine the HCF of the numbers in each of the following:  
(a) 216, 252                      (b) 2261, 3059 and 3325                      (c) 101, 573, 1079  
(d) 1624, 1276, 522                      (e) 747, 2241, 8217.

13. Reduce each of the following fractions to the lowest terms:

(a)  $\frac{2639}{5075}$

(b)  $\frac{2888}{256}$

14. Find the greatest number which divides 245, 405 and 1029 leaving 5 as remainder in each case.
15. Find the greatest number that will divide 455, 582 and 710 leaving remainders 14, 15 and 17 respectively.
16. Two tankers contain 760 litres and 1140 litres of petrol respectively. Find the maximum capacity of a container which can measure the petrol of either tanker in exact number of times.
17. 111 cows, 185 sheep and 296 goats are to be taken across a river. There is only one boat and the boatman says, "I will take the same number and same kind of animals in each trip." Find the largest number of animals in each trip and the number of trips he will make.
18. How many square-shaped handkerchiefs of the biggest possible size can be made out of a piece of cloth 120 cm in length and 96 cm in breadth, without wastage of cloth? What is the size of each handkerchief?
19. Two brands of chocolates are available in packs of 10 and 12. If I need to buy an equal number of chocolates of both kinds, what is the least number of packs of each kind I would need to buy?
20. A merchant has 80 litres of oil of one kind, 100 litres of the second kind and 120 litres of the third kind. He wants to sell the three kinds of oil by filling them in tins of equal capacity. What should be the greatest capacity of such a tin?
21. The length, breadth and height of a room are 8 m 25 cm, 6 m 75 cm and 4 m 50 cm respectively. Determine the longest tape which can measure the three dimensions of the room exactly.
22. Using *Prime Factorisation Method*, determine the LCM of the numbers in each of the following:  
(a) 144, 180, 384                      (b) 14, 28, 60, 70                      (c) 48, 20, 108, 210  
(d) 64, 72, 96, 108.
23. Using *Common Division Method*, determine the LCM of the numbers in each of the following:  
(a) 1760, 2112                      (b) 120, 210, 330                      (c) 112, 140, 168  
(d) 75, 225, 250, 525.
24. Three measuring rods are 48 cm, 60 cm and 72 cm in length. What is the least length of cloth (in metres) that can be measured exact number of times by each of the three rods?
25. Find the least number which when divided by 25, 40 and 60 leaves 7 as remainder in each case.
26. Determine two numbers nearest to 10000 which are exactly divisible by each of the numbers 20, 24 and 35.
27. Find the greatest number of 6 digits which is exactly divisible by 15, 18 and 24.
28. Determine the number nearest to 100000 but greater than it which is exactly divisible by 8, 15 and 21.
29. Replace \* in  $270 * 0$  by smallest number so that it becomes divisible by 2, 3, 5, 7 and 9.
30. Find HCF and LCM of the following pairs of numbers:  
(a) 693, 1001                      (b) 1295, 2923

31. Determine the least number which is divisible by 105, 252, 360 and 700.
32. The LCM of two coprime numbers is 4235. If one of the numbers is 55, find the other number.
33. Determine the greatest number which divides the sum of numbers of any pair of twin primes between 4 and 100 exactly.
34. Can two numbers have 16 as their HCF and 204 as their LCM? Give reason.
35. A boy saves ₹ 4.05 daily. Find the least number of days in which he will be able to save an exact number of rupees.
36. Three boys A, B and C can go round a circular pathway in 3 min 20 sec, 3 min 40 sec and 4 min respectively. If they start simultaneously from the same place and at the same time, when will they all meet next?
37. Find out the smallest number which when added to 14532316 gives the number divisible by 8.
38. Simplify:

(a)  $78 - 2 \times 4$  of  $3\frac{1}{2} - 1\frac{7}{10}$

(b)  $22 - (5 \text{ of } 7) + (12 + 8) + (-5)$

(c)  $3\frac{1}{2} \div \frac{1}{2} + 4\frac{1}{6} \times 1\frac{1}{5} - 3$

## ANSWERS

1. (a)  $1 \times 60$       (b)  $1 \times 120$   
 $2 \times 30$        $2 \times 60$   
 $3 \times 20$        $3 \times 40$   
 $4 \times 15$        $4 \times 30$   
 $5 \times 12$        $5 \times 24$   
 $6 \times 10$        $6 \times 20$   
                    $8 \times 15$   
                    $10 \times 12$
2. (a) 1, 2, 3, 5, 6, 10, 15, 30      (b) 1, 2, 3, 4, 6, 8, 12, 16, 24, 48  
 (c) 1, 2, 4, 5, 10, 20, 25, 50, 100      3. 20
4. (a)  $180 = 2 \times 2 \times 3 \times 3 \times 5$       (b)  $324 = 2 \times 2 \times 3 \times 3 \times 3 \times 3$
5. (a) No      (b) one      (c) four, namely 4, 9, 25 and 49
6. (a)  $2 \times 2 \times 2 \times 2 \times 2$       (b)  $3 \times 3 \times 7$       (c)  $3 \times 3 \times 3 \times 5$   
 (d)  $2 \times 2 \times 2 \times 2 \times 2 \times 5$       (e)  $2 \times 2 \times 61$
7. (a), (b), (d), (e)      8. 90.
9. (a)  $2^2 \times 3^2$       (b)  $2^4 \times 3$       (c)  $2 \times 3^2 \times 13$       (d)  $3^2 \times 7 \times 19$       (e)  $3 \times 7 \times 13 \times 17$   
 (f)  $2^3 \times 3^2 \times 5^3$       (g)  $5 \times 11^2 \times 23$
10. 7, 13, 19; Difference between them is 6.

11. (a) 4 (b) 13 (c) 12 (d) 53
12. (a) 36 (b) 133 (c) 1 (d) 58 (e) 747
13. (a)  $\frac{13}{25}$  (b)  $\frac{361}{32}$  14. 16 15. 63 16. 380
17. 37 animals in each trip; 16 trips 18. 20 handkerchiefs, 24 cm  $\times$  24 cm
19. 6 packs of 10 each and 5 packs of 12 each 20. 20 litres 21. 75 cm.
22. (a) 5,760 (b) 420 (c) 15,120 (d) 1,728
23. (a) 10,560 (b) 9,240 (c) 1,680 (d) 15,750
24. 7.2 m 25. 607 26. 9,240; 10,080 27. 9,99,720 28. 1,00,800
29. \* is replaced by 9.
30. (a) HCF = 77 and LCM = 9009 (b) HCF = 37 and LCM = 102305 31. 12600
32. 77 33. 12 34. No, HCF should be a factor of LCM. 35. 20 days
36. After 220 minutes 37. 4 38. (a)  $48\frac{3}{10}$  (b) 2 (c) 9.



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