

**Earth Science Reference Tables Review:****ANSWER KEY**(Adapted from: At Your Finger Tips; [homercentral.org](http://homercentral.org))**Reference Tables; Page 1**

2. Which of the radioactive substances listed on this page has the shortest half life? **C-14**
3. Write the half life of Uranium-238 as a standard number. **4,500,000,000**
4. If you started with 100 g of K-40, how much would remain K-40 after  $3.9 \times 10^9$  years?  
**12.5 g**
5. What common substance requires the most energy to heat up a unit mass by  $10^\circ\text{C}$ ?

**LIQUID WATER**

6. Which uses more energy, melting a 10 g ice cube or evaporating 10 g of water?

**EVAPORATION**

7. What is the average gradient from A to B? **25-30 m/km**
8. What are the two most common elements in the oceans? **HYDROGEN & OXYGEN**
9. What element makes up about 6% of crustal rocks by mass, but only 0.5% by volume?  
**IRON**

**Reference Tables; Page 2**

10. In what landscape region do you live? **ERIE-ONTARIO LOWLANDS**
11. What is the landscape region around Old Forge, NY? **ADIRONDACK MOUNTAINS**
12. The Catskill Mountains are a part of what larger landscape area? **ALLEGHENY PLATEAU**

**Reference Tables; Page 3**

13. If you want to drive from Albany to Buffalo, what direction must you travel? **WEST**
14. What is the approximate latitude & longitude of Watertown, NY?  **$44^\circ \text{ N } 76^\circ \text{ E}$**
15. What is the numerical age (millions of years) of the bedrock around Syracuse, NY?  
**416-444 M.Y.A.**
16. What is the metric distance (km) from Syracuse to Utica? **70 km**
17. As water flows from Lake Erie into Lake Ontario, most of the change in elevation is at Niagara Falls. What is the total change in elevation? **100 m**
18. Which kind of rocks are most common in the Catskills? (circle one) Igneous, Metamorphic, **Sedimentary**
19. What New York landscape region has the oldest bedrock? **ADIRONDACK MOUNTAINS**

**Reference Tables; Page 4**

20. What ocean current keeps Europe relatively warm? **NORTH ATLANTIC CURRENT**
21. How do local ocean currents affect the climate along the western coast of South America? **COOL PERU CURRENT KEEPS WESTERN SOUTH AMERICA COOLER**
22. What major ocean current can be found at  $30^\circ\text{S}$ ,  $50^\circ\text{W}$ ? **BRAZIL CURRENT**

**Reference Tables; Page 5**

23. With respect to Africa, in what direction is South America drifting? **WEST**
24. What kind of plate boundary is the Mid-Atlantic Ridge? (circle one) Transform, **Divergent**, Convergent
25. What is the major active fault in the Western United States? **SAN ANDREAS FAULT**
26. What has caused the growth of the Himalayan Mountains, north of India?  
**CONVERGENT BOUNDARY BETWEEN INDIA AND EURASIA**
27. Which mantle hot spot is closest to New York? **YELLOWSTONE HOT SPOT**

**Reference Tables; Page 6**

28. What is the final step in the formation of sediment? **COMPACTION AND/OR CEMENTATION**
29. What do we call sediment composed of particles 0.1 cm across? **SAND**
30. How does gabbro differ from basalt? **GABBRO HAS LARGER CRYSTALS**
31. What is the most abundant mineral in diorite? **PLAGIOCLASE FELDSPAR**
32. How fast does a stream have to flow to transport the smallest boulders? **200 cm/sec**

33. What five minerals are common in basalt? **PLAGIOCLASE FELDSPAR, PYROXENE, BIOTITE, AMPHIBOLE, OLIVINE**

**Reference Tables; Page 7**

34. What minerals are most common in sandstone? **QUARTZ, FELDSPAR, AND CLAY MINERALS**

35. Which clastic (fragmental) rock is composed of the smallest particles? **SHALE**

36. What mineral is most abundant in rock salt? (The mineral is not called salt.) **HALITE**

37. What mineral is common in slate, phyllite, schist and gneiss? **MICA**

38. What is the texture of quartzite? **NONFOLIATED**

39. What metamorphic rock is primarily composed of calcite? **MARBLE**

**Reference Tables; Pages 8 & 9**

40. When did North America split apart from Africa and Europe? (period!) **JURASSIC**

41. How old is the Earth? **4,600 MYA (4.6 BILLION YEARS AGO)**

42. What is the first period of the Paleozoic era? **CAMBRIAN**

43. What three periods are *not* represented in the bedrock of New York? **PERMIAN, PALEOGENE, NEOGENE**

44. What animal group first evolved about the same time as the dinosaurs? **MAMMALS**

**Reference Tables; Page 10**

45. At what two depths within the Earth is the temperature above the melting point? **400 km and between 3,000 - 5,000 km**

46. What is Earth's radius in kilometers? **6,400 km** What is its diameter? **12,756 km**

47. What is the composition of Earth's core? **IRON & NICKEL**

48. Which layer of the Earth is the least dense? **CRUST** Most dense; **INNER CORE**

49. In what part of the Earth does the temperature increase fastest with depth?

**ASTHENOSPHERE**

**Reference Tables; Pages 11**

50. How long does it take an S-wave to travel 6000 km? **17 min** ... a P-wave? **9 min 30 sec**

51. How far away is the epicenter if the P-wave arrives 5 minutes before the S-wave? **3,500 km**

52. How far can a P-wave travel in 5 minutes, 40 seconds? **3,000 km**

**Reference Tables; Pages 12**

53. If the wet bulb reads 4°C and the dry bulb records 12°C, what is the dew point? **- 9° C**

54. What is the relative humidity in the conditions specified above? **19 %**

55. What does a negative dew point mean? **FROZEN DEW (ICE)**

**Reference Tables; Pages 13**

56. What is the Kelvin temperature of 0° C? **273** What is this temperature in Fahrenheit? **32°**

57. What is the normal atmospheric pressure in inches of mercury? **29.92**

58. What is the Fahrenheit temperature at this weather station? 74 Celsius? **24 °**

59. What is the atmospheric pressure? 1000.2 mb Is it rising or falling? **FALLING**

60. Wind speed? **15 knots** Wind direction? **SOUTHEAST** Cloud Cover? **50 %**

61. A maritime tropical air mass is **WARM and WET (WARM-WET-LOW/GULF OF MEXICO)**

**Reference Tables; Pages 14**

62. How does the air temperature change as you go higher within the mesosphere? **DECREASES**

63. What name has been given to the boundary at the bottom of the atmosphere? **SEA LEVEL**

64. What form of electromagnetic energy has a wavelength just too long to be visible to us? **INFRARED**

65. How many colors make up visible light? **SIX**

66. What is the prevailing wind direction 45° south of the equator? **NW**

67. Why is precipitation so abundant near the equator? **AIR IS RISING**

**Reference Tables; Pages 15**

68. Although Barnard's Star is relatively close to us, it is hard to see? Compared to the sun, how much light does Barnard's Star give off? **LESS THAN 0.01 TIMES**

69. The North Star is similar to the sun in **COLOR and TEMPERATURE**

How is it very different? **MORE LUMINOUS**

70. Rigel and Betelgeuse are two of the brightest stars in the prominent winter constellation Orion.

How does Betelgeuse appear different from Rigel to us? **COLOR (RED VERSUS BLUE-WHITE)**

71. Of the eight planets, which one spins the fastest on its axis? **JUPITER**

72. Which planet has the most out of round (flattened/eccentric) orbit? **MERCURY**

73. Which planet is closest to the Earth in size? **VENUS**

74. Approximately how many times larger is the sun's diameter than the diameter of the Earth?

**~ 100 X**

#### **Reference Tables; Pages 16**

75. What mineral has a nonmetallic luster, scratches glass and is often pink?

**POTASSIUM FELDSPAR**

76. Name two common minerals that are chemical elements: **SULFUR and GRAPHITE**

77. What is the most obvious difference between amphibole and pyroxene? **CLEAVAGE DIRECTION**

78. What other mineral breaks apart similar to galena? **HALITE**