Name __KEY__

Date _____

Period _____

# Homework

# Longitude and Latitude

Part I – General knowledge

1) Lines of longitude are called __Meridians__ On a map they run __N__ & __S__ but are measured in degrees __East__ or __West__ of the __Prime Meridian__

2) Lines of latitude are called __parallels__ On a map they run __E__ & __W__ but are measured in degrees __North__ or __South__ of the __Equator__

3) In one complete day the Earth turns __360°__ degrees on its axis. That means that every hour, the earth turns __15°__ degrees.

The latitude for the Tropic of Capricorn is __23½°S__

The latitude for the Tropic of Cancer is __23½°N__

Part II – Time questions

5) New York is found at 75 W longitude. If it is 11 P.M. in New York, what time is it at the Prime Meridian?

5hrs.
15⟌75
(E↑)

11pm

75°W

0°

[4AM]

4AM
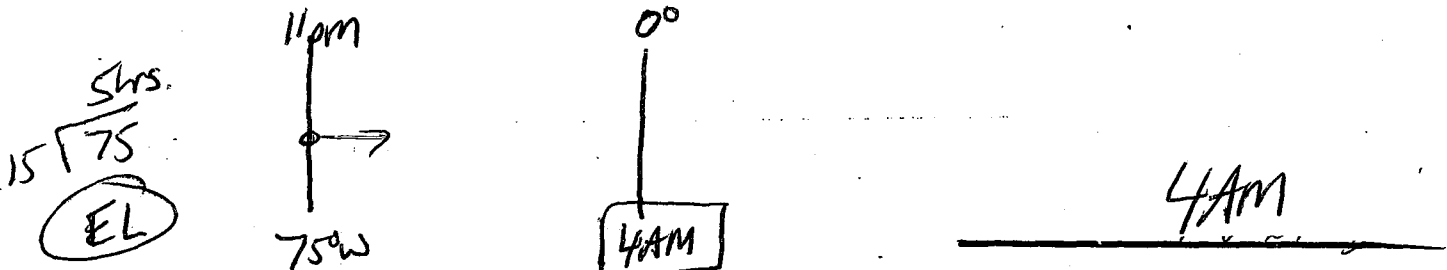
6) Rio de Janeiro is found at 45 W longitude. Moscow is found at 45 E longitude. If it is 2 P.M. in Moscow, what time is it in Rio?

6hrs.
15⟌90

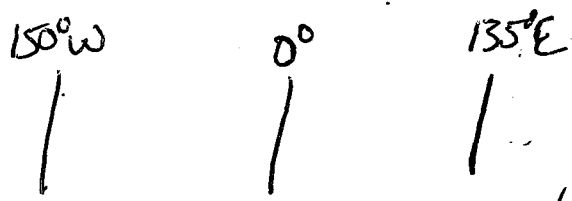45°W

0°

45°E

(W E)

[8AM]

2pm
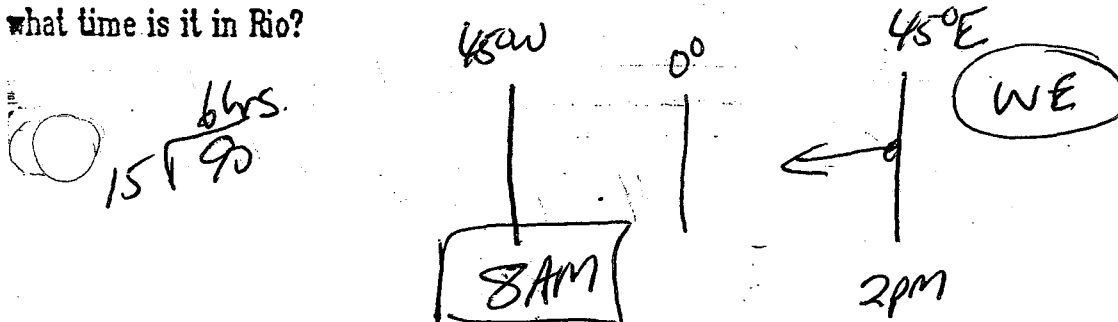
**7)** If you fly 135 degrees of longitude to the west, what will happen to the time?

$$\frac{9hrs}{15 \overline{)135^\circ}}$$

**9hrs Earlier.**

**8)** Anchorage, Alaska is found at 150 W longitude. How many hours of time separate Anchorage and Tokyo, Japan if Tokyo is found at 135 E longitude?
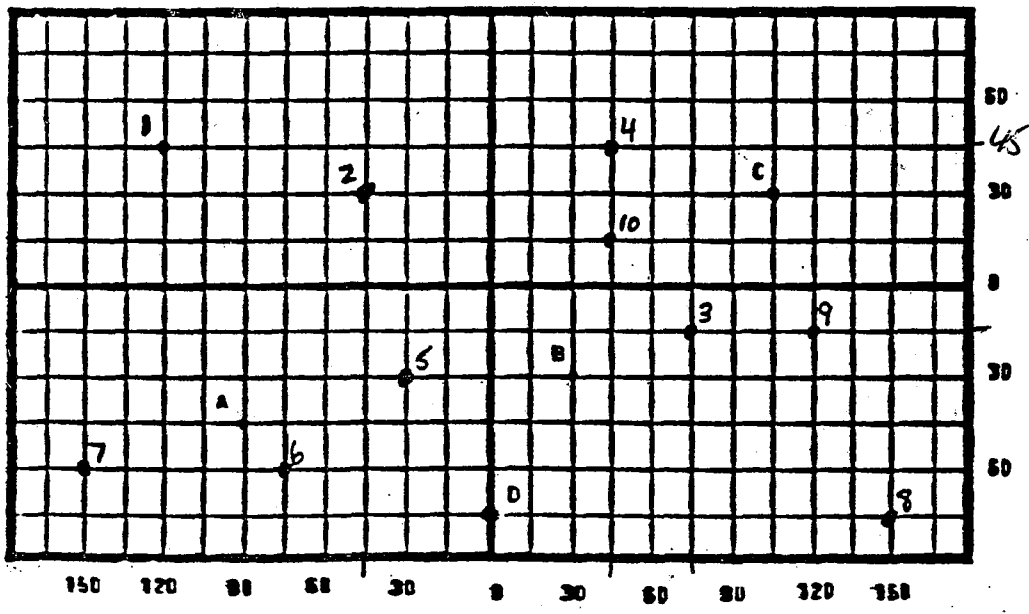
150°W       0°       135°E

$$\begin{array}{r} 150 \\ +135 \\ \hline 285^\circ \end{array}$$

$$\frac{19}{15 \overline{)285}}$$

135°E    180°    150°W

45°    30°

$$\begin{array}{r} 30 \\ +45 \\ \hline 75^\circ \end{array}$$

$$\frac{5hrs}{15 \overline{)75^\circ}}$$
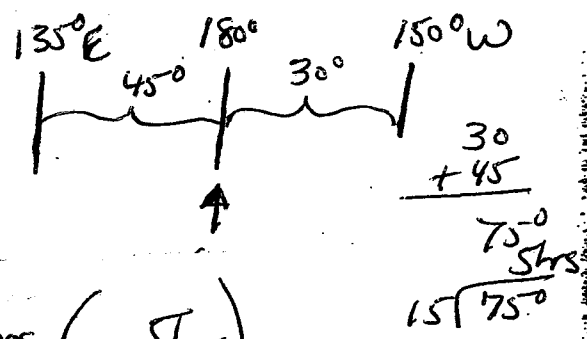
**19hrs (or 5hrs)**

**Part III –** Longitude and Latitude on a map.
**(Include Directions)**



1. __45°N, 120°W__
2. __30°N, 45°W__
3. __75°S, 75°E__
4. __45°N, 45°E__
5. __30°S, 30°W__
6. __60°S, 75°W__
7. __60°S, 150°W__
8. __75°S, 150°E__
9. __15°S, 120°E__
10. __15°N, 45°E__

What 2 points have the same time? __4 + 10__
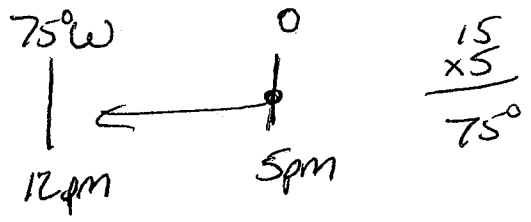How many hours between points 3 + 5? __7hrs__

1. What could be the approximate location of an observer if he measured the altitude of Polaris to be 41 degrees above the horizon?
   1) Watertown
   2) Massena
   3) Buffalo
   4) New York City  *(circled)*

   **4**

2. Base your answer to the following question on the diagram below, which represents latitude and longitude lines on Earth. Points *A* through *E* represent locations on Earth. Arrows represent direction of rotation.

   **North Pole**
   **Prime Meridian (0°)**
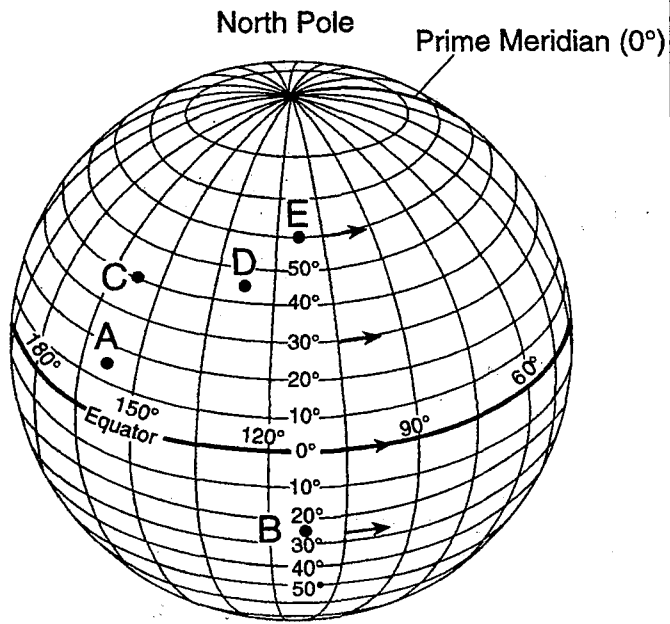
   What is the approximate latitude and longitude of location *A*?
   1) 160° N, 15° E
   2) 160° S, 15° W
   3) 15° N, 160° E
   4) 15° N, 160° W  *(circled)*

   **4**

3. Which latitude and longitude coordinates represent a location on the continent of Australia?
   1) 20° N, 135° E
   2) 20° N, 135° W
   3) 20° S, 135° E  *(circled)*
   4) 20° S, 135° W

   **3**

4. As a ship crosses the Prime Meridian, the altitude of *Polaris* measured from the ship is 50°. What is the ship's location?
   1) 0° latitude 50° east longitude
   2) 0° latitude 50° west longitude
   3) 50° north latitude 0° longitude  *(circled)*
   4) 50° south latitude 0° longitude

   **3**

5. When the time of day for a certain ship at sea is 12 noon, the time of day at the Prime Meridian (0° longitude) is 5 p.m. What is the ship's longitude?
   1) 45° W
   2) 45° E
   3) 75° W  *(circled)*
   4) 75° E

   **3**

   75°W        0

   12pm        5pm

   $\begin{array}{r} 15 \\ \times 5 \\ \hline 75° \end{array}$

6. The approximate latitude of Utica, New York, is
   1) 43°05' N  *(circled)*
   2) 43°05' S
   3) 75°15' E
   4) 75°15'W

   **1**

7. As a ship crosses the Prime Meridian, an observer on the ship measures the altitude *of Polaris* at 60°. What is the ship's location?
   1) 60° south latitude and 0° longitude
   2) 60° north latitude and 0° longitude  *(circled)*
   3) 0° latitude and 60° east longitude
   4) 0° latitude and 60° west longitude

   **2**

Base your answers to questions **8** and **9** on the map below, which shows the latitude and longitude of five observers, *A, B, C, D,* and *E*, on Earth.
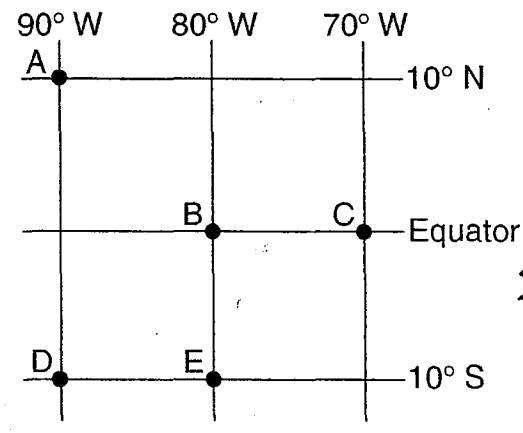
Same
Longitude =
Same
Time.

8. Which two observers would be experiencing the same apparent solar time?
   1) *A* and *C*
   2) *B* and *C*
   3) *B* and *E*  *(circled)*
   4) *D* and *E*

   **3**

9. What is the altitude of *Polaris* (the North Star) above the northern horizon for observer *A*?
   1) 0°
   2) 10°  *(circled)*
   3) 80°
   4) 90°

   **2**

   Altitude of Polaris
   = Latitude of
   Observer

Base your answers to questions **10** and **11** on the world map below. Letters *A* through *D* represent locations on Earth's surface. KEY



**West longitude** ··· **East longitude**

160° apart
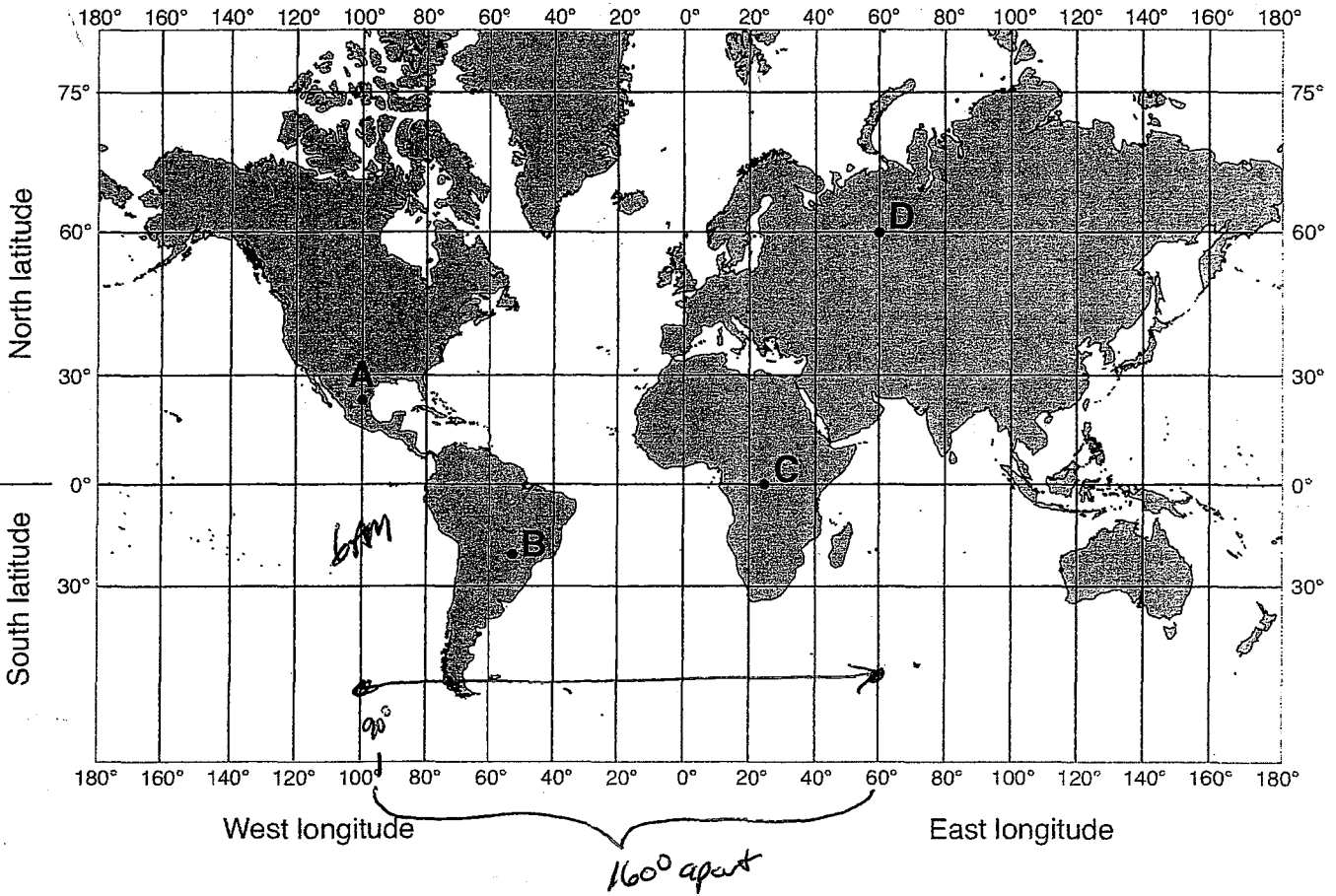
10. At which location could an observer *not* see *Polaris* in the night sky at any time during the year?
   1) A           (2) B           3) C           4) D          2

11. If it is 6 am at location A, what time is it at location D?
   1) 1 am          2) 2 am          3) 1 pm          4) 2 pm

$$15 \overline{\smash{)}160°} \quad \begin{array}{r} 10 \\ \underline{15\,0} \\ 1\,0 \end{array}$$

4pm