



Name _____ Class _____ Date _____

1 The water in the reactor acts **both** as a heat transfer agent and a moderator. In its capacity as a **moderator**, the water

- A accelerates the neutrons to higher speeds so that they can interact with nuclei more energetically
- B slows the neutrons to increase the probability of nuclear interaction
- C prevents a chain reaction from occurring
- D absorbs neutrons and slows the nuclear reaction

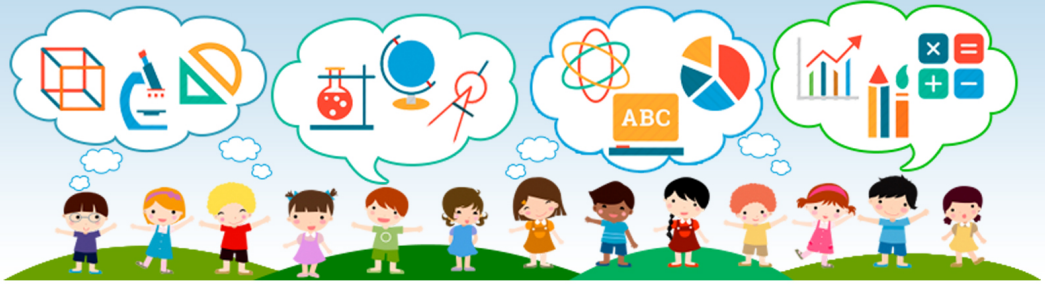
2 One of the radioactive waste products of a reactor has a **half-life of 250 years**. What fraction of a given sample of this product will remain after **1,000 years**?

- A $1/2$
- C $1/8$
- B $1/4$
- D $1/16$



3 An atomic nucleus emits energy as it **decays** from an excited state to a more stable state without a change in its atomic number. This energy is **emitted in the form of**

4 The number of **nucleons** in a $^{206}_{82}\text{Pb}$ nucleus is



5

PREVIEW

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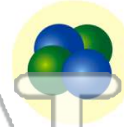
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- A weak and short range
- B weak and long range
- C strong and short range
- D strong and long range



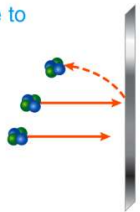
charge of **+2 elementary charges** is equivalent to

- A $8.0 \times 10^{-20}\text{ C}$
- B $3.2 \times 10^{-19}\text{ C}$
- C $1.2 \times 10^{19}\text{ C}$
- D $3.2 \times 10^{19}\text{ C}$



9 Alpha particles were directed at a thin metal foil. Some particles were **deflected into hyperbolic paths** due to

- A gravitational attraction
- B electrostatic repulsion
- C electrostatic attraction
- D magnetic repulsion



10 The electron in a hydrogen atom drops from energy level $n = 2$ to energy level $n = 1$ by **emitting a photon** having an **energy** of approximately

- A $5.4 \times 10^{-19}\text{ J}$
- B $1.6 \times 10^{-18}\text{ J}$
- C $2.2 \times 10^{-18}\text{ J}$
- D $7.4 \times 10^{-18}\text{ J}$





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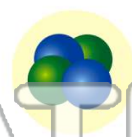
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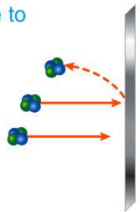
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