

Counting and Patterns

Notes

Palindrome

Leap year

To find the number of combinations

a) Write a scenario when the order matters.

b) Write a scenario when the order does not matter.

Find the last digit of a^b

Discussion questions

1. A club consists of five members: André, Béatrice, Claude, Denis, and Édith. How many ways can a president and secretary be elected if the same person cannot hold both jobs?
2. The six students on a team shake hands with one another before a game. How many handshakes are there in all?
3. How many 3-digit palindromic numbers are there?
4. In 1988, Betty's birthday was on a cold Wednesday in January. In 1993, on what day will her birthday occur?
5. What is the last digit of the number 2^{2023} ?

6. How many 3-digit numbers are there which contain exactly one zero?

Practice Questions

1. Which number does not belong in the list 3, 5, 7, 9, 11, 13, 17, 19, 23, 29, 31, ...?

2. What is the hundredth term in the sequence 0, 2, 6, 12, 20, 30, 42, ... ?

3. What is the next term in the sequence $\frac{3}{4}, 1, \frac{15}{14}, \frac{21}{19}, \dots$?

4. Find the missing term in the sequence: 1, 2, 5, 12, ?, 58