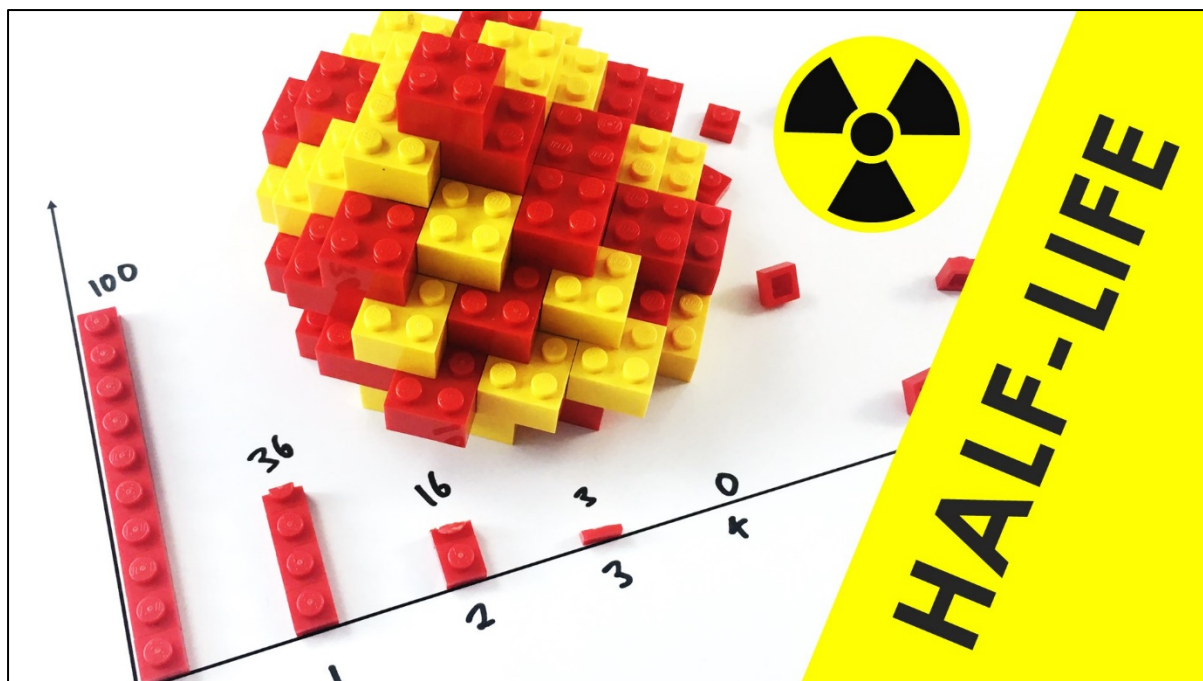


GCSE Physics

8th Mar 2021 – Radiation

Suitable for ALL exam boards



This session looks at radioactive isotopes, their radiation emitted and the half-life.

Don't forget to **subscribe** on **YouTube** and turn on **notification** to be reminded about the **weekly livestreams** to support you as you prepare for any exams.

Question taken from:

Edexcel GCSE Physics – January 2018 - Paper 2 (5PH2H/01) – Question 2

Using radioactive materials

2 (a) A scientist investigates a radioactive sample.

She measures a count rate of 130 counts per minute.

The average background radiation count rate in her laboratory is 10 counts per minute.

(i) What is the count rate due to this sample?

Put a cross (☒) in the box next to your answer.

(1)

- A 13 counts per minute
- B 120 counts per minute
- C 140 counts per minute
- D 1300 counts per minute

(ii) State **one** source of background radiation.

(1)

(iii) Explain why some people are exposed to more background radiation than others.

(2)

(iv) Complete the sentence by putting a cross (☒) in the box next to your answer.

The recommended safe limit for exposure to radiation has been reduced over the last 80 years.

This is because

(1)

- A scientists now have better instruments to make measurements more quickly
- B global warming has increased the rate of decay of radioactive materials
- C humans have released more radioactive materials into the environment
- D scientists now have a better understanding of the dangers of radiation

(b) After an accident at a nuclear power plant in Japan, some drinking water was contaminated with radioactive iodine-131.

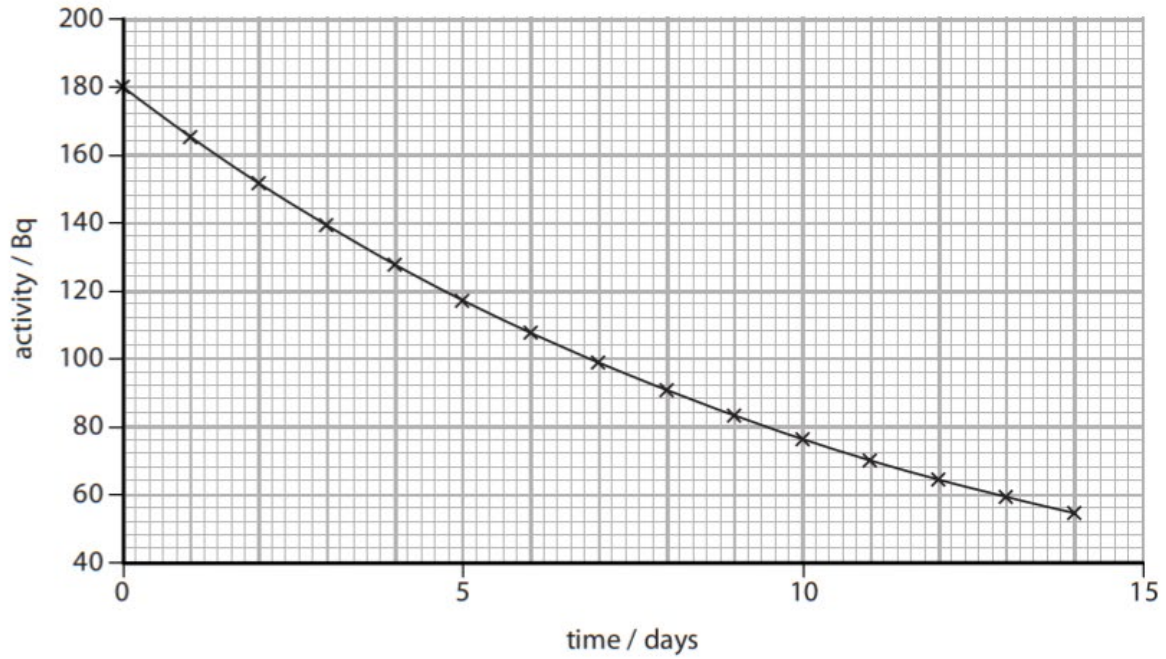
When iodine-131 decays, it emits beta radiation.

State **one** possible danger to health from exposure to beta radiation.

(1)



(c) The graph shows how the activity of a sample of iodine-131 changes over a period of 14 days.



(i) Use the graph to estimate the half-life of iodine-131.

Show your working.

(2)

half-life = days

(ii) Estimate the time it would take for the activity to fall from 180 Bq to 40 Bq.

(1)

time taken = days

