Complete the following nuclear reactions:

1. 
$${}^{226}_{88}Ra \rightarrow {}^{226}_{10}AC + {}^{0}_{10}e$$

2. 
$$^{209}_{84}Po \rightarrow ^{205}_{82}Pb + {\text{4He}}$$

3. 
$$^{238}_{92}U \rightarrow \frac{347}{1} + {}^{4}_{2}He$$

4. 
$$^{234}_{90}Th \rightarrow ^{234}_{91}Pa + \frac{9}{1}e$$

5. 
$$\frac{4}{3}$$
 He +  $\frac{14}{7}$ N  $\Rightarrow \frac{17}{8}$ O +  $\frac{1}{1}$ H

Write nuclear equations that describe the following processes.

6. Uranium-235 undergoes an alpha decay to produce thorium-231.

35U - 2 He + 37 Th

7. Lanthanum -144 becomes cerium-144 when it undergoes a beta decay.

144/La -> 1e + 144/Ce

8. Neptunium-233 is formed when americium-237 undergoes a nuclear decay process

9. When protactinium-229 goes through two alpha decays, francium-221 is formed.

saPr - The + alle + sai Fr

10. Uranium-238 undergoes an alpha decay and produces two gamma rays.

38U - 2 He+ 8+8+ 384Th

11. The neon-22 nucleus is formed when an element undergoes a beta decay.

12. Samarium-146 is produced when an element undergoes an alpha decay.

Egad - The + 1/65m

13. The beta decay of dysprosium-165 creates a new element.

165 Dy -> 9e +67 Ho

Answer the following questions. Include the mass number when naming isotopes

14. What atom produces scandium-47 when it goes through a beta decay?

15. What new isotope is formed when curium-244 emits two alpha particles and three gamma rays?

96Cm - 1 SHe+ 3He+ 8+8+x+ [?

Uranium-236