

## Nuclear Decay Organizer

*Students know* the three most common forms of radioactive decay (alpha, beta, and gamma) and know how the nucleus changes in each type of decay.

*Students know* alpha, beta, and gamma radiation produce different amounts and kinds of damage in matter and have different penetrations.

*Students know* some naturally occurring isotopes of elements are radioactive, as are isotopes formed in nuclear reactions.

	Alpha Particle Emission	Beta Particle Emission	Gamma Ray Emission
<b>Symbol</b>	${}^4_2\text{He}^{2+}$ or ${}^4_2\alpha^{2+}$	${}^0_{-1}e$ or ${}^0_{-1}\beta$	${}^0_0\gamma$
<b>Mass</b>	Heavy	Light	No Mass
<b>How it changes the nucleus</b>	<ul style="list-style-type: none"> <li>Decreases the mass number by 4</li> <li>Decreases the atomic number by 2</li> </ul>	<ul style="list-style-type: none"> <li>Converts a neutron into a proton</li> <li>Increases atomic number by 1</li> </ul>	No change to the nucleus
<b>Penetration</b>	Low	Medium	High
<b>Protection provided by...</b>	Skin	Paper, clothing	Lead
<b>Danger</b>	Low	Medium	High