

Exercise 23

Questions

Name:

Age Dating 3

Lab:

Complete and turn in the SCANTRON sheet. Keep these questions.

Refer to your class notes to answer the following:

- 1 _____ atoms is the general name for the original radioactive atoms.
(A) Daughter, (B) Parent
- 2 _____ atoms is the general name for the atoms resulting from radioactive decay. (A) Daughter, (B) Parent
- 3 _____ atoms increase as time passes.
(A) Daughter, (B) Parent
- 4 _____ The more daughter atoms, the older the rock.
(A) True, (B) False

State the amount (fraction) of parent atoms remaining after the following number of half-lives have elapsed:

- 5 _____ 1 half-life
(A) 1/2, (B) 1/4, (C) 1/8, (D) 1/16, (E) 1/32
- 6 _____ 3 half-lives
(A) 1/2, (B) 1/4, (C) 1/8, (D) 1/16, (E) 1/32
- 7 _____ 2 half-lives
(A) 1/2, (B) 1/4, (C) 1/8, (D) 1/16, (E) 1/32
- 8 _____ 5 half-lives
(A) 1/2, (B) 1/4, (C) 1/8, (D) 1/16, (E) 1/32
- 9 _____ 4 half-lives
(A) 1/2, (B) 1/4, (C) 1/8, (D) 1/16, (E) 1/32
- 10 _____ After two half-lives none of the parent isotope remains.
(A) True, (B) False

State the number of half-lives which have elapsed when a sample has the following parent:daughter ratio:

- 11 _____ 1:3 parent:daughter ratio
(A) 1, (B) 2, (C) 3, (D) 4, (E) 5
- 12 _____ 1:7 parent:daughter ratio
(A) 1, (B) 2, (C) 3, (D) 4, (E) 5
- 13 _____ 1:1 parent:daughter ratio
(A) 1, (B) 2, (C) 3, (D) 4, (E) 5
- 14 _____ 1:15 parent:daughter ratio
(A) 1, (B) 2, (C) 3, (D) 4, (E) 5

X decays to P and has a half-life = 20 million years.

- 15 _____ million years is the rock age when X:P is 1:3.
(A) 20, (B) 40, (C) 60, (D) 80, (E) None
- 16 _____ million years is the rock age when X:P is 1:1
(A) 20, (B) 40, (C) 60, (D) 80, (E) None
- 17 _____ million years is the rock age when X:P is 1:7.
(A) 20, (B) 40, (C) 60, (D) 80, (E) None

Y decays to Q and has a half-life = 50 million years.

- 18 _____ million years is the rock age when Y:Q is 1:3.
(A) 50, (B) 100, (C) 150, (D) 200, (E) None
- 19 _____ million years is the rock age when Y:Q is 1:1.
(A) 50, (B) 100, (C) 150, (D) 200, (E) None
- 20 _____ million years is the rock age when Y:Q is 1:7.
(A) 50, (B) 100, (C) 150, (D) 200, (E) None

Z decays to R and has a half-life = 100 million years.

- 21 _____ million years is the rock age when Z:R is 1:7.
(A) 100, (B) 200, (C) 300, (D) 400, (E) None
- 22 _____ million years is the rock age when Z:R is 1:1.
(A) 100, (B) 200, (C) 300, (D) 400, (E) None
- 23 _____ million years is the rock age when Z:R is 1:3.
(A) 100, (B) 200, (C) 300, (D) 400, (E) None

- 24 _____ The granite is older than the dike (intrusion).
(A) True, (B) False
- 25 _____ million years is the age of the dike.
(A) 50, (B) GT 50, (C) LT 100, (D) 100,
(E) None
- 26 _____ million years is the age of the granite.
(A) 100, (B) GT 100, (C) LT 50, (D) 50,
(E) None
- 27 _____ is the period when the dike formed.
(Refer to page 84)
(A) Devonian, (B) Cretaceous, (C) Jurassic,
(D) Permian, (E) None

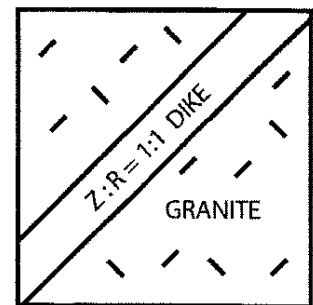


Figure 23.1

- 28 _____ The granite is younger than the dike (intrusion).
(A) True, (B) False
- 29 _____ million years is the age of the granite.
(A) 50, (B) GT 100, (C) LT 100, (D) 100,
(E) None
- 30 _____ million years is the age of the dike.
(A) 100, (B) GT 100, (C) LT 100, (D) 200,
(E) None
- 31 _____ is the period when the granite formed.
(Refer to page 84)
(A) Devonian, (B) Cretaceous, (C) Jurassic,
(D) Permian, (E) None

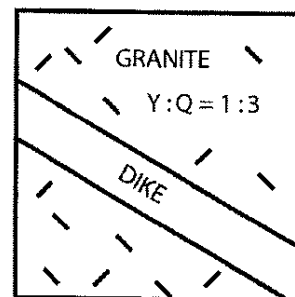


Figure 23.2

- 32 _____ million years is the age of the **shaded** dike.
(A) 20, (B) GT 20, (C) LT 20
- 33 _____ is the period when the **shaded** dike formed.
(A) Devonian, (B) Cretaceous, (C) Tertiary,
(D) Permian
- 34 _____ million years is the age of the granite.
(A) 100, (B) GT 100, (C) LT 100
- 35 _____ million years is the age of the unshaded dike.
(A) 20, (B) GT 100, (C) LT 20, (D) 20-100,
(E) None
- 36 _____ is the period when the granite formed.
(A) Devonian, (B) Cretaceous, (C) Tertiary,
(D) Permian, (E) None

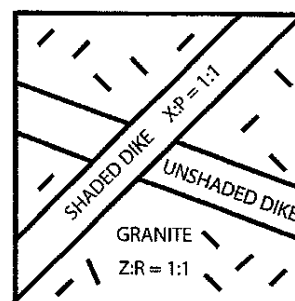


Figure 23.3

- 37 _____ million years is the age of the dike.
(A) 20, (B) LT 60, (C) GT 60, (D) 60,
(E) None
- 38 _____ million years is the age of the granite.
(A) 60, (B) LT 60, (C) GT 60, (D) 20,
(E) None
- 39 _____ is the period when the dike formed.
(A) Devonian, (B) Cretaceous, (C) Tertiary,
(D) Permian, (E) None
- 40 _____ million years is the age of the overlying strata. (A) 80, (B) LT 60, (C) GT 80,
(D) 60, (E) None
- 41 _____ is the type of unconformity.
(A) Nonconformity, (B) Disconformity,
(C) Angular Unconformity

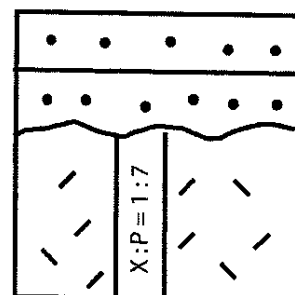


Figure 23.4

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42 _____ million years is the age of the lava flow.
(A) 200, (B) 400, (C) GT 400, (D) 100,
(E) None

43 _____ is the period when the lava flowed.
(A) Devonian, (B) Cretaceous, (C) Tertiary,
(D) Permian, (E) None

44 _____ million years is the age of the strata beneath
the lava flow. (A) 400, (B) LT 400,
(C) GT 400, (D) 200-400, (E) None

45 _____ million years is the age of the strata
above the lava flow. (A) 400, (B) LT 400,
(C) GT 400

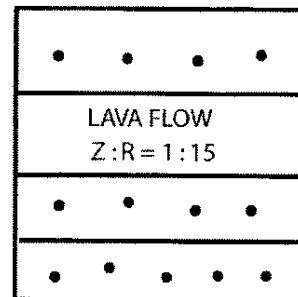


Figure 23.5

46 _____ million years is the age of the granite.
(A) 200, (B) LT 200, (C) GT 200

47 _____ million years is the age of the sandstone.
(A) 100, (B) LT 100, (C) GT 200, (D) 200,
(E) None

48 _____ is the period when the granite formed.
(A) Devonian, (B) Cretaceous, (C) Tertiary,
(D) Jurassic, (E) None

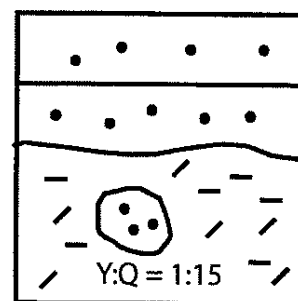


Figure 23.6

49 _____ million years is the age of the granite.
(A) 200, (B) LT 400, (C) GT 500, (D) 400,
(E) None

50 _____ million years is the age of the sandstone.
(A) 400, (B) LT 400, (C) GT 500,
(D) 400-500, (E) None

51 _____ is the type of unconformity.
(A) Nonconformity, (B) Disconformity,
(C) Angular Unconformity

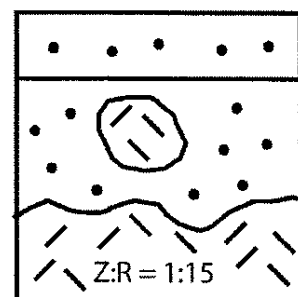


Figure 23.7

Refer to the graph on the following page (Figure 23.8):

52 _____ million years is the age of the rock when the parent daughter ratio is
50:50.
(A) 60, (B) 100, (C) 160, (D) 225, (E) 330

53 _____ is the geologic period when the rock with the **50:50** ratio formed.
(A) Tertiary, (B) Mississippian, (C) Jurassic, (D) Cretaceous,
(E) None

DECAY CURVE

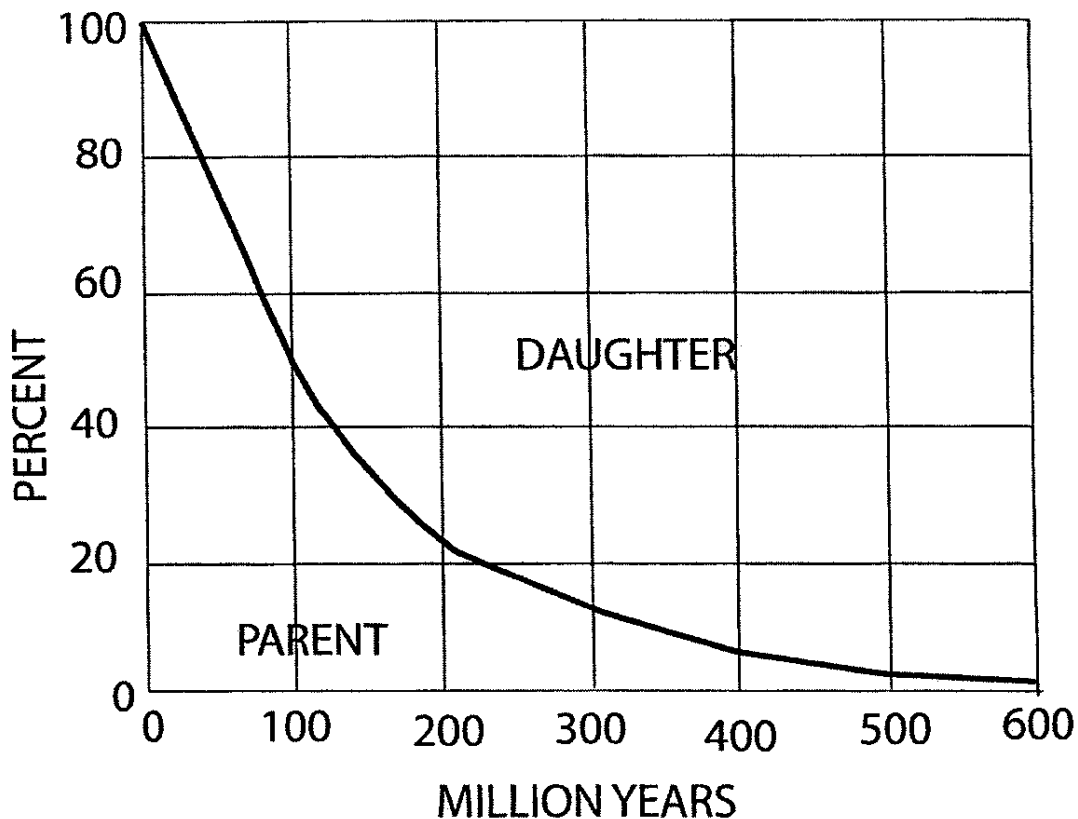


Figure 23.8

- 54 _____ million years is the half-life of the radioactive element in Figure 23.8
(A) 60, (B) 100, (C) 160, (D) 225, (E) 330
- 55 _____ million years is the age of the rock when the parent daughter ratio is **70:30**.
(A) 60, (B) 100, (C) 160, (D) 225, (E) 330
- 56 _____ is the geologic period when the rock with the **70:30** ratio formed.
(A) Tertiary, (B) Mississippian, (C) Jurassic, (D) Cretaceous,
(E) None
- 57 _____ million years is the age of the rock when the parent daughter ratio is **30:70**.
(A) 60, (B) 100, (C) 160, (D) 225, (E) 330
- 58 _____ is the geologic period when the rock with the **30:70** ratio formed.
(A) Tertiary, (B) Mississippian, (C) Jurassic, (D) Cretaceous,
(E) None
- 59 _____ million years is the age of the rock when the parent daughter ratio is **10:90**.
(A) 60, (B) 100, (C) 160, (D) 225, (E) 330
- 60 _____ is the geologic period when the rock with the **10:90** ratio formed.
(A) Tertiary, (B) Mississippian, (C) Jurassic, (D) Cretaceous,
(E) None

USING THE PERIODIC TABLE ON THE NEXT PAGE COMPLETE THE FOLLOWING:

- 61 _____ is the atomic number of zirconium.
(A) 65, (B) 30, (C) 91, (D) 40, (E) none
- 62 _____ is the number of neutrons of lead.
(A) 82, (B) 207, (C) 125, (D) 207.19, (E) none
- 63 _____ is an element with similar properties as chlorine.
(A) I, (B) S, (C) Ar, (D) O, (E) none
- 64 _____ is the atomic number of mercury.
(A) 201, (B) 200, (C) 121, (D) 80, (E) none
- 65 _____ is the number of neutrons of zirconium.
(A) 40, (B) 91, (C) 51, (D) 35, (E) none
- 66 _____ is an element with similar properties as phosphorus.
(A) N, (B) Si, (C) S, (D) Po, (E) none
- 67 _____ is the atomic mass of bromine.
(A) 209, (B) 83, (C) 35, (D) 80, (E) none
- 68 _____ is the atomic number of magnesium.
(A) 27, (B) 59, (C) 29, (D) 64, (E) none
- 69 _____ is the number of neutrons of radium.
(A) 88, (B) 226, (C) 136, (D) 138, (E) none
- 70 _____ is an element with similar properties as calcium.
(A) Ba, (B) Sc, (C) k, (D) Li, (E) none

Modern Periodic Table

MODERN PERIODIC TABLE

The number of electrons in filled shells is shown in the column at the extreme left; the remaining electrons for each element are shown below the symbol and atomic number for each element. The atomic weights shown above the symbols are based on Carbon-12.

PERIODS	METALS										NONMETALS												
	I A	II A		TRANSITION METALS										III A	IV A	V A	VIA	VII A	0				
				III B	IV B	V B	VIB	VII B	VIII		I B	II B											
1	1.00797 H [1]																			1.00797 H [1]	4.0026 He [2]		
2	6.939 Li [3]	9.0122 Be [4]																		18.9984 F [9]	20.183 Ne [10]		
3	22.9898 Na [11]	24.312 Mg [12]																		35.453 Cl [17]	39.948 Ar [18]		
4	39.102 K [19]	40.08 Ca [20]	44.956 Sc [21]	47.90 Ti [22]	50.942 V [23]	51.996 Cr [24]	54.9380 Mn [25]	55.847 Fe [26]	58.9332 Co [27]	58.71 Ni [28]	63.54 Cu [29]	65.37 Zn [30]								79.909 Br [35]	83.80 Kr [36]		
5	85.47 Rb [37]	87.62 Sr [38]	88.905 Y [39]	91.22 Zr [40]	92.906 Nb [41]	95.94 Mo [42]	101.07 Tc [43]	101.07 Ru [44]	102.905 Rh [45]	105.4 Pd [46]	107.870 Ag [47]	112.40 Cd [48]								126.9044 I [53]	131.30 Xe [54]		
6	132.905 Cs [55]	137.34 Ba [56]	[57-71] * Fr [87]	178.49 Hf [72]	180.948 Ta [73]	183.85 W [74]	186.2 Re [75]	190.2 Os [76]	192.2 Ir [77]	195.08 Pt [78]	196.967 Au [79]	200.59 Hg [80]								(210) At [85]	(222) Rn [86]		
7	(223) Fr [87]	(226.05) Ra [88]	[89-103] †	[104]	[105]	[106]	[107]	[108]												32, 18, 7 Po [84]	32, 18, 6 At [85]		
2, 8, 18, 32																				32, 18, 4 Bi [83]	32, 18, 5 Po [84]	32, 18, 6 At [85]	32, 18, 7 Rn [86]
																				164.930 Er [67]	167.26 Tm [69]	168.934 Yb [70]	173.04 Lu [71]
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