Prime Time

Standard difficulty · 20 questions · 40 marks · Time: 35 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. Which of these is a prime number?
(a) 81 **(b)** 57 **(c)** 91 **(d)** 37

2. The HCF of 45 and 18 is:
(a) 10 **(b)** 90 **(c)** 18 **(d)** 9

3. The LCM of 10 and 4 is:
(a) 20 **(b)** 40 **(c)** 2 **(d)** 14

4. The smallest prime number is:
(a) 2 **(b)** 3 **(c)** 0 **(d)** 1

5. Which of these numbers is divisible by 3?
(a) 989 **(b)** 749 **(c)** 779 **(d)** 735

6. Which of these is a factor of 36?
(a) 8 **(b)** 11 **(c)** 12 **(d)** 15

7. Two numbers whose HCF is 1 are called:
(a) co-prime **(b)** perfect numbers
(c) twin primes **(d)** composite

8. Which of these is NOT a multiple of 6?
(a) 37 **(b)** 54 **(c)** 60 **(d)** 66

Section B — Short answer — 8 × 2 = 16 marks

9. Write the prime factorisation of 180.

10. Find the HCF of 60 and 72.

11. Find the LCM of 13 and 16.

12. Find the HCF and LCM of 12 and 42. Check that HCF × LCM = 12 × 42.

13. List all the factors of 56.

14. Write the first five multiples of 17.

15. Without dividing, check whether 8028 is divisible by 4 and by 9. Give reasons.

16. Write 80 as the sum of two odd prime numbers.

Section C — Word problems — 4 × 4 = 16 marks

17. Two school bells ring every 9 and 30 minutes. They ring together at 8:00 am. When will they next ring together?

18. Two ropes are 96 cm and 216 cm long. They are cut into pieces of equal length, as long as possible, with nothing left over. How long is each piece, and how many pieces are there?

19. What is the smallest number of sweets that can be shared equally among either 4 children or 20 children, with none left over?

20. A room is 320 cm by 280 cm. What is the largest square tile that fits exactly along both sides, and how many such tiles cover the floor?

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Answer key

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Q	Answer	Working
1	**(d) 37**	37 has exactly two factors, 1 and 37
2	**(d) 9**	45 = 9 × 5, 18 = 9 × 2
3	**(a) 20**	LCM = 10 × 4 ÷ HCF 2 = 20
4	**(a) 2**	1 is neither prime nor composite
5	**(d) 735**	digit sum of 735 is 15, a multiple of 3
6	**(c) 12**	36 = 12 × 3
7	**(a) co-prime**	—
8	**(a) 37**	37 ÷ 6 leaves a remainder
9	**2 × 2 × 3 × 3 × 5**	keep dividing by the smallest prime: 2 × 2 × 3 × 3 × 5 = 180
10	**12**	60 = 12 × 5; 72 = 12 × 6; HCF = 12
11	**208**	13 × 16 ÷ HCF 1 = 208
12	**HCF 6, LCM 84**	6 × 84 = 504 = 12 × 42
13	**1, 2, 4, 7, 8, 14, 28, 56**	8 factors, found in pairs
14	**17, 34, 51, 68, 85**	17 × 1 … 17 × 5
15	**by 4: Yes; by 9: Yes**	last two digits 28; digit sum 18
16	**7 + 73 (any correct pair)**	any two odd primes adding to the number are correct
17	**9:30 am (90 minutes later)**	LCM of 9 and 30 = 90 minutes
18	**24 cm; 13 pieces**	HCF of 96 and 216 = 24; 4 + 9 = 13 pieces
19	**20 sweets**	LCM of 4 and 20 = 20
20	**40 cm tiles; 56 tiles**	HCF of 320 and 280 = 40; (320 ÷ 40) × (280 ÷ 40) = 8 × 7 = 56