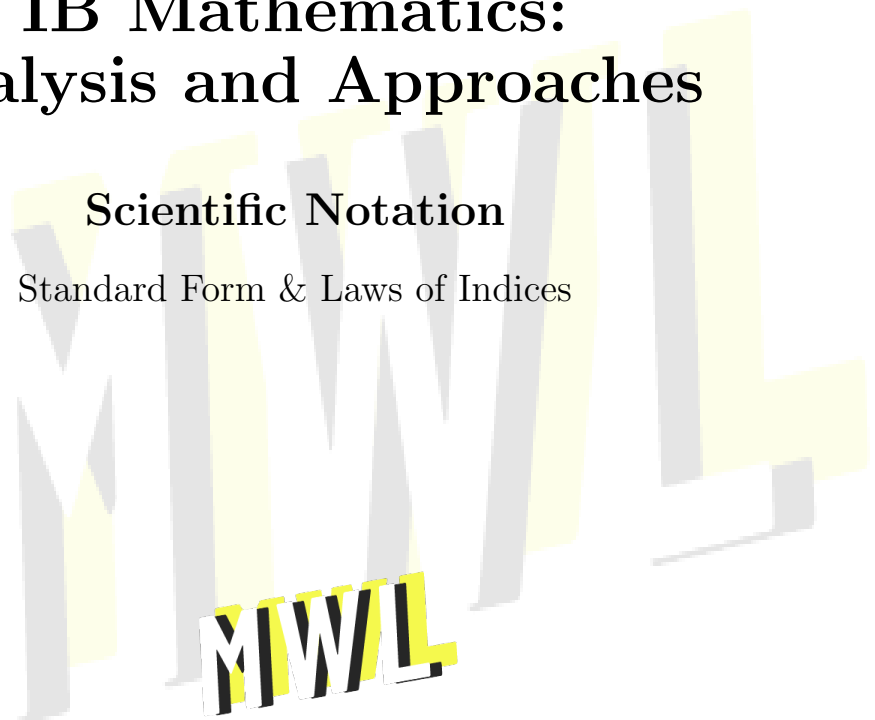


# IB Mathematics: Analysis and Approaches

## Scientific Notation

Standard Form & Laws of Indices



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Name: \_\_\_\_\_

## 1. DP AA Exam Style Question 1.1 [4]

The diameter of a spherical moon is  $12 \times 10^3$  km.

- (a) Write down the radius of the moon. [1]

The volume of the moon can be expressed in the form

$$\pi(a \times 10^k) \text{ km}^3$$

where  $1 \leq a < 10$  and  $k \in \mathbb{Z}$ .

- (b) Find the value of  $a$  and the value of  $k$ . [3]

**Source:** DP AA Exam Style Question 1.1, Paper 2.

## 2. DP AA Exam Style Question 1.2 [6]

Gold in the asteroid 11 Midas is said to be valued at 78.3 quintillion euros (EUR), where one quintillion =  $10^{18}$ .

- (a) Write down the value of the gold in the form

$$a \times 10^k$$

where  $1 \leq a < 10$  and  $k \in \mathbb{Z}$ . [2]

Ella believes the asteroid is approximately spherical with a radius of 132 km. She uses this information to estimate its volume.

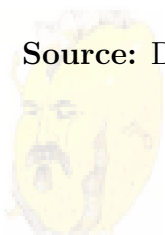
- (b) Calculate Ella's estimate of its volume, in  $\text{km}^3$ . [2]

The actual volume of the asteroid is found to be

$$7.585 \times 10^6 \text{ km}^3.$$

- (c) Find the percentage error in Ella's estimate of the volume. [2]

**Source:** DP AA Exam Style Question 1.2, Paper 2.



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