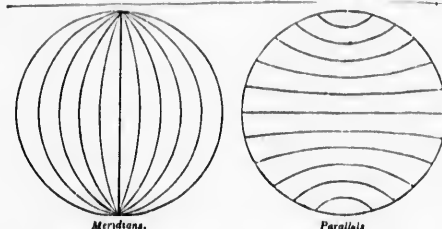


# DEFINITIONS AND EXPLANATIONS.



51. The tropic on the north side of the equator is called the *tropic of Cancer*, and the tropic on the south side of the equator, the *tropic of Capricorn*.

[The word *tropic* is from a Greek word signifying to turn, because when the sun at noon is vertical (or directly over head) to the inhabitants on either of these circles, it appears to stop, and return toward the equator. The sun is vertical to the inhabitants under the tropic of Cancer on or about the 21st of June, to the inhabitants under the equator (or under the line, as it is often called) about the 21st of March and 21st of September, and under the tropic of Capricorn on the 21st of December. When the sun at noon is directly over the equator, the days and nights are equal all over the globe, and these times are, therefore, called *equinoxes*. From the period of the vernal equinox (March 21st) the days, north of the equator, are always more than 12 hours long, and continually growing longer till June 21st, when the sun arrives at our summer solstice, and from that period they grow continually shorter till December 21st, when the sun arrives at the winter solstice.]

52. The *polar circles* are two circles on the globe, around the two poles, at the distance of 23 degrees and 28 minutes. The name of the northern polar circle is the *Arctic circle*; and that of the southern polar circle, the *Antarctic circle*.

Questions.—44. What is the equator? 45. What is the northern hemisphere? the southern hemisphere? 46. What are meridians? 47. What is the first meridian? 48. What are the Eastern and Western hemispheres? 49. What is a degree? a minute? a second? What is the mark for a degree? for a minute? for a second? 50. What are the tropics? What are parallel lines or circles? 51. What is the tropic of Cancer? the tropic of Capricorn? 52. What are the polar circles? What is the Arctic circle? the Antarctic circle?

NOTE.—The figure of the circles given above represents, as nearly as is possible on a flat surface, one half of the equator, tropics, and polar circles.

## V. ZONES.

53. The *Zones* are the divisions of the earth's surface, made by the two tropics and two polar circles. They are called zones because they encompass the earth like zones or belts.

54. There are *five zones*: one Torrid, two Temperate, and two Frigid.

55. The *Torrid zone* is the part of the earth's surface between the tropic of Cancer and the tropic of Capricorn. The *Northern Temperate zone* is the part between the tropic of Cancer and the Arctic circle; and the *Southern Temperate zone*, the part between the tropic of Capricorn and the Antarctic circle. The *Northern Frigid zone* is the part between the Arctic circle and the North Pole; and the *Southern Frigid zone*, the part between the Antarctic circle and the South Pole.

56. The sun in the *Torrid zone* at noon is seen directly, or almost directly, over the heads of the inhabitants; and the heat is very great.

57. The *days and nights in the Torrid zone* are always nearly equal. The sun rises not far from six o'clock, and sets not far from six o'clock, all the year round.

58. The sun in the *Temperate zones* is never seen at noon directly over the heads of the inhabitants, but in some part of the zones, at some seasons of the year, is seen at every other elevation from the level of the horizon upward.

59. The *temperature of the Temperate zones* is variable; in the parts of the zone near the polar circles, very cold in winter, and in the parts near the tropics, very hot in summer; but, on the

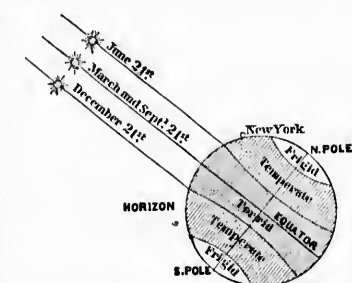
whole, it is temperate, as the name implies, and favorable to the growth of the most useful vegetables and animals.

60. The *days and nights in the Temperate zones* are very unequal, especially in the parts near the polar circles, where the day is nearly 24 hours long in midsummer, and the night nearly 24 hours long in midwinter.

61. The sun in the *Frigid zones* does not set for a certain number of days in summer, but appears to move all round the horizon, and never rises for a certain number of days in winter. At the poles the sun is six months above and six months below the horizon.

62. The *temperature of the Frigid zones* is so cold that nothing can grow there except a few plants in the parts nearest to the Temperate zones, and even the few men that live there are of a dwarfish size. Snow and ice cover land and sea during nearly the whole year.

[The teacher should here dwell upon the fact that heat depends chiefly on the angle at which the sun's rays strike the earth; that where the sun is high above the horizon, and the rays come down perpendicularly, or nearly so, the heat is very great, and that where the sun is low, or near the horizon, it has little power. He may then illustrate by the diagram below how powerful the sun must be in the Torrid zone, and how feeble in the Frigid zone. The other facts stated above are also illustrated by the diagram.]



Questions.—53. What are the zones? why are they called zones? 54. How many zones are there? 55. What, or where, is the Torrid zone? the Northern Temperate zone? the Southern Temperate zone? the Northern Frigid zone? the Southern Frigid zone? 56. How does the sun appear at noon in the Torrid zone? 57. How do the days and nights compare in length in the Torrid zone? 58. How does the sun appear at noon in the Temperate zones? 59. What is the temperature of the Temperate zones? 60. How do the days and nights compare in length in the Temperate zones? 61. How does the sun appear in the Frigid zones? 62. What is the temperature of the Frigid zones?

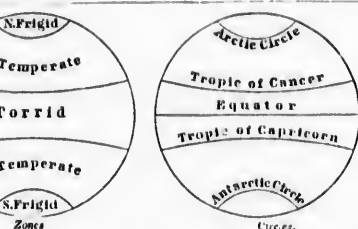
## VI. LATITUDE AND LONGITUDE.

63. The *latitude* of a place is its distance from the equator, measured in degrees and minutes on the meridian which passes through the place.

64. Places north of the equator are in *north latitude*, and those which are south of the equator are in *south latitude*.

NOTE.—The number of degrees in the highest latitude is ninety. The poles, which are farther from the equator than any other points on the globe, are only ninety degrees distant.

65. *Parallels of latitude* are circles on the globe



parallel with the equator. They are all, of course, smaller than the equator, and continually diminish as you approach the poles.

66. The *longitude* of a place is its distance from the first meridian, either east or west, reckoned in degrees on the equator. In the highest longitude there are one hundred and eighty degrees.

67. The *length of a degree of longitude* on the equator is sixty geographical, or sixty-nine and a quarter statute miles; on the parallel of 60°, thirty geographical miles, or one half as many as on the equator.

68. The *length of a degree of latitude* is always sixty geographical, or sixty-nine and a quarter statute miles.

Questions.—63. What is latitude? 64. What places are in north latitude? How many degrees in the highest latitude? 65. What are parallels of latitude? 66. What is longitude? How many degrees in the highest longitude? 67. What is the length of a degree of longitude on the equator? on the parallel of 60°? 68. What is the length of a degree of latitude?

## VII. POINTS OF COMPASS.

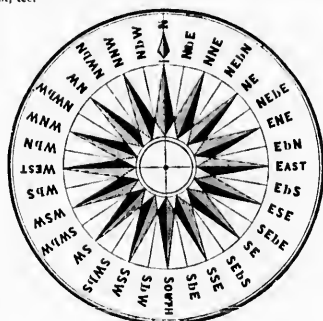
69. The *sensible horizon* is the small circle which bounds our prospect, where the sky and land, or water, seem to meet. The *real horizon*, or the horizon of the globe, is the great circle parallel to the sensible horizon, which divides the earth into two hemispheres.

NOTE.—If you were raised up in the air so high that you could see one half of the globe, the sensible horizon and the real horizon would be the same. The half of the globe which you could see would be the *upper hemisphere*, and the part which you could not see, the *lower hemisphere*.

70. The horizon is divided by the four *cardinal points*, North, East, South, and West, into four equal parts of 90 degrees each.

71. A *compass* is a magnetic needle resting upon a pivot over a circle, the circumference of which is divided into four equal parts, marked North, East, South, and West, each of which is again subdivided.

NOTE.—Here is the picture of a compass. The number of points is 32. The four cardinal or principal points are North, East, South, and West. The point half way between North and East is Northeast; the point half way between East and South, Southeast; the point half way between South and West, Southwest; the point half way between West and North, Northwest, all marked by their initials; N.E. for Northeast; S.E. for Southeast, &c.



72. T... and Sou...  
73. T... With th... with saf...  
Question... real horizon... sensible an... call the hor... either of th...  
70. What... rizon divid...  
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74. A... surface,  
75. h... are count... eye if it... ly over t...  
[The to... Northern h... this he... peculiar... which man... as drawn... outh pace... also, that... he put on... through it...  
76. T... side, cas... side, we...  
NOTE.—... exception... isphere is... circumference...  
77. T... tom of t... longitud... resent p...  
78. T... maps d... princip...  
NOTE.—... is east; if... maps, the... taken as t...  
79. T... press th...