

**REVIEW OF THE EARTH SCIENCE REFERENCE TABLES**

**DIRECTIONS** Use the *Earth Science Reference Tables* to answer the following questions.

1. The surface of the Allegheny Plateau was mostly formed by sedimentary bedrock deposited during which geologic time period?
2. In which of the following landscape regions would the oldest bedrock be found?
  - 1) Erie-Ontario Lowlands
  - 2) Atlantic Coastal Plain
  - 3) Tug Hill Plateau
  - 4) Adirondack Mountains
3. List the type of rocks that could be found in the Newark Lowlands.
4. Which landscape region separates the Adirondack Mountains from the Catskills?
5. Which landscape region is composed primarily of Cretaceous through Pleistocene unconsolidated sediments?
6. What landscape region is located at 42° 15' N and 74° W?
7. What warm ocean current flows northward along the east coast of the United States?
8. Cool ocean currents flow towards
  - 1) higher latitudes
  - 2) lower latitudes
9. What type of plate boundary is the Mid-Atlantic Ridge?
  - 1) divergent
  - 2) convergent
  - 3) transverse
10. The convergence of two ocean plates is found at the
  - 1) Peru-Chile Trench
  - 2) Mid-Atlantic Ridge
  - 3) Aleutian Trench
  - 4) Atlantic-Indian Ridge
11. A coarse-grained igneous rock with no quartz in its composition would be
12. This igneous rock is glassy and felsic in composition.
13. An igneous rock with mineral grains less than 1 mm and containing potassium feldspar would be

Devonian4SedimentaryHudson-MohawkAtlantic CoastalCatskillsGulfstream2Divergent1GabbroObsidianRhyolite

14. An intrusive igneous rock with approximately 70% pyroxene, 15% plagioclase, and 15% olivine would be classified as

Gabbro

15. What is the primary difference between gabbro and basalt?

Basalt is fine grained

16. What is the size range for a pebble?

.2 - 6.4 cm

17. What is the largest sized particle a stream could transport if its water velocity is 100 cm/sec?

1 cm

18. Which sedimentary rock is composed of cemented shells, shell fragments, and skeletal remains?

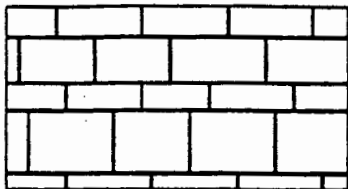
Limestone

19. Which clastic sedimentary rock contains the greatest range of particle sizes?

Conglomerate

20. Which sedimentary rock is represented by the symbol shown below?

Limestone



21. Which sedimentary rock is formed from compacted clay particles?

Shale

22. Which sedimentary rock can be identified by the acid test?

Limestone

23. Name the rock that forms from the metamorphism of limestone.

Marble

24. Which fine-grained metamorphic rock often has a high percentage of ~~chlorite~~ and mica in its composition?

Slate

25. Which foliated rock is formed by high-grade metamorphism?

Gneiss

26. Metamorphism of bituminous coal will result in what rock's formation?

Graphite

27. Solidification of magma will result in the formation of what type of rock? (igneous, metamorphic, sedimentary)

Igneous

28. Sediments form as the result of what process?

Weathering / Erosion

29. Geologic time is subdivided into a number of time units called periods on the basis of

2

- 1) rock thickness
- 2) fossil evidence

- 3) rock types
- 4) radioactive dating of rocks

30. The *Permian Period* began how many million years before the present?

290

Which of the following fossils is found in rocks of *Precambrian* Eon age?

4

- 1) coelophysis
- 2) graptolite
- 3) eurypterid
- 4) stromatolites

4

32. In which of the following geologic periods is the rock record in New York State most complete?

- 1) Tertiary
- 2) Cretaceous
- 3) Permian
- 4) Silurian

2

33. In which of the following periods are fossil invertebrates and vertebrates found in New York State?

- 1) Tertiary
- 2) Jurassic
- 3) Carboniferous
- 4) Devonian

1

34. Which tectonic event did *not* occur during the Ordovician Period in New York State?

- 1) rifting
- 2) continental collision
- 3) subduction
- 4) passive margin

3

35. The *Acadian Orogeny* in New York State occurred at about the same time as

- 1) the extinction of the trilobites
- 2) the extinction of the dinosaurs
- 3) the extinction of the armored fishes
- 4) the Appalachian Orogeny

3

36. The oldest marine invertebrate fossils are found in rocks of which age?

- 1) Mesozoic Era
- 2) Late Proterozoic Era
- 3) Cretaceous Period
- 4) Cambrian Period

4

37. What is the actual temperature at the boundary between Earth's mantle and outer core?

5000°C

38. List Earth's interior zones in order of increasing density.

Crust  
Asthenosphere  
Stiffer Mantle  
Outer Core  
Inner Core

39. Which is denser, ocean crust or continental crust?

Ocean crust

40. Which of Earth's interior zones is inferred to be liquid?

Outer Core

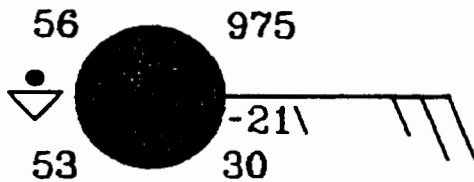
41. What is the pressure at a depth of 5,000 km?

3 million ATM's

42. Together, the crust and rigid mantle make up the

Lithosphere

43. In Earth's crust, what two elements are most abundant by mass?
44. What is the percent (by volume) of oxygen in the troposphere?
45. What is the distance to the epicenter of an earthquake if the arrival time of the P-wave is 10:12:00 and the arrival time of the S-wave is 10:15:40?
46. A seismograph 5,600 km from an earthquake's epicenter records the first arrival P-wave at 08:11:00. What was the origin time of the earthquake?
47. Find the relative humidity if the dry-bulb temperature is 14° C and the wet-bulb temperature is 8° C.
48. Find the dewpoint temperature if the dry-bulb temperature is 20° C and the wet-bulb temperature is 19° C.
49. As the difference between the dry-bulb and wet-bulb temperatures of a sling psychrometer increases, the relative humidity (decreases, increases, remains the same).
50. Identify the following weather data on the station model shown below.



O<sub>2</sub>, Si  
21%

2,200 km

8:00

41%

19° C

decreases

Temperature.....

56° F

Barometric pressure (long form) .....

997.5 mb

Barometric pressure three hours ago based on the barometric trend .....

-2.1mb

995.4 mb

Wind direction.....

East

Wind speed .....

25 knots

Dewpoint temperature .....

53° F

Present weather.....

Very Cloudy, rainy

51. On a weather map, an air mass that is very warm and dry would have what label?

cT

52. Draw the symbol used on a weather map for a cold front.

锯齿状符号

53. Convert 86° F to its equivalent temperature in degrees Celsius.

30° C

54. Convert 0° C to its equivalent temperature in degrees Fahrenheit.
55. Convert 996.0 mb of air pressure to its equivalent pressure in inches of mercury (Hg).
56. Convert 29.10 inches of Hg to its equivalent air pressure in millibars.
57. Which visible wavelength of the electromagnetic spectrum has the shortest wavelength?
58. What is the approximate wavelength in meters of infrared rays?
59. Which planet has the longest period of revolution?
60. Which planet's period of rotation is closest to Earth's period of rotation?
61. What is the eccentricity of the orbit of Mars?
62. The shape of which planet's orbit is least eccentric?
63. Which planet has a density that is less than liquid water?
64. Water vapor is present in which temperature zone of the atmosphere?
65. What change in atmospheric pressure occurs with increasing altitude?
66. What is the temperature at the tropopause?
67. As a rocket passes through the mesopause, it enters which temperature zone of Earth's atmosphere?
68. In which two temperature zones of Earth's atmosphere does temperature decrease with increasing altitude?
69. At what latitudes do surface winds converge?
70. Between 30° N and 60° N planetary winds are generally from which compass direction?
71. In the northern hemisphere, the Coriolis Effect appears to deflect wind to which direction (the right or the left) of the direction of travel?
72. A stream transports a sand grain 400 centimeters in 10 seconds. Calculate the rate the sand grain moved along the stream bed.
73. Which Earth material has the highest specific heat?

32°F

29.41 in

285.5 mb

violet

$7 \times 10^{-5}$

pluto/neptune

Mars

0.093

VENUS

Saturn

troposphere

it decreases

15°C → -55°C

Thermosphere

Troposphere/meso-

0°, 60° N + S

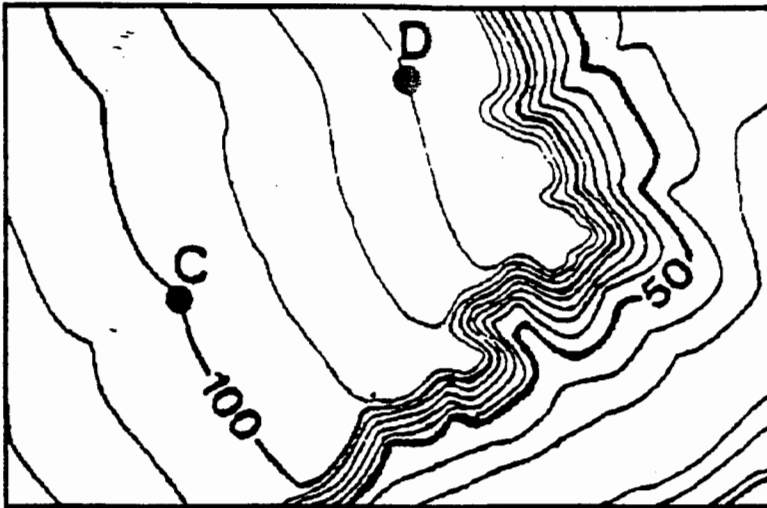
West

right

40 cm/sec

water

74. A portion of a topographic map is shown below. Determine the gradient between points C and D on the map. Round to the *nearest tenth*. (The elevations shown by contour lines are in meters above sea level.)

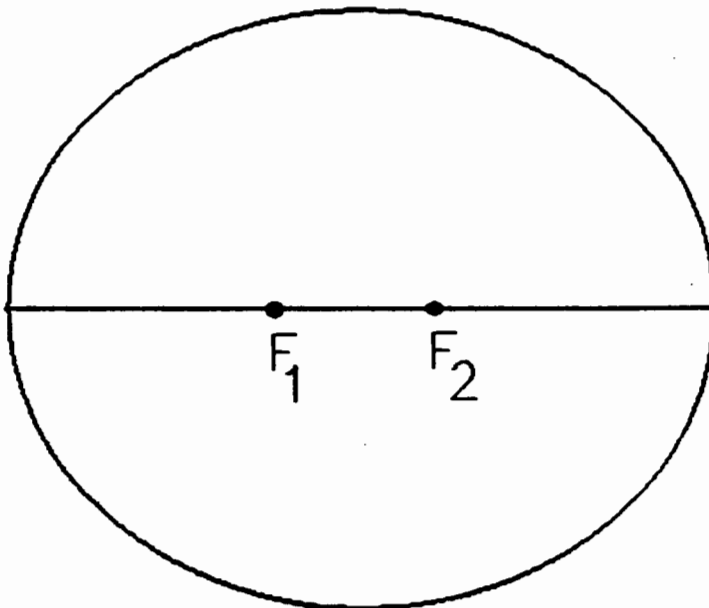


SCALE: 1 cm = 0.5 km

$$\frac{100 \rightarrow 30}{(4 \text{ cm})} = \frac{30}{\cancel{8} \text{ km}}$$

$$15 \text{ m/km}$$

75. Determine the eccentricity of the ellipse shown below. (Round your answer to the *nearest thousandth*.)



(DRAWN TO SCALE)

$$e = \frac{D}{L}$$

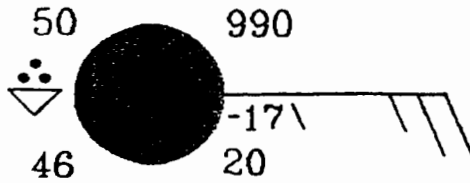
$$= \frac{2 \text{ cm}}{9.4 \text{ cm}}$$

.200

76. What is the diameter of the Moon?

3476 km

~~77.~~ Determine the cloud base altitude for the location represented by the station model shown below.



~~78.~~ How much heat energy would have to be added to a 2,000 gram sample of granite to raise its temperature 20° C?

79. Assuming masses are equal, which of the substances listed in the chart "Specific Heats of Common Materials" would require the least heat energy in order to be heated from 40° C to 50° C?

~~80.~~ How much heat energy will be lost by a 300 gram mass of basalt as it cools from 40° C to 25° C?

81. How much heat energy would be required to vaporize 150 grams of water?

82. Which phase change of water requires the addition of the most heat energy in order to occur?

- |                    |                    |
|--------------------|--------------------|
| 1) solid to liquid | 3) liquid to solid |
| 2) liquid to gas   | 4) gas to liquid   |

~~83.~~ Two planets of equal mass revolve around a star. Planet X is three astronomical units away from the star while planet Y is one astronomical unit away. How many times greater is the force of gravity between Planet Y and the star than the force of gravity between Planet X and the star?

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Iron

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150g x 540cal  
2

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Make sure you can answer these

ESRT

questions

1. What is the formula for eccentricity?  $E = \frac{D}{L}$
2. Name the plate boundary that Iceland is located on. Mid-Atlantic Ridge
3. How does the wavelength of infrared compare to the wavelength of visible light? IR is longer.
4. What happens when acid is placed on calcite or limestone? Reacts/Bubbles
5. During which time PERIOD were the rocks that covered the Allegheny Plateau formed? Devonian
6. What PERIOD did the Taconian Orogeny happen during? Ordovician
7. What are the processes that form igneous rocks? Melting and Solidification
8. Name the cold water current that flows completely around the world. Westwind Drift
9. What is the half life of Uranium-238 and what is its stable decay product?  $4.5 \times 10^9$
10. Name a landscape region where you will find intensely metamorphosed rock. Adirondack Mts.
11. What is the percent mass of OXYGEN found in the Earth's crust? 46.40
12. What is the depth of the interface between the stiffer mantle and the outer core? 2900 km
13. What is the symbol for HAIL?  $\Delta$
14. If the dry-bulb is  $16^\circ\text{C}$  and the wet-bulb is  $10^\circ\text{C}$ , What are the relative humidity and the dew point?  $4^\circ\text{C D.P.} / 45\% \text{ R.H.}$
15. Convert 1016.0 mb to inches of mercury. 30.00 in.
16. What is the composition of MARBLE and LIMESTONE? Calcite
17. What is the stream velocity needed to carry a particle .1 cm in diameter? 50 cm/sec
18. What is located between the South American Plate and the Nazca Plate? Trench
19. Convert  $55^\circ\text{F}$  to Celsius.  $12^\circ\text{C}$
20. Do we every use units on a station model? No
21. What is the density of the OUTER CORE?  $9.9 - 12.1 \text{ g/cm}^3$
22. How long ago did the dinosaurs go extinct? 65 mya
23. How much energy is gained during vaporization? 540 cal/gram (added)
24. How does the specific heat of liquid water compare to the specific heat of basalt? water has a higher specific heat
25. What is the surface elevation of Lake Ontario? 75 meters
26. Name one COURSE grained igneous rock. Granite
27. Name one rock that shows BANDING. Gneiss
28. If the P-wave arrived at 12:03 pm and the S-wave arrived at 12:07 pm. How far is the earthquake from the epicenter? 2800 km
29. Draw the symbol for a cold front.
30. Name the layer of the atmosphere that contains most of the water vapor. Troposphere
31. What is the eccentricity of Saturn? .056
32. What is the temperature, color and luminosity of the star RIGEL?  $11,000^\circ\text{C}$ , white,  $100,000 \times$  lumin.
33. Describe what the winds do near the equator. Converge, rise
34. What does mT stand for? maritime, Tropical (wet, warm)
35. What is the latitude and longitude of SLIDE MOUNTAIN?  $42^\circ\text{N}$ ,  $74^\circ 30'\text{W}$
36. Put the following in order from oldest to youngest.  
DEVONIAN<sup>3</sup> PLEISTOCENE<sup>5</sup> ORDOVICIAN<sup>2</sup> JURASSIC<sup>4</sup> CAMBRIAN<sup>1</sup>
37. What color stars are the hottest? ~~white~~ Blue
- Hand question- 38. If the air temperature is  $28^\circ\text{C}$  and the relative humidity is 53%, what is the wet-bulb temperature?  $21^\circ\text{C}$
39. Name the rock that is formed from sediment that is less than .0004 cm. shale
40. Name the water current that moderates the climate of northern Europe despite its northerly location. North Atlantic current.