UNIT 3 *Indices and Standard Form* Overhead Slides

Overhead Slides

OS 3.1 *Indices*

Complete the following calculations:

1. $2 \times 2 \times 2 \times 2 = 2^{\square}$

2. $7 \times 7 \times 7 = 7^{\square}$

3. $8 \times 8 \times 8 \times 8 \times 8 \times 8 \times 8 = 8^{\square}$

4. $1000 = 10 \times 10 \times 10$

   $= 10^{\square}$

5. $1\,000\,000 =$

   $= 10^{\square}$

6. $8 = 2^{\square}$

7. $27 = 3^{\square}$

OS 3.2 *Laws of Indices 1*

The Laws of Indices

$$a^m \times a^n = a^{m+n}$$

$$a^m \div a^n = a^{m-n} \quad (m \geq n)$$

$$\left(a^m\right)^n = \left(a^n\right)^m = a^{m \times n}$$

Complete the following statements:

1. $3^6 \times 3^7 = 3^{\square}$

2. $4^3 \times 4^5 = 4^{\square}$

3. $5^2 \times 5^7 = 5^{\square}$

4. $6^3 \times 6^2 = 6^{\square}$

5. $7^8 \div 7^2 = 7^{\square}$

6. $9^{10} \div 9^7 = 9^{\square}$

7. $8^4 \div 8^2 = 8^{\square}$

OS 3.3 *Laws of Indices 2*

Complete the following statements:

1. $\left(10^{2}\right)^{3} = 10^{\square}$

2. $\left(2^{4}\right)^{7} = 2^{\square}$

3. $\left(6^{3}\right)^{4} = 6^{\square}$

4. $a^{6} \times a^{7} = a^{\square}$

5. $a^{12} \div a^{5} = a^{\square}$

6. $\left(x^{4}\right)^{2} = x^{\square}$

7. $x^{3} \times x^{9} = x^{\square}$

8. $\left(x^{11}\right)^{2} = x^{\square}$

9. $z^{11} \div z^{7} = z^{\square}$

OS 3.4 *Negative Indices*

Complete each of the following statements:

1. $4^{-2} = \frac{1}{4^{2}} = \frac{1}{\quad}$

2. $1^{-1} = \frac{1}{\quad} =$

3. $10^{-3} = \frac{1}{\quad} = \frac{1}{\quad}$

4. $2^{-4} = \frac{1}{\quad} = \frac{1}{\quad}$

5. $2^{-1} + 4^{-1} = \frac{1}{\quad} + \frac{1}{\quad}$

$=$

OS 3.5 *Standard Form*

Complete each of the following statements:

1. $36\,200 = 3.62 \times 10^{\square}$

2. $4710 = 4.71 \times 10^{\square}$

3. $8\,400\,000 = \square \times 10^{\square}$

4. $92\,000 = \square \times 10^{\square}$

5. $0.0042 = 4.2 \times 10^{\square}$

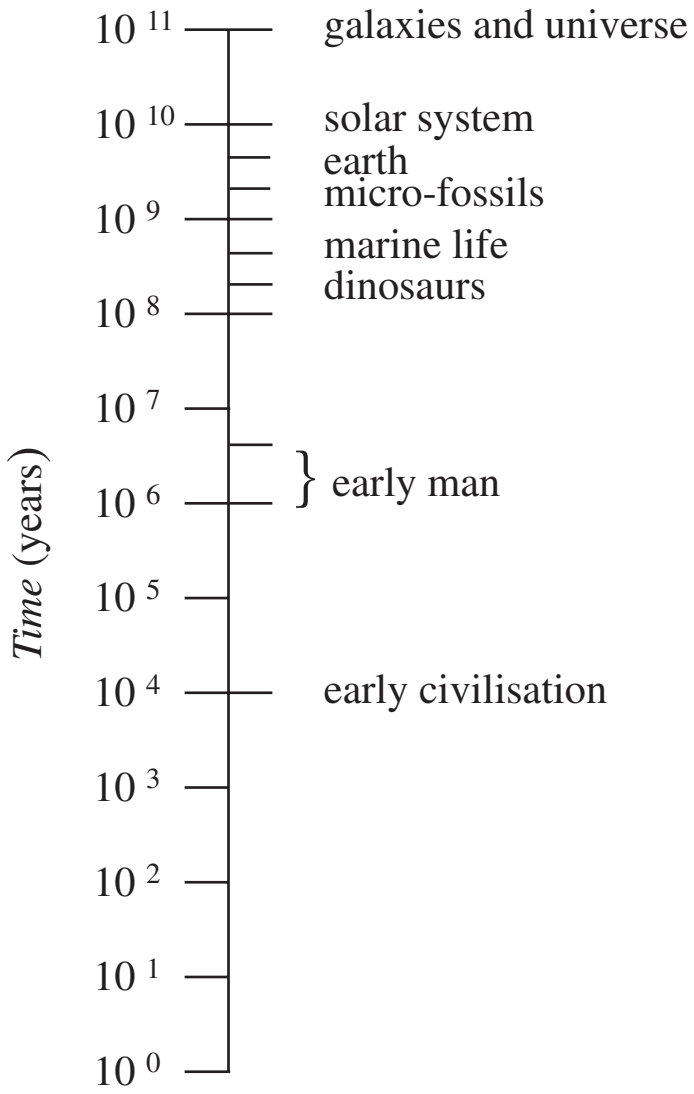
6. $0.0168 = 1.68 \times 10^{\square}$

7. $0.0000062 = \square \times 10^{\square}$

8. $0.00000000041 = \square \times 10^{\square}$

OS 3.6 *Time Scale*

Non-linear Scale



Galaxies and universe formed	10^5 million years ago
Solar system formed	10^4 million years ago
Mocro-fossils formed	3.2×10^3 million years ago
Marine evolution	6×10^2 million years ago
Early man evolved	4 to 1 million years ago
Early civilisation began	10^4 years ago

OS 3.7 *Calculations in Standard Form*

Complete each of the following statements:

1. $\left(6 \times 10^{4}\right) \times \left(2 \times 10^{5}\right) = (6 \times 2) \times \left(10^{4} \times 10^{5}\right)$

$= \quad \times 10^{\square}$

$= \quad \times 10^{\square}$

2. $\left(8 \times 10^{7}\right) \times \left(3 \times 10^{-2}\right) = (\quad \times \quad) \times (10^{\square} \times 10^{\square})$

$= \quad \times 10^{\square}$

$= \quad \times 10^{\square}$

3. $\left(8 \times 10^{16}\right) \div \left(2 \times 10^{5}\right) = (8 \div 2) \times \left(10^{16} \div 10^{5}\right)$

$= \quad \times 10^{\square}$

4. $\left(4.2 \times 10^{13}\right) \div \left(3 \times 10^{4}\right) = (\quad \div \quad) \times (10^{\square} \div 10^{\square})$

$= \quad \times 10^{\square}$

OS 3.8 *Fractional Indices*

Complete each of the following statements:

1. $4 = \sqrt{16} = 16^{\square}$

2. $3 = \sqrt{\square} = \square^{\frac{1}{2}}$

3. $\frac{1}{2} = \frac{1}{\sqrt[3]{8}} = 8^{\square}$

4. $3 = \sqrt{\square} = \square^{\frac{1}{3}}$

5. $\left(\frac{6 \times 8}{3}\right)^{\frac{1}{2}} =$

6. $\left(\frac{10 \times 15}{6}\right)^{\frac{1}{2}} =$