

**Hunter College of the City University of New York
Department of Geography**

ATLAS EXERCISE

EXERCISE 1 – PHYSICAL LANDSCAPE FEATURES

PLACE ANSWERS ON BLUE SHEET USING A #2 PENCIL.

Consult the index for the appropriate maps in the atlas.

1. Which African river empties into the Indian Ocean?
a) Congo b) Niger c) Nile d) Zambezi
2. Which African islands are found in the Gulf of Guinea?
a) Canary b) Comoros c) Azores d) Sao Tome & Principe
3. The Suez Canal connects the Red Sea with
a) Persian Gulf b) Gulf of Aqaba c) Caribbean Sea d) Mediterranean Sea
4. Which is not an island of Japan?
a) Hokkaido b) Sakhalin c) Honshu d) Shikoku
5. Which is not an island of the Philippines?
a) Celebes b) Luzon c) Mindanao d) Palawan
6. Into which body of water does the Taymyr Peninsula of Russia extend?
a) Pacific Ocean b) Black Sea c) Arctic Ocean d) Yellow Sea
7. There are mountains in the Yucatan region of Mexico.
a) True b) False
8. The Persian Gulf is entered by passing through the
a) Strait of Hormuz b) Red Sea c) Panama Canal d) Bab el Mandeb
9. The Maldivé Islands lie closest to
a) Australia b) Africa c) Europe d) India
10. The island at the mouth of the Amazon River is
a) Amazonas b) Selvas c) Parinas d) Marajo
11. The island of Guadalcanal is part of the _____ island group.
a) Solomon b) Society c) Fiji d) Vanuatu
12. The Antarctic Peninsula lies closest to
a) South America b) Africa c) Europe d) Australia
13. The Great Barrier Reef is located off
a) Yucatan b) SW Africa c) Greenland d) Australia

14. Which of the Earth's four oceans does not touch Antarctica?
a) Pacific b) Atlantic c) Arctic d) Indian
15. Which water body is not located between North America and South America?
a) Gulf of Mexico b) Drake Passage c) Caribbean Sea d) Gulf of Honduras
16. Green Bay (Wisconsin) is an arm of
a) Lake Huron b) Lake Michigan c) Lake Superior
17. The city of St. Louis, MO is located near the junction of which two rivers?
a) Columbia-Snake b) Platte-Missouri c) Missouri-Mississippi

For the following questions, match the physical feature with the country.

18. Deccan Plateau
a) India b) China c) Russia d) Afghanistan
19. Hindu Kush (mts.)
a) India b) China c) Russia d) Afghanistan
20. Huang (river)
a) India b) China c) Russia d) Afghanistan
21. Plateau of Tibet
a) India b) China c) Russia d) Afghanistan
22. Ural Mts.
a) India b) China c) Russia d) Afghanistan

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LATITUDE and LONGITUDE

LATITUDE

Latitude is the distance measured in degrees north or south of the equator. The equator is an imaginary line drawn around the surface of the Earth exactly halfway between the North and South Poles. Since from any point on the equator the distance along a north-south line is one-quarter of a circle or 90° , no latitude can be greater than 90° N (the North Pole) or 90° S (the South Pole).

Lines drawn on globes and maps to connect points of equal latitude run east-west parallel to the equator, and are therefore called *parallels of latitude*. On the globe they are circles of progressively smaller circumference for each higher value of latitude: the highest value, 90° N or S, is indicated by a point. The parallels are "small circles" in contrast to a "great circle" which bisects the Earth: the equator.

Since the polar circumference of the Earth is 24,859 miles, every degree of latitude is approximately 69 miles long. Parallels of latitude are evenly spaced; they never touch.

LONGITUDE

Longitude is the distance measured in degrees east or west of the Prime Meridian. The Prime Meridian is an imaginary line drawn on the surface of the Earth from the North Pole through Greenwich, England, to the South Pole. It is half of a great circle. The Prime Meridian is used as the zero line (0°) for determining east-west locations. If a globe or a map is held with north at the top and with the Prime Meridian facing you, places to the right of this line are said to be in east longitude and those to the left of you are in west longitude. East longitude continues half way around the Earth (180°) eastward, or to the right of this view, and west longitude continues half way around westward (180°), or to the left of this view. No longitude can be greater than 180° . The 180° meridian can be designated as either east longitude or west longitude.

Lines drawn on globes and maps to connect places of equal longitude are halves of great circles extending north-south from pole to pole. They are called *meridians of longitude*. They cross parallels of latitude at right angles and together divide each parallel into 360 parts or degrees. (Each degree can be further divided into seconds and minutes.)

Since the parallels of latitude are circles of different circumferences, the length in miles of a degree of longitude varies with latitude, being greatest at the equator ($1/360$ th of the equatorial circumference of the Earth makes one degree of longitude 69 miles long) and decreasing to zero at either pole where all meridians meet. See diagrams in the text and in the atlas.

THE GRID SYSTEM

Together, the parallels of latitude and the meridians of longitude make a network or grid of lines covering the Earth's surface. On a map, they can be drawn for every degree of latitude and longitude, at intervals smaller than one degree or at intervals of multiples of degrees as every five or ten or more. One degree is divided into 60 minutes and one minute is divided into 60 seconds.

When a point falls between the grid lines on a map, its position can be estimated by proportional dividing.

On the globe this grid has the following characteristics:

>The parallels of latitude are circles, parallel to the equator and to each other; they are equally spaced and are of progressively smaller circumference poleward.

>The meridians of longitude cross the parallels at right angles, each meridian being a half great circle, and on any one parallel of latitude the meridians are equally spaced BUT the spacing differs from one parallel to the next, being greatest on the equator and decreasing to zero at the poles.

When this three-dimensional grid is shown on a flat (or two-dimensional) map, it is inevitably distorted. See the section in the atlas on map projections. Always, however, it consists of two sets of lines, one representing the parallels (which run in and indicate east-west direction) and one representing the meridians (which run in and indicate a north-south direction).

By means of this grid, it is possible to locate places precisely on the round Earth. From latitude, we know a place is a given distance north or south of the equator. But since the parallel of latitude is a circle, we do not know where on that circle our place is located. The longitude tells us this since it indicates degrees east or west of the Prime Meridian. The location of any place on Earth is thus at the intersection of a parallel and a meridian, just as the Empire State Building is located at the intersection of Fifth Avenue and 34th Street.

EXERCISE 2 -- LATITUDE AND LONGITUDE

Consult appropriate maps in the Goode's atlas indicated by the pages for the 19th edition/20-21 edition. The page numbers for the 20th and 21st editions are the same. Place all answers on the BLUE sheet using a #2 PENCIL.

I. LOCATING PLACES USING THE EARTH'S GRID

A. Given specific coordinates of latitude and longitude, name the place found there. (Start with atlas pp. 2-3, then go to specific continent maps.)

<u>Latitude, Longitude</u>	<u>Name of Place</u>		
23. 0°, 78°W	a) Colombo	b) Quito	c) Svalbard
24. 51°N, 0°	a) London	b) Bouvetoya	c) mouth of Amazon R.
25. 30°N, 31°E	a) Cairo	b) Durban	c) Uganda
26. 30°S, 31°E	a) Cairo	b) Durban	c) Fernando de Noronha
27. 30°N, 90°W	a) New Orleans	b) Bhutan	c) North Pole
28. 16°S, 68°W	a) Dominican Rep.	b) La Paz	c) Arabian Sea

B. Given the name of a place, find that place on the map (use pp. 2-3 of atlas) and estimate the coordinates of latitude and longitude to the nearest degree.

<u>Name of Place</u>	<u>Latitude, Longitude</u>		
29. New York City	a) 41°N, 74°W	b) 41°W, 74°N	c) 74°N, 35°W

- | | | | |
|---------------------------|----------------|----------------|----------------|
| 30. Shang-hai, China | a) 31°E, 121°E | b) 121°N, 31°W | c) 31°N, 121°E |
| 31. Bombay, India | a) 29°N, 73°E | b) 19°N, 73°E | c) 20°N, 75°W |
| 32. Sao Paulo, Brazil | a) 46°S, 24°E | b) 16°S, 50°W | c) 24°S, 46°W |
| 33. Tahiti, Fr. Polynesia | a) 17°S, 149°W | b) 180°, 30°N | c) 149N, 17°S |

II. DIFFERENT MEANINGS OF EAST AND WEST

The terms **east** and **west** are used in three senses and it is important to distinguish between them. In the following discussion, assume you are looking at a globe held with the north at the top – a common orientation but by no means a necessary one. The three usages are:

A. Longitude. Places with east longitude are to the right of the Prime Meridian (assuming the orientation of the globe specified above), while those with west longitude are to the left.

B. Limits of an area. Those parts of an area farthest to the right are the easternmost, while those farthest to the left are the westernmost. On maps it is safe to follow this rule only if the parallels of latitude are straight lines parallel to the top and bottom of the page. If they are curved, you must follow their curvature to find the easternmost and westernmost extremities of an area. Compare the map on pp. 2-3 with the one on pp. 180-81/196-97. Note that in this usage there is no necessary relation to longitudinal designation, for the easternmost part of any area may be in west longitude and vice versa.)

C. Direction of movement. If you are traveling with the North Pole on your left, you are going east regardless of your longitude. If the North Pole is to your right, you are going west.

Thus you are going east when you travel:

- a) from 15°W across the Prime Meridian to 15°E,
- b) from 15°E to 30°E,
- c) from 30°W to 15°W, and
- d) from 165°E across the 180° meridian to 165°W.

You are going west when you travel:

- a) from 15°E across the Prime Meridian to 15°W,
- b) from 30°E to 15°E,
- c) from 15°W to 30°W, and
- d) from 165°W across the 180°de meridian to 165°E.

The following exercises will illustrate the three usages of east and west. When approximate longitude is called for, estimate it by paying attention to the blue numbers along the map's border.

See atlas p. 82/89.

Canada's easternmost area is found on the island of Newfoundland.

34. The approximate longitude of its easternmost point is

- a) 40°W b) 53°W c) 50°N

Canada's westernmost area borders on Alaska.

35. The approximate longitude of its westernmost point is

- a) 141°W b) 70°W c) 70°N

36. If you travel across Canada from its western extremity to its easternmost area, you are traveling in _____ direction.

- a) an easterly b) a westerly c) a northerly d) a southerly

37. However, all the time you are in
a) east longitude b) west longitude

See atlas page 224-25/240-41.

The easternmost part of the Pacific Ocean lies off the coast of northern Chile.

38. It has an approximate longitude of
a) 71°W b) 89°W c) 20°S
39. If you travel across the Pacific Ocean from Australia to Chile, you are going predominantly in _____ direction.
a) an easterly b) a westerly c) a northerly d) a southerly
40. During this journey, you started in
a) east longitude b) west longitude
41. and ended in
a) east longitude b) west longitude

See atlas page 209/229.

The easternmost part of the continent of Africa is found in the country of Somalia.

42. Its approximate longitude is
a) 10°N b) 51°E c) 60°E
- The westernmost part of Africa is found in the country of Senegal.*
43. Its approximate longitude is
a) 15°N b) 17°W c) 30°W
44. If you travel across Africa from its western extremity to its eastern extremity, you are going in _____ direction
a) an easterly b) a westerly c) a northerly d) a southerly
45. During this journey, you started in
a) east longitude b) west longitude
46. and ended in
a) east longitude b) west longitude

III. DIFFERENT MEANINGS OF NORTH AND SOUTH

The terms **north** and **south** are used in three senses as follows:

A. Latitude. If a globe is held with the North Pole up, places with north latitude are above the equator, while those with south latitude are below it.

B. Limits of an area. The northernmost limit of a region is the part **nearest** to the North Pole (or farthest from the South Pole), and the southernmost part is **farthest** from the North Pole (or nearest to the South Pole). The northernmost and southernmost positions on a map must be determined not in terms of position on the page, but in terms of relationship to parallels of latitude which do not always run straight across the page. See the section on map projections in the atlas. Also, **find north** on the Asia (p. 178/192), India (pp. 186-87/202-03), Antarctica (p. 219/224), and North Lands (p. 220/244) maps. Note that the northern and southern limits of an area can have either north or south latitude, depending on the relative location of the area with reference to the equator.

C. Direction of movement. If you are traveling toward the North Pole, you are going north, regardless of what your latitude is. If you are traveling toward the South Pole, you are going south.

Thus you are going north when you travel:

- a) from 10°N to 20°N,
- b) from 10°S to 10°N, and
- c) from 20°S to 10°S.

You are going south when you travel:

- a) from 20°N to 10°N,
- b) from 10°N to 10°S, and
- c) from 10°S to 20°S.

The following exercises will illustrate the three usages of north and south. When approximate latitude is called for, estimate it by paying attention to the blue numbers along the map's border.

See atlas page 131/143.

47. Guyana's northernmost part has an approximate latitude of
a) 0° b) 5°N c) 8°N
48. Guyana's southernmost part has an approximate latitude of
a) 0°N b) 1°N c) 59°W
49. If you travel from Guyana's northern limit which is in
a) north latitude b) south latitude
50. to its southern limit which is in
a) north latitude b) south latitude
51. you are going in a _____ direction.
a) an easterly c) a northerly b) a westerly d) a southerly

See atlas page 128/139.

Brazil's northernmost part borders on the country of Guyana.

52. Its approximate latitude is
a) 5°N b) 15°N c) 0°

Brazil's southernmost part borders on the country of Uruguay.

53. Its approximate latitude is
a) 30°S b) 33°S c) 35°S
54. If you travel from Brazil's northern limit which is in
a) north latitude b) south latitude
55. to its southern limit which in
a) north latitude b) south latitude
56. you are traveling in _____ direction.
a) an easterly b) a westerly c) a northerly d) a southerly

See atlas page 132/144.

Argentina's northernmost part borders on the country of Bolivia.

57. Its approximate latitude is
a) 20°S b) 22°S c) 25°S

Argentina's southernmost part borders on the country of Chile.

58. Its approximate latitude is
a) 51°S b) 55°S c) 60°S

59. If you travel from Argentina's northern limit which is in
 a) north latitude b) south latitude
60. to its southern limit which in
 a) north latitude b) south latitude
61. you are traveling in _____ direction.
 a) an easterly b) a westerly c) a northerly d) a southerly

TIME

USE the Time Zone map in the ATLAS, not the one in the textbook.

62. How many standard time zones are there?
 a) 24 b) 12 c) 30
63. How many time zones are shown on the map when you include the areas that do not conform to standard time zones?
 a) 24 b) less than 24 c) more than 24
64. When it is 12 Noon in London, what time is it in Paris?
 a) 12 Noon b) 1 PM c) 2 PM
65. When it is 1 PM in Rome, what time is it in Cape Town, South Africa?
 a) 12 Noon b) 1 PM c) 2 PM
66. When it is 6 AM in Moscow, Russia, what time is it in Bombay, India?
 a) 12:30 AM b) 8:30 AM c) 5:30 AM

When it is 2 PM in Anchorage, Alaska, what time is it in:

67. New York City?
 a) 7 PM b) 6 PM c) 10 AM
68. Los Angeles, Calif.?
 a) 4 AM b) 3 PM c) 1 PM
69. Beijing, China?
 a) 7 AM b) 11 AM c) 2 PM
70. If you leave New York City at 12 Noon and it takes 5 hours to fly to Seattle, at what time, locally, would you arrive in Seattle?
 a) 9 AM b) 2 PM c) 5 PM
71. If you leave New York City at 6 PM and it takes 2 1/2 hours to fly to Miami, at what time, locally, would you arrive in Miami?
 a) 7:30 PM b) 6 PM c) 8:30 PM

When it is 2 PM, Tuesday, in Lima, Peru,

72. what time is it in Sydney, Australia?
 a) 5 AM b) 2 PM c) 11 PM
73. what day is it in Sydney, Australia?
 a) Monday b) Tuesday c) Wednesday

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M A P S C A L E

The scale of a map is the ratio between distance on the map and distance on the Earth's surface. It may be expressed in three ways:

1. **Numerically**, as a ratio or fraction

1:63,360 or 1 (distance on the map)

63,360 (distance on the Earth's surface)

2. **Verbally** 1 inch to 1 mile (not one inch equals one mile)

3. **Graphically** 0 1 2
 |_____ |_____ |

Since there are 63,360 inches in one mile, the scale 1:63,360 is exactly one inch to one mile. However, the scale 1:62,500, which is *approximately* one inch to one mile is often used because 62,500 is an even fraction (1/16) of one million, and is thus a more convenient figure to work with. Multiples or divisions of it are always even fractions of one million

Map scales are described as **large** and **small** in a relative sense. The more closely the size of features on a map approaches their actual size on the Earth's surface, the larger is the scale of the map and the more nearly the fractional expression of the scale approaches unity, i.e., 1:1. A large scale map, therefore, shows more detail and less area than does a small scale map.

EXERCISE 3 - M A P S C A L E

INSTRUCTIONS: Answer all questions by filling in the correct circle on the *BLUE* answer sheets. Use a #2 pencil. Page numbers refer to the 19th edition/20-21 edition of Goode's World Atlas. The pages of 20th and 21st editions are the same.

To answer the following questions, refer the U.S. map on p. 97/107 of the atlas. Find the approximate distance in miles and then in kilometers between the cities listed below. (Use a piece of string or the edge of a piece of paper to determine the distance on the map from dot to dot. Then lay this distance off against the graphic scale at the bottom of p. 97/107 to find the number of miles and kilometers.)

74. The approximate distance in miles from Newark, NJ to Des Moines, Iowa is
a) 800 mi b) 1000 mi c) 1600 mi

75. The approximate distance in miles from Salt Lake City, Utah to Reno, Nev. is
a) 450 mi b) 600 mi c) 720 mi

76. The approximate distance in miles from Orlando, Fla. to Tampa, Fla. Is
a) 80 mi b) 100 mi c) 130 mi

Using a piece of tracing paper, first trace the outline of the islands of Andros (p. 122/134), Taiwan (p. 193/209) and Madagascar (p. 209/229), then compare them as to size.

77. Which statement best describes the **apparent** length of the islands in relation to each other?
a) The islands are definitely the same size.
b) It is impossible to compare them.
c) They appear to be of similar size.

Using a ruler, measure the length of each island.

78. In the atlas, each island is about _____ long.
a) 1 inch b) 1.5 inches c) 2 inches

Using the graphic scale for each map, determine the length in miles of each island.

79. Taiwan is about _____ long.
a) 110 mi b) 250 mi c) 1050 mi

80. Madagascar is about _____ long.
a) 110 mi b) 250 mi c) 1050 mi

81. Andros is about _____ long.
a) 110 mi b) 250 mi c) 1050 mi

Using the information above, answer the following questions.

82. The equivalent distance in miles from the same length of line on the pages of the atlas is _____ on Madagascar than for Andros or Taiwan.
a) greater b) lesser

83. Therefore, Madagascar must be the _____ of the three islands.
a) largest b) smallest

Determining Equivalent Distance and Area Represented from Scale.

The ability to convert a numerical scale into a verbal scale allows the reader to ascertain distance and surface area represented on the map. For example: 1:62,500 or one inch to one mile or 4 sq. mi. Once area is known, the amount of detail that can be logically portrayed becomes evident to the reader.

Refer to the columns below.

From Column B, choose the correct verbal (word) equivalent of the numerical scales listed in Column A. Then from Column C determine the area for each of the scales listed in Column A based on the premise that the map measures two inches by two inches. *See the 1:62,500 **boldfaced** example.*

"A" NUMERICAL SCALE	"B" APPROX. EQUIVALENT IN INCH TO MILE SCALE	"C" AREA (sq.mi.) REPRESENTED BY A 2" x 2" MAP
84. 1:31,250	a) one inch to half a mile b) one inch to two miles	1 sq. mi.
1:62,500	one inch to one mile	4 sq. mi.
85. 1:125,000	a) one inch to twelve miles b) one inch to two miles	16 sq. mi.
86. 1:250,000	one inch to four miles	a) 16 sq. mi. b) 64 sq. mi.
87. 1:500,000	one inch to eight miles	a) 64 sq. mi. b) 256 sq. mi.
88. 1:1,000,000	a) one inch to twelve miles b) one inch to sixteen miles	1,024 sq. mi.

89. Of the scales listed above, 1:1,000,000 is the
 a) smallest b) largest

90. Therefore, it shows the _____ area.
 a) most b) least