Divisibility Tests Exercises

Introduction

This worksheet provides practice problems for testing divisibility by 3, 9, and 11 using their respective rules:

- **Divisibility by 3:** A number is divisible by 3 if the sum of its digits is divisible by 3.

- **Divisibility by 9:** A number is divisible by 9 if the sum of its digits is divisible by 9.

- **Divisibility by 11:** A number is divisible by 11 if the alternating sum of its digits (from right to left) is divisible by 11.

1 Divisibility by 3

Determine whether each number is divisible by 3. Show your work by calculating the sum of digits.

1. 246   (Sum: $2 + 4 + 6 = 12$, and 12 is divisible by 3)

2. 517

3. 8 934

4. 12 705

5. 47 218

6. 123 456

7. 777 777

8. 1 234 567

9. 88 888 888

10. 402 819 173

2   Divisibility by 9

Determine whether each number is divisible by 9. Show your work by calculating the sum of digits.

1. 378   (Sum: $3 + 7 + 8 = 18$, and 18 is divisible by 9)

2. 729

3. 1 458

4. 2 835

5. 6 237

6. 123 456 789

7. 888 888 888

8. 1 111 111 110

9. 987 654 321

10. 8 392 571 064 923

3   Divisibility by 11

Determine whether each number is divisible by 11. Show your work by calculating the alternating sum of digits from right to left.

1. 121   (Alternating sum from right: $1 - 2 + 1 = 0$, and 0 is divisible by 11)

2. 286

3. 1 331

4. 9 570

5. 10 648

6. 123 456

7. 918 081

8. 8 172 849

9. 111 111 111

10. 9 876 543 210 987