

Foundation Course in Radiological Protection

Check out your Maths!

Although the Foundation Course aims to present its subject matter in a qualitative way, rather than a mathematically rigorous one, inevitably in dealing with topics such as radioactive decay and radiation attenuation, the participant will be involved in some mathematical calculations. Your ability to handle such calculations will be assumed, and it will therefore be of great benefit if you possess the necessary skills before attending the course.

If you plan to attend the course, you may wish to work through the following calculations which are indicative of those needed for the course. You will need a 'scientific' calculator, ruler and graph paper to complete the exercises.

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1. From the equation:

$$\frac{a_1}{x_1^2} = \frac{a_2}{x_2^2}$$

- a) Find a_1 if $a_2 = 10$, $x_1 = 2$, and $x_2 = 4$
- b) Find x_1 if $a_1 = 25$, $a_2 = 5$, and $x_2 = 3$

2. Calculate the values of:

- a) $(\frac{1}{2})^3$
- b) $(\frac{1}{2})^{7/8}$
- c) $10^{-2.5}$

3. From the equation:

$$A = Be^{-kx}$$

- a) Find A if $B = 5$, $k = 0.2$, and $x = 3$
- b) Find B if $A = 1$, $k = 0.5$, and $x = 2.5$
- c) Find x if $A = 2.5$, $B = 8$, and $k = 0.4$

4. From the equation:

$$y = -0.1x + 1$$

- a) What will be the value of y when $x = 0$?
- b) What will be the value of x when $y = 0$?
- c) What will be the value of x when $y = 0.5$?
- d) Sketch the graph of the equation.

How did you get on?
See the answer sheet to find out