Name _____ Date _____

Applying Knowledge
Section 7.2

Use with textbook pages 302–309.

Radioactive decay

1. Define the following terms.

(a) half-life _____

(b) decay curve _____

(c) parent isotope _____

(d) daughter isotope _____

2. Complete the following tables.

Half-Life	Percent of parent isotope	Percent of daughter isotope
0		
1		
2		
3		
4		

Half-Life	Fraction of parent isotope	Fraction of daughter isotope
0		
1		
2		
3		
4		

3. A rock sample contains 120 g of a radioactive isotope. The radioactive isotope has a half-life of 5 years.

(a) Complete the following table.

Half-Life	Time (a)	Mass (g)
0	0	
1	5	
2	10	
3	15	
4	20	
5	25	

(b) How much of the radioactive isotope if left after 25 years have passed? _____

(c) How many half-lives have passed if there is only 15 g of the parent isotope left?

_____

(d) How many years have passed if there is only 7.5 g of the parent isotope left?

_____

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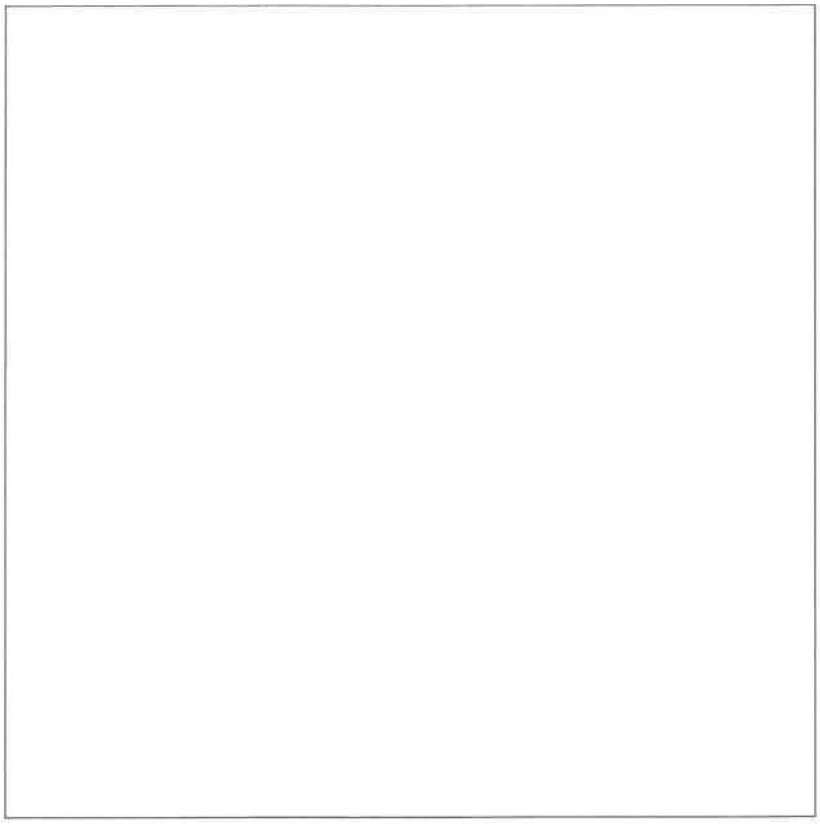
(e) Use the data in the table to graph a decay curve. Label the *x*-axis with Time (a) and the *y*-axis with Mass (g).



4. A rock sample contains 80 g of a radioactive isotope with a half-life of 20 years.

(a) Complete the following table.

Half-Life	Time (a)	Mass of parent isotope (g)	Mass of daughter isotope (g)
0	0		
1	20		
2	40		
3	60		
4	80		
5	100		

(b) How much of the parent isotope is left after 4 half-lives? _____

(c) How much of the parent isotope is left after 100 years? _____

(d) How much of the daughter isotope is present after 60 years? _____

(e) How much time has passed if 77.5 g of the daughter isotope is present? _____

(f) What is the ratio of parent isotope to daughter isotope after 2 half-lives? _____

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