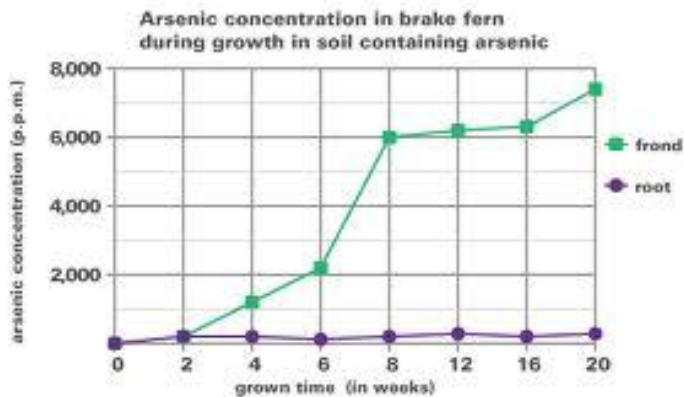


Honors Science Study Guide

- Write each of the following numbers in scientific notation.
 - 23,500
 - 387,000
 - 0.0964
 - 0.00000447
- Write each of the following numbers in standard form.
 - 3.48×10^4
 - 5.22×10^8
 - 8.11×10^{-2}
 - 6.01×10^{-5}
- Convert each of the following values to meters.
 - 536 cm
 - 24,900 mm
 - 49 km
- Perform the following operations. Include proper units in your answer.
 - $(8 \times 10^3 \text{ m})(2 \times 10^4 \text{ m}) =$
 - $\frac{8 \times 10^2 \text{ m}^2}{2 \times 10^{-4} \text{ m}} =$
 - $(2 \times 10^2 \text{ cm})^3 =$
- Given the equation $PV = nRT$, solve for V .
- Answer the following questions according to the graph below:



- After 8 weeks, what was the difference in arsenic concentration in the frond of the brake fern as compared to the root?
- Estimate the concentration of arsenic in the root of the brake fern after 30 weeks.

Answer Key

1. Write each of the following numbers in scientific notation.

- a. $23,500 = 2.35 \times 10^4$
- b. $387,000 = 3.87 \times 10^5$
- c. $0.0964 = 9.64 \times 10^{-2}$
- d. $0.00000447 = 4.47 \times 10^{-6}$

2. Write each of the following numbers in standard form.

- a. $3.48 \times 10^4 = 34,800$
- b. $5.22 \times 10^8 = 522,000,000$
- c. $8.11 \times 10^{-2} = 0.0811$
- d. $6.01 \times 10^{-5} = 0.0000601$

3. Convert each of the following values to meters.

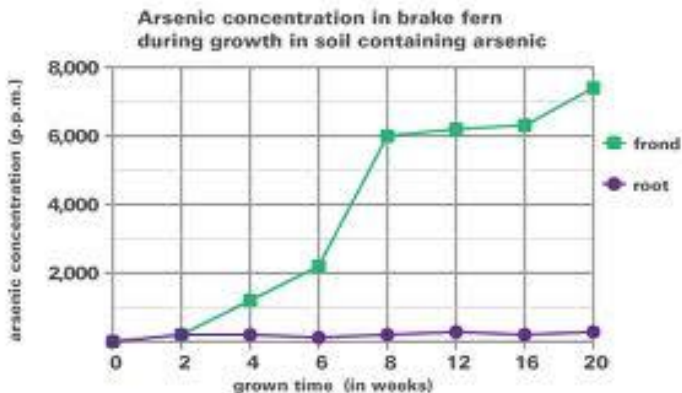
- a. $536 \text{ cm} = 536 \text{ cm} \left(\frac{1\text{m}}{100\text{cm}} \right) = 5.36 \text{ m}$
- b. $24,900 \text{ mm} = 24,900 \text{ mm} \left(\frac{1\text{m}}{1000\text{mm}} \right) = 24.9 \text{ m}$
- c. $49 \text{ km} = 49\text{km} \left(\frac{1000\text{m}}{1\text{km}} \right) = 49,000 \text{ m}$

4. Perform the following operations. Include proper units in your answer.

- a. $(8 \times 10^3 \text{ m})(2 \times 10^4 \text{ m}) = 16 \times 10^7 \text{ m}^2 = 1.6 \times 10^8 \text{ m}^2$
- b. $\frac{8 \times 10^2 \text{ m}^2}{2 \times 10^{-4} \text{ m}} = 4 \times 10^6 \text{ m}$
- c. $(2 \times 10^2 \text{ cm})^3 = 8 \times 10^6 \text{ cm}^3$

5. Given the equation $PV = nRT$, solve for V . $V = \frac{nRT}{P}$

6. Answer the following questions according to the graph below:



a. After 8 weeks, what was the difference in arsenic concentration in the frond of the brake fern as compared to the root?
6000 p.p.m. – 200 p.p.m. = 5800 p.p.m.

b. Estimate the concentration of arsenic in the root of the brake fern after 30 weeks. ~300 p.p.m.