CLASS 8 · MATHEMATICS

Number Play

Sample paper · 15 questions · 22 marks

10 objective questions × 1 mark. Five written-response questions: 12 marks. Write your working where needed. Suggested time: 45 minutes. Answers and marking guidance follow the questions.

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Section A · Objective questions (10 marks)

1. Which of these numbers is divisible by 3?

A. 5123

B. 3411

C. 1234

D. 2345

2. Which of these numbers is divisible by 4?

A. 322

B. 330

C. 314

D. 316

3. The smallest prime number is:

A. 0

B. 2

C. 1

D. 3

4. Which of these numbers is divisible by 9?

A. 5,392

B. 5,391

C. 5,390

D. 5,381

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5. Which number is NOT divisible by 5?

A. 505

B. 232

C. 240

D. 135

6. The highest common factor (HCF) of 12 and 18 is:

A. 6

B. 4

C. 3

D. 12

7. The least common multiple (LCM) of 4 and 6 is:

A. 12

B. 10

C. 8

D. 24

8. The prime factorisation of 60 is:

A. 2 cubed x 15

B. 2 x 3 x 10

C. 2 squared x 3 x 5

D. 2 x 3 squared x 5

9. Which of these numbers is divisible by 11?

A. 1234

B. 2728

C. 4321

D. 3456

10. A number is divisible by both 2 and 3. It must also be divisible by:

A. 12

B. 6

C. 5

D. 9

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Section B · Written responses (12 marks)

Attempt all five. Use a separate sheet if you need more space. The marks for each question are shown.

11. Test 6,732 for divisibility by 3 and by 9, showing the rule you use. [2 marks]

12. Find the HCF of 24 and 36 by listing their factors. [2 marks]

13. Explain why every even number greater than 2 cannot be prime. [2 marks]

14. Use the divisibility rule for 11 to decide whether 98,989 is divisible by 11. Show your working. [3 marks]

15. Two bells ring together at 9:00 AM. One rings every 12 minutes and the other every 18 minutes. At what time will they next ring together? Explain your method. [3 marks]

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Answers & marking guidance

Use these after attempting the paper. Accept equivalent correct reasoning and sensible units. These are Evater model answers, not an official marking scheme.

Section A · 1 mark each

1. B — The digit sum of 3411 is 3 + 4 + 1 + 1 = 9, a multiple of 3. The other digit sums (10, 14, 11) are not.

2. D — A number is divisible by 4 when its last two digits are divisible by 4, and 16 is divisible by 4.

3. B — 2 is prime (its only factors are 1 and 2). 1 is not prime, and 0 is not prime.

4. B — The digit sum of 5391 is 5 + 3 + 9 + 1 = 18, a multiple of 9; the other digit sums (17, 19, 17) are not.

5. B — Multiples of 5 end in 0 or 5; 232 ends in 2.

6. A — Factors of 12 are 1, 2, 3, 4, 6, 12 and of 18 are 1, 2, 3, 6, 9, 18; the largest common factor is 6.

7. A — Multiples of 4: 4, 8, 12, ...; multiples of 6: 6, 12, ...; the smallest common multiple is 12.

8. C — 60 = 2 x 2 x 3 x 5; options with 10 or 15 are not prime factorisations.

9. B — For 2728, (7 + 8) - (2 + 2) = 11, a multiple of 11, so 2728 is divisible by 11 (2728 = 11 x 248). The others give differences that are not multiples of 11.

10. B — Being divisible by both 2 and 3 (which share no common factor) means being divisible by 2 x 3 = 6.

Section B · Model answers

11. The digit sum is 6 + 7 + 3 + 2 = 18. Since 18 is a multiple of both 3 and 9, 6,732 is divisible by both 3 and 9 (6732 = 9 x 748).

Marking: 1 mark for the digit-sum rule and the sum 18; 1 mark for both correct conclusions.

12. Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24. Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36. The common factors are 1, 2, 3, 4, 6, 12, so the HCF is 12.

Marking: 1 mark for correct factor lists; 1 mark for the HCF 12.

13. An even number greater than 2 has 1, 2 and itself as factors, and possibly more. Since it has a factor other than 1 and itself (namely 2), it is composite, not prime.

Marking: 1 mark for noting 2 is always a factor; 1 mark for the conclusion using the definition of a prime.

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14. Group alternate digits: (9 + 9 + 9) = 27 and (8 + 8) = 16. Their difference is 27 - 16 = 11, which is a multiple of 11, so 98,989 is divisible by 11. Check: 98,989 = 11 x 8,999.

Marking: 1 mark for stating/applying the alternate-digit rule; 1 mark for computing 27 - 16 = 11; 1 mark for the correct conclusion.

15. They ring together at common multiples of 12 and 18. The LCM of 12 and 18 is 36, so they next ring together 36 minutes after 9:00 AM, at 9:36 AM.

Marking: 1 mark for choosing the LCM method; 1 mark for LCM = 36; 1 mark for the time 9:36 AM.

Topic references

NCERT Class 8 Mathematics, Ganita Prakash, Chapter 5: Number Play.

https://ncert.nic.in/textbook/pdf/hegp105.pdf

Concept reference only. Questions and model answers are original Evater practice material, not an official NCERT paper.

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