1 1859 Ref: GC, Characteristic, Equator D
A great circle crosses the equator at 141°E. It will also cross the equator at what other longitude?
A. 180°E
B. 41°E
C. 141°W
D. 39°W The longitude 180° away from 141°E is 39°W.

2 1861 Ref: GC, Characteristic, Equator D
A great circle crosses the equator at 162°E. It will also cross the equator at what other longitude?
A. 62°E
B. 126°W
C. 162°W
D. 18°W The longitude 180° away from 162°E is 18°W.

3 1860 Ref: GC, Characteristic, Longitude B
A great circle crosses the equator at 127°W. It will also cross the equator at what other longitude?
A. 127°E
B. 53°E The longitude 180° away from 127°W is 53°E.
C. 27°E
D. 27°W

4 1862 Ref: GC, Characteristic, Longitude A
A great circle crosses the equator at 134°E. It will also cross the equator at what other longitude?
A. 46°W The longitude 180° away from 134°E is 46°W.
B. 124°W
C. 134°W
D. 34°E

5 1863 Ref: GC, Characteristic, Longitude C
A great circle crosses the equator at 157°W. It will also cross the equator at what other longitude?
A. 157°E
B. 57°E
C. 23°E The longitude 180° away from 157°W is 23°E.
D. 57°W

6 1864 Ref: GC, Characteristic, Longitude C
A great circle crosses the equator at 17°W. It will also cross the equator at what other longitude?
A. 173°W
B. 117°W
C. 163°E The longitude 180° away from 17°W is 163°E.
D. 17°E

7 1933 Ref: GC, Characteristic, Longitude A
A great circle crosses the equator at 173°E. It will also cross the equator at what other longitude?
A. 7°W The longitude 180° away from 173°E is 7°W.
B. 73°E
C. 73°W
D. 173°W

8 1917 Ref: GC, Characteristic, Longitude B
A great circle crosses the equator at 93°W. It will also cross the equator at what other longitude?
A. 13°E
B. 87°E The longitude 180° away from 93°W is 87°E.
C. 177°E
D. 177°W

9 784 Ref: GC, Characteristic, Longitude D

The longitude of the upper vertex of a great circle track is 169°E. What is the longitude of the lower vertex?

A. 076°E
B. 169°W
C. 101°W
D. 011°W

The longitude 180° away from 169°E is 011°W.

10 785 Ref: GC, Characteristic, Longitude A

The upper vertex of a great circle track is in LONG 156°00'E. Sailing eastward, the great circle track will cross the equator in LONG _____.

A. 114°00'W
B. 110°00'W
C. 66°00'W
D. 66°00'E

The longitude 90° to the east of 156°00'E is 114°00'W
The vertex and the location of the GC on the equator are 90° apart.

11 786 Ref: GC, Characteristic, Longitude A

The vertex of a great circle track is in LONG 109°E. An eastbound vessel would cross the equator in LONG _____.

A. 161°W
B. 161°E
C. 19°E
D. 19°W

The longitude 90° to the east of 109°E is 161°W
The vertex and the location of the GC on the equator are 90° apart.

12 787 Ref: GC, Characteristic, Vertex C

The latitude of the upper vertex of a great circle is 36°N. What is the latitude of the lower vertex?

A. 36°N
B. 0°
C. 36°S
D. Cannot be determined from the information given

Vertex latitudes are 180° apart and
are numerically the same with contrary names.

13 226 Ref: GC, Gnomonic Chart B

In which voyage, between two points, is the rhumb line distance NOT approximately the same as the great circle distance?

A. The two points are in low latitudes in the same hemisphere.
B. The two points are in high latitudes in the same hemisphere.
C. The two points are near the equator, but in different hemispheres.
D. One point is near the equator, one point is in a high latitude, and both are near the 180th meridian.

The closer a GC track lies to the equator or any meridian, the less distance savings there is.

14 2089 Ref: GC, Gnomonic Chart C

On a gnomonic chart, a great circle track between Los Angeles and Brisbane will appear as a _____.

A. loxodromic curve
B. curved line concave to the equator
C. straight line
D. spiral approaching the poles as a limit

Gnomonic charts are GC charts and straight lines are GC tracks.

15 1918 Ref: GC, Initial Course C

From LAT 07°12'N, LONG 80°00'W, to LAT 47°12'S, LONG 169°18'E, the initial great circle course angle is 137.25°. How would you name this course?

A. N 137.25°E
B. S 137.25°E
C. N 137.25°W
D. S 137.25°W

Course angles are labeled with the initial latitude and the direction of Dlo.

16 1918 Ref: GC, Initial Course B
The initial great circle course angle between LAT 23°00'S, LONG 42°00'W and LAT 34°00'S, LONG 18°00'E is 063.8°. What is the true course?
A. 063.8°T
B. 116.2°T Course angles are labeled with the initial latitude and the direction of Dlo.
C. 243.8°T
D. 296.2°T

17 1918 Ref: GC, Length D
A great circle will intersect the equator at how many degrees of longitude apart?
A. 0°
B. 45°
C. 90°
D. 180° Consider the GC that is made up of the Prime Meridian and the 180° meridian. At the equator, they are 180° apart.

18 1918 Ref: GC, Length D
For navigational purposes, each great circle on the Earth has a length of _____.
A. 3,600 miles
B. 5,400 miles
C. 12,500 miles
D. 21,600 miles 360° with each degree being 60 nm. 360 x 60 = 21,600.

19 1918 Ref: GC, Length B
The distance in longitude from the intersection of a great circle and the equator to the lower vertex is how many degrees of longitude?
A. 45°
B. 90° The vertex and the location of the GC on the equator are 90° apart.
C. 135°
D. 180°

20 1918 Ref: GC, Length A
The distance to the nearest vertex from any point on a great circle track cannot exceed _____.
A. 5400 nautical miles
B. 5840 nautical miles
C. 6080 nautical miles
D. 10,800 nautical miles If the GC distance is greater than 180°, you went the wrong (long) way.