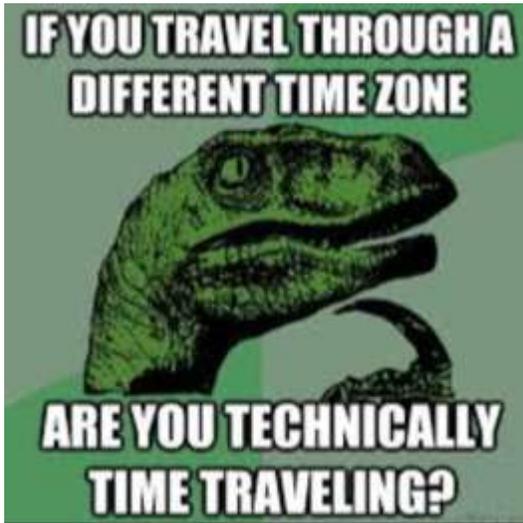


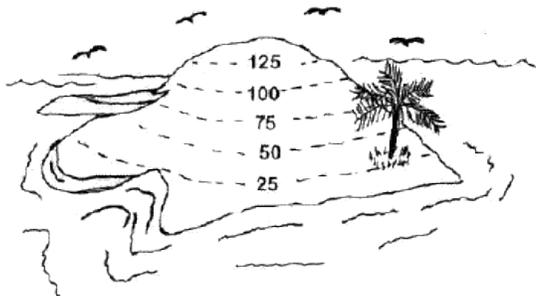
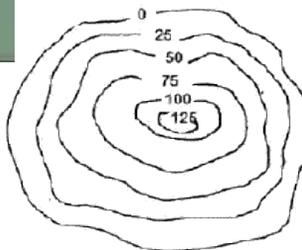
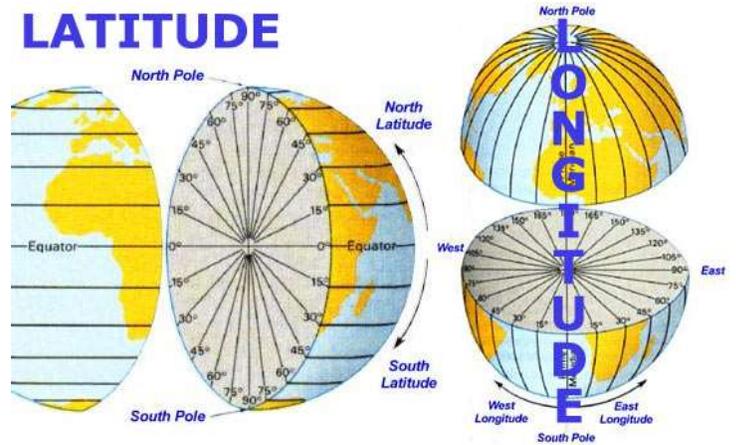
Practice Packet

Topic 2: Measuring Earth

Earth



LATITUDE



Vocabulary: _____

Lesson 1: _____

Lesson 2: _____

Lesson 3: _____

Mini Lesson: _____

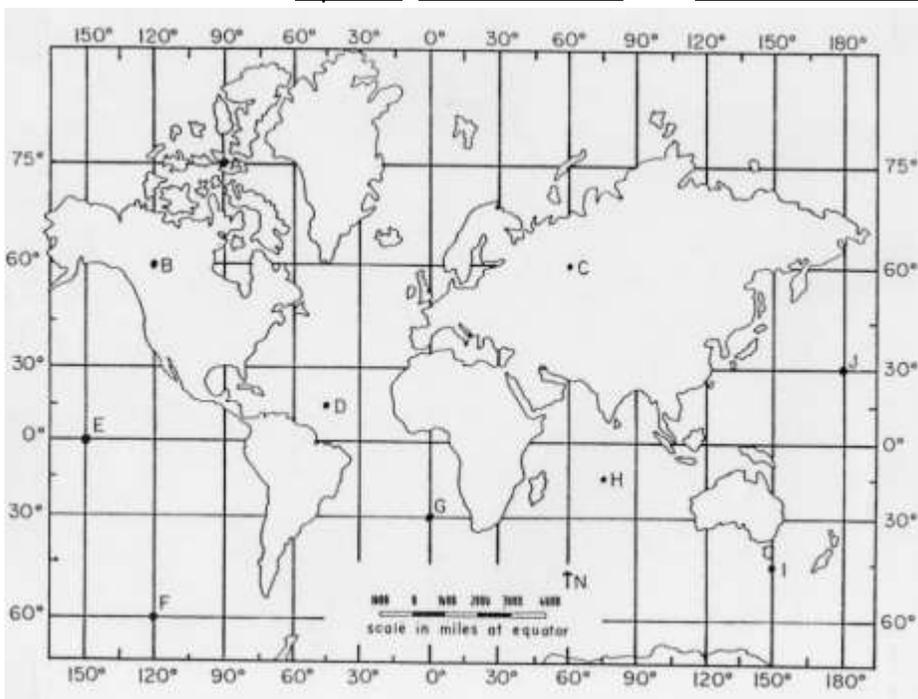
Name: _____

PRACTICE PACKET: TOPIC 2 MEASURING EARTH

Latitude Longitude Pre-Test

- To locate exact places on the earth, one must look at
 - The intersecting lines of latitude & longitude
 - The lines of latitude only
 - The lines of longitude only
 - A neighboring area to describe the location
- _____ lines on a globe are measured from east to west.
 - Latitude
 - Longitude
- When measuring the lines of latitude, always begin with the _____, which represents 0° .
 - Prime Meridian
 - Equator
 - Tropic of Cancer
 - Tropic of Capricorn
- The highest number of degrees in latitude is 90.
 - True
 - False
- When measuring the lines of longitude, always begin with the _____, which represents 0° .
 - International Date Line
 - Equator
 - Prime Meridian
 - Tropic of Cancer
- To locate something on the Earth, you would write the numbers in which format?
 - Minutes, Degrees, Seconds
 - Degrees, Minutes, Seconds
 - Seconds, Minutes, Degrees
 - Degrees, Seconds, Minutes
- Freddy is standing at 41°N , Suzanne is at 12°N . Which one is closer to the Equator?
 - Freddy
 - Suzanne
 - They are the same distance
- When stating the location of a place, you always give the longitude first.
 - True
 - False

Directions: **Label** the Equator, Prime Meridian, and International Date Line.



9. What is the latitude and longitude for each location. Be sure to include compass directions.

B: _____

C: _____

D: _____

E: _____

F: _____

BONUS: Label the USA & put a star (*) where New York State would be located.

PRACTICE PACKET: TOPIC 2 MEASURING EARTH

VOCABULARY

For each word, provide a short but specific definition from YOUR OWN BRAIN! No boring textbook definitions. Write something to help you remember the word. Explain the word as if you were explaining it to an elementary school student. Give an example if you can. Don't use the words given in your definition!

Contour Line: _____

Coordinate System: _____

Elevation: _____

Equator: _____

Gradient: _____

Isoline: _____

Latitude: _____

Longitude: _____

Prime Meridian: _____

Profile: _____

Topographic Map: _____

Polaris: _____

Slope: _____

Lesson 1- Latitude & Longitude

Objective:

- I can explain what Latitude is & what compass direction it is measured in.
- I can name the special lines of Latitude
- I know the name of the star that helps find latitude in the Northern Hemisphere
- I can explain what Longitude is & what compass direction it is measured in.
- I can name the special lines of Longitude
- I can locate places on a map using latitude and longitude

Questions:

1. What is wrong with the following location: 135° N, 185° E?

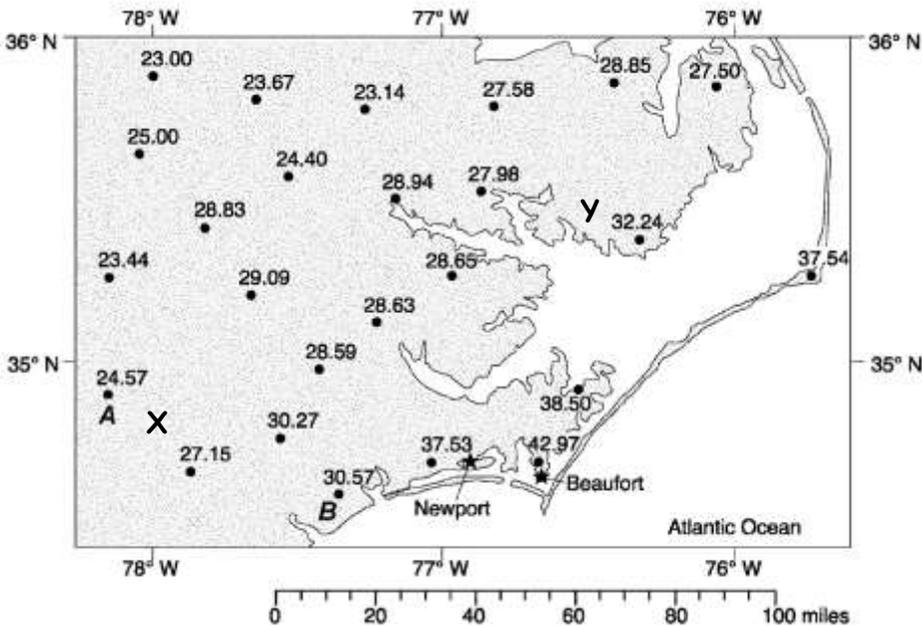
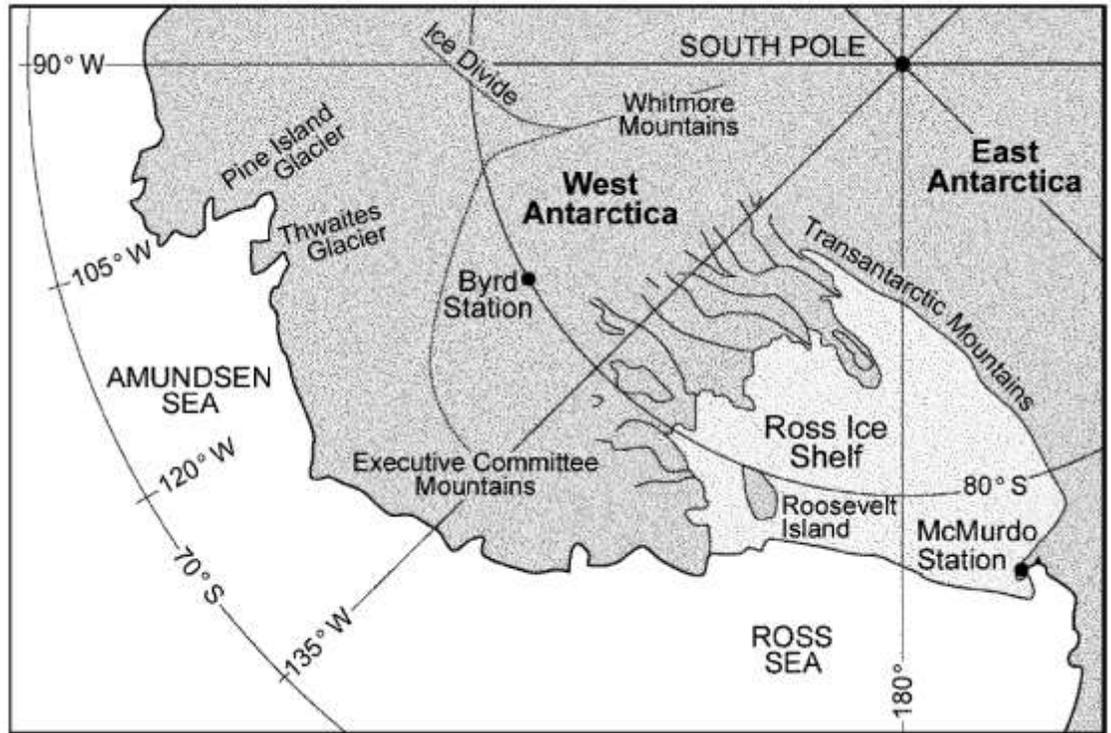
PRACTICE PACKET: TOPIC 2 MEASURING EARTH

2. As you move from point A to point B in the Northern Hemisphere, the length of a degree of latitude progressively decreases. In which direction are you moving?

3. State the latitude and longitude of Byrd Station & McMurdo Station shown on the given map. [Your answer must include both the units and the compass directions.]

Byrd Station:

McMurdo Station:



4. State the latitude and longitude of point X & Y shown on the given map. [Your answer must include both the units and the compass directions.]

5. Identify the city shown on the Generalized Bedrock Geology of New York State map in the Earth Science Reference Tables that is closest to the longitude of Newport, North Carolina.

6. As an observer travels northward from NYS the altitude of the North Star
- a. Increases directly with the latitude
 - b. Increases directly with the longitude
 - c. Decreases directly with the latitude
 - d. Decreases directly with the longitude

7. An observer is on a ship at sea, which latitude does the North Star appear closest to the horizon?

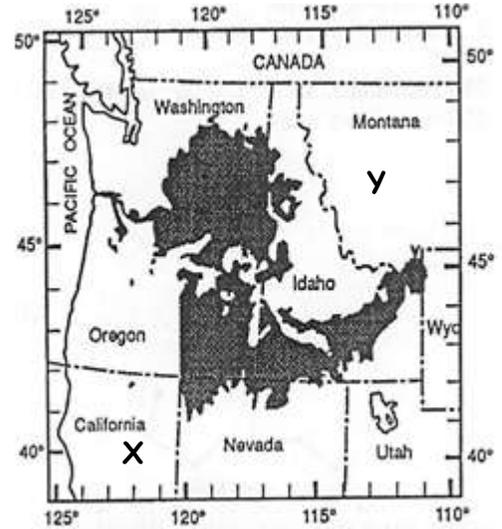
- a. 5°N
- b. 20°N
- c. 50°N
- d. 85°N

PRACTICE PACKET: TOPIC 2 MEASURING EARTH

8. A large earthquake occurred at 45°N, 75°W, on September 5, 1994. Which location in NYS was closest to the epicenter of the Earthquake?
 a. Buffalo b. Massena c. Albany d. New York City

9. Which location is in the shaded area of surface basaltic bedrock?
 a. 40°N, 120°W c. 44°N, 122°W
 b. 46°N, 120°W d. 48°N, 116°W

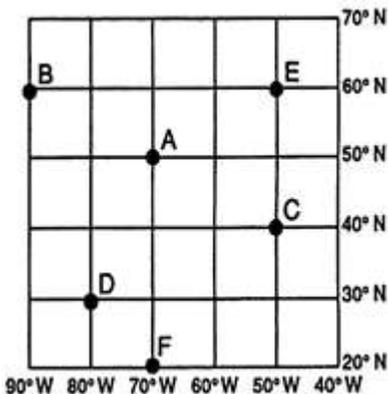
10. State the latitude and longitude of point X & Y shown on the given map. [Your answer must include both the units and the compass directions.]



ASSESS YOURSELF ON THIS LESSON: _____/10
 If you missed more than 4, do the Additional Practice. If not, go on to the next hw video!!!

11. An observer in NYS measures the altitude of Polaris to be 44°. According to the ESRT, the location of the observer is nearest to
 a. Watertown b. Elmira c. Buffalo d. Kingston

Base your answers to questions 12 - 15 on the latitude-longitude system shown on the map.



12. What is the latitude and longitude of point A?
 13. What is the compass direction from point D toward point E?
 14. Explain where the map is located in relation to the Equator and Prime Meridian.
 15. As a person travels from location E to location C, what will happen to the observed altitude of Polaris?

ASSESS YOURSELF ON THIS ADDITIONAL PRACTICE: _____/5
 If you missed more than 1 you should see me for extra help and/or re-watch the lesson video assignment

PRACTICE PACKET: TOPIC 2 MEASURING EARTH

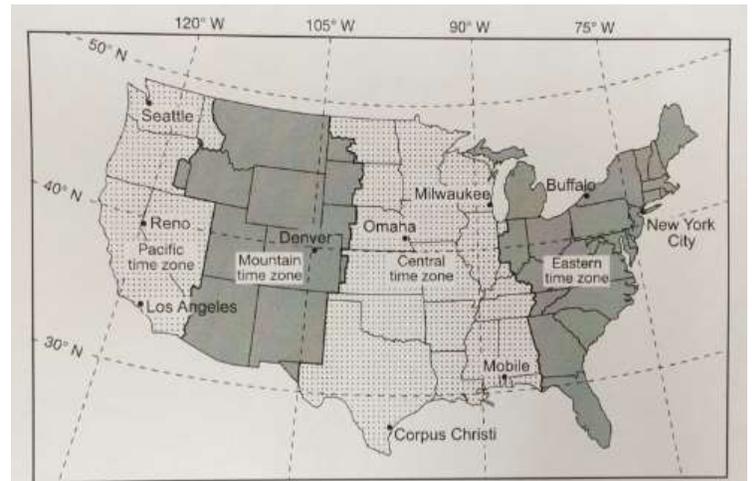
Lesson 2- Time Zones

Objective:

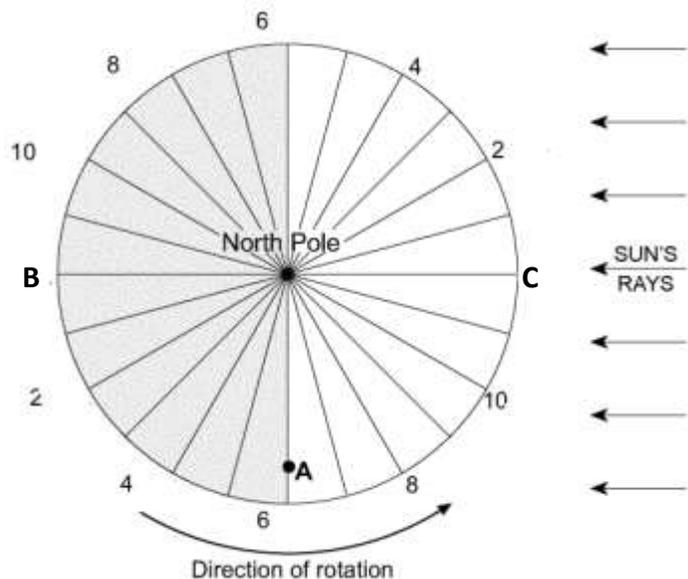
- I can explain how far apart each time zone is & why.
- I can remember the saying to help with whether or not to add or subtract time.
- I can determine times in other places on Earth if I am given a starting time & location.

1. As you go **EAST** time will _____; as you go **WEST** time will be _____.
2. Approximately how many degrees does the Earth rotate on its axis in 1 hour? _____
3. If it is **3:00 am** at **30°E** longitude what time is it at **60°E** longitude? _____
4. If it is **12:00 pm** at **60°W** longitude what time is it at the **Prime Meridian**? _____

5. State the number of degrees of longitude that separates New York City from Reno, Nevada & the difference in hours between the two cities.
6. Identify two cities on the map where measurements of the altitude of Polaris are within one degree of the other.
7. Identify the city labeled on the map where sunrise occurs first each day.



8. Identify the Earth motion that provides the basis for our system of local time and time zones.
9. State the altitude of *Polaris* as seen by the observer at the North Pole shown in the diagram.
10. How many degrees apart are the longitude lines shown in the diagram?
11. What time is it at location A? B? & C? (Hint: Numbers should correspond with the lines)



- a. _____
- b. _____
- c. _____

PRACTICE PACKET: TOPIC 2 MEASURING EARTH

ASSESS YOURSELF ON THIS LESSON: _____/11

If you missed more than 4, do the Additional Practice. If not, go on to the next hw video!!!

12. The time is 3:00 pm at 45°E longitude what time is it at the Prime Meridian? _____
13. The time is 9:00 pm at 150°E longitude what time is it at 45°E longitude? _____
14. The time is 5:00 am at 120°W longitude what time is it at the International Date Line? _____
15. If it is 7:00 pm at the Prime Meridian at what longitude is it 1:00 pm? _____
16. On Earth, the solar time difference between point A and point B would be _____ hours.
17. If the time at point B is 7 pm what time is it at point A? _____



ASSESS YOURSELF ON THIS ADDITIONAL PRACTICE:

_____/6

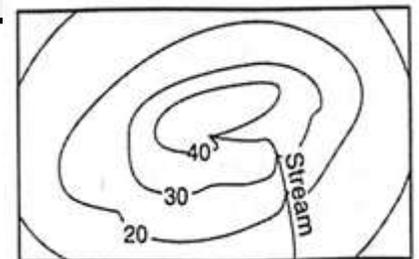
If you missed more than 2 you should see me for extra help and/or re-watch the lesson video assignment

Lesson 3- Topographic Maps

Objective:

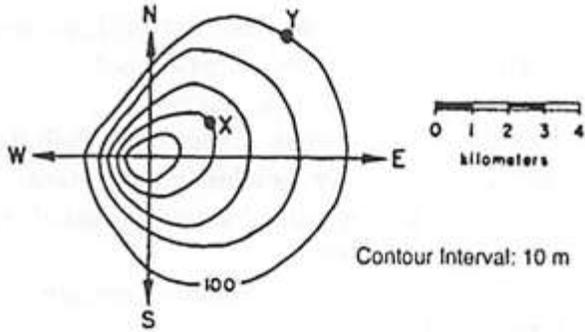
- I can determine the contour interval
- I can locate the steep & gentle slope on a map
- I can use the gradient formula
- I can determine which way a river is flowing
- I can determine the highest elevation on a map
- I can draw a topographic profile

1. Isolines on the topographic map show elevations above sea level, measured in meters. What could be the highest possible elevation represented on this map?
a. 39m b. 41m c. 45m d. 49m



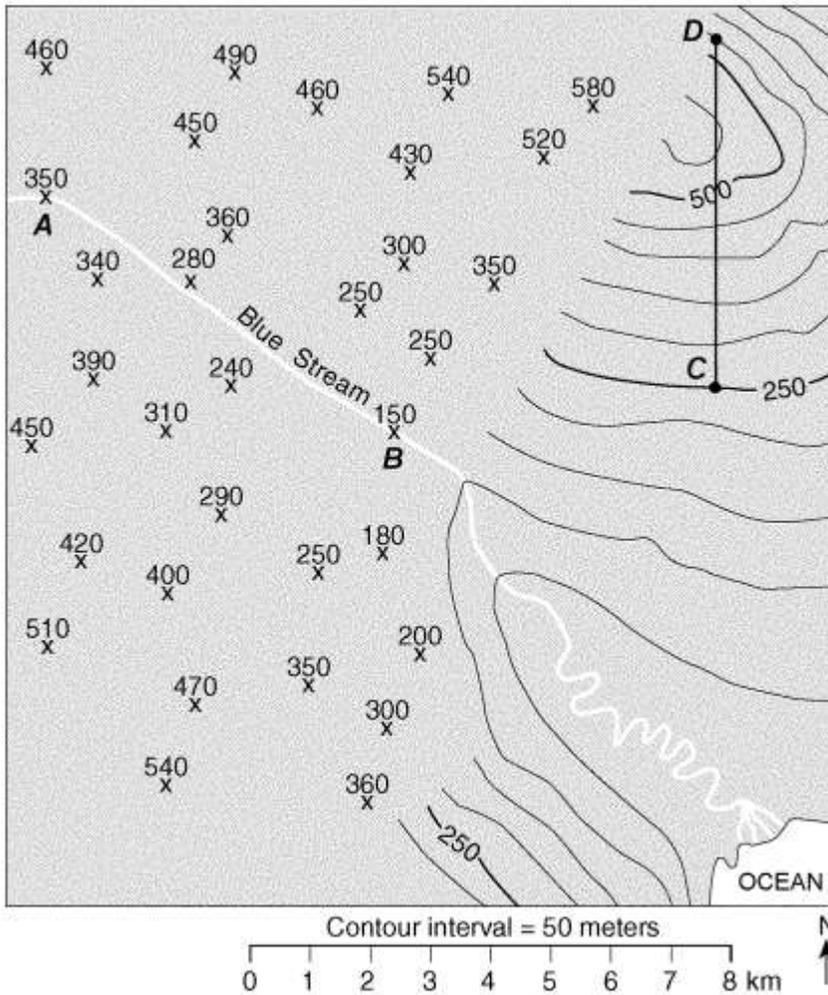
2. You are using a topographic map to plan a hike. Along path A, the contour lines are widely spaced. Along path B, the contour lines are almost touching. Which path would probably be easier and safer? Why?

PRACTICE PACKET: TOPIC 2 MEASURING EARTH

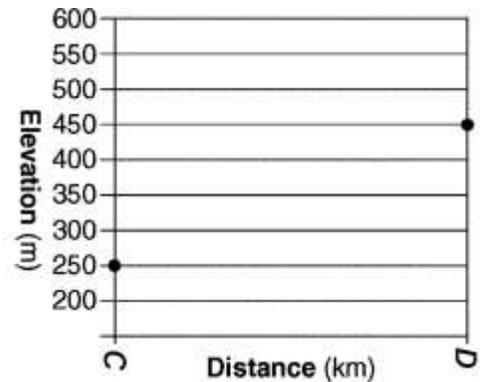


3. On which side of the hill does the land have the steepest slope?
 - a. North
 - b. East
 - c. South
 - d. West
4. What is the approximate gradient of the hill between points X and Y?
 - a. 1m/km
 - b. 3m/km
 - c. 10m/km
 - d. 30m/km

Questions 5 - 8 refer to the map below that shows partially drawn contour lines. X's indicate elevations in meters. Letters A, B, C, and D represent locations on the map.



5. On the grid provided, construct a topographic profile along line CD. Plot with an X the elevation of each contour line that crosses line CD. Connect the X's from C to D with a smooth, curved line to complete the profile. Elevations C and D have already been plotted.



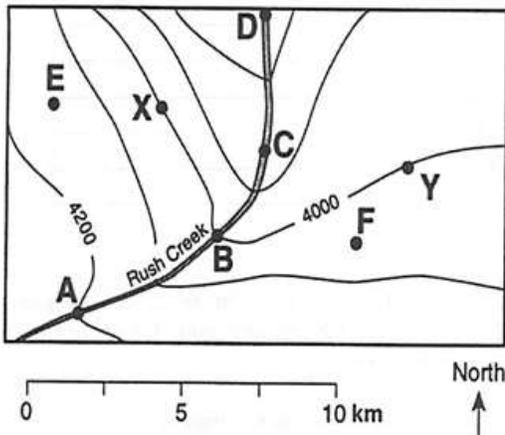
6. What compass direction does Blue Stream flow?

7. Calculate the stream gradient from elevation A to elevation B on the contour map provided. [Label your answer with the correct units.]

8. On the portion of the map showing contour lines, place an X in an area where an elevation of 55 meters is located.

PRACTICE PACKET: TOPIC 2 MEASURING EARTH

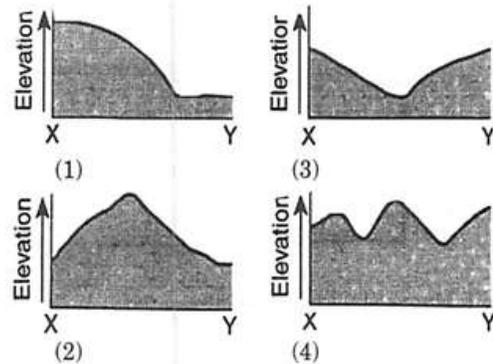
Base your answers to questions 9-13 on the topographic map below and on your knowledge of Earth Science. Points A,B,C,D,E,F,X, & Y are locations on the map. Elevation is measured in **meters**.



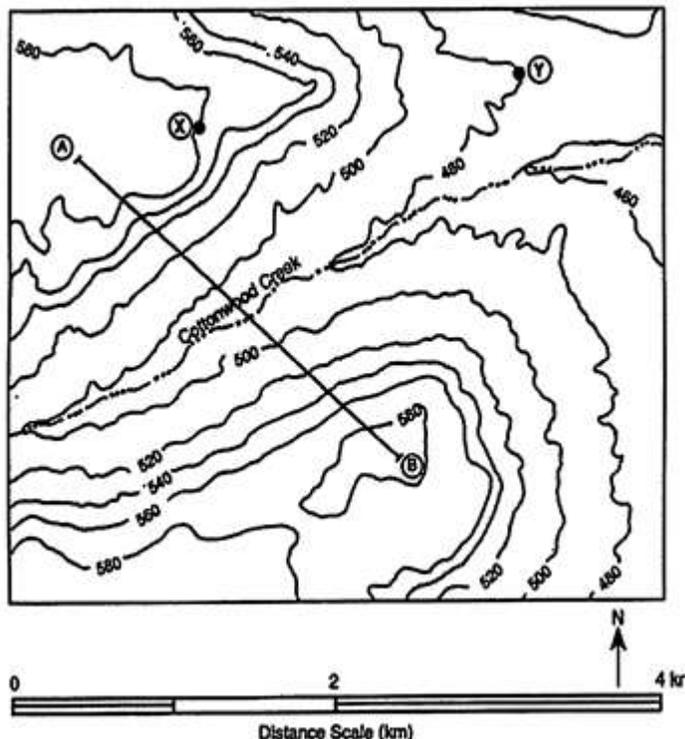
9. What is the contour interval used on this map?
 - a. 20 m
 - b. 50 m
 - c. 100 m
 - d. 200 m
10. Which locations have the greatest difference in elevation?
 - a. A and D
 - b. B and X
 - c. C and F
 - d. E and Y

11. Between points C and D, Rush Creek flows toward the
 - a. North
 - b. South
 - c. East
 - d. West
12. The gradient between points A and B is closest to
 - a. 20 m/km
 - b. 40 m/km
 - c. 80 m/km
 - d. 200 m/km

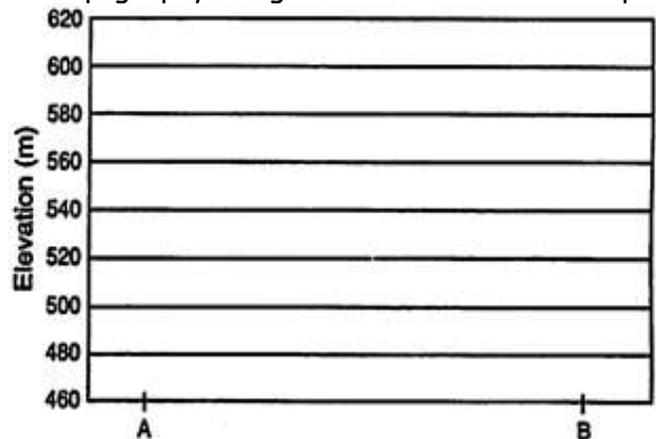
13. Which diagram best represents the profile along a straight line between points X and Y?
 - (1)
 - (2)
 - (3)
 - (4)



Base your answers to questions 14 - 18 on the topographic map of Cottonwood, Colorado, below.



14. On the grid below, draw a profile of the topography along line AB shown on the map.



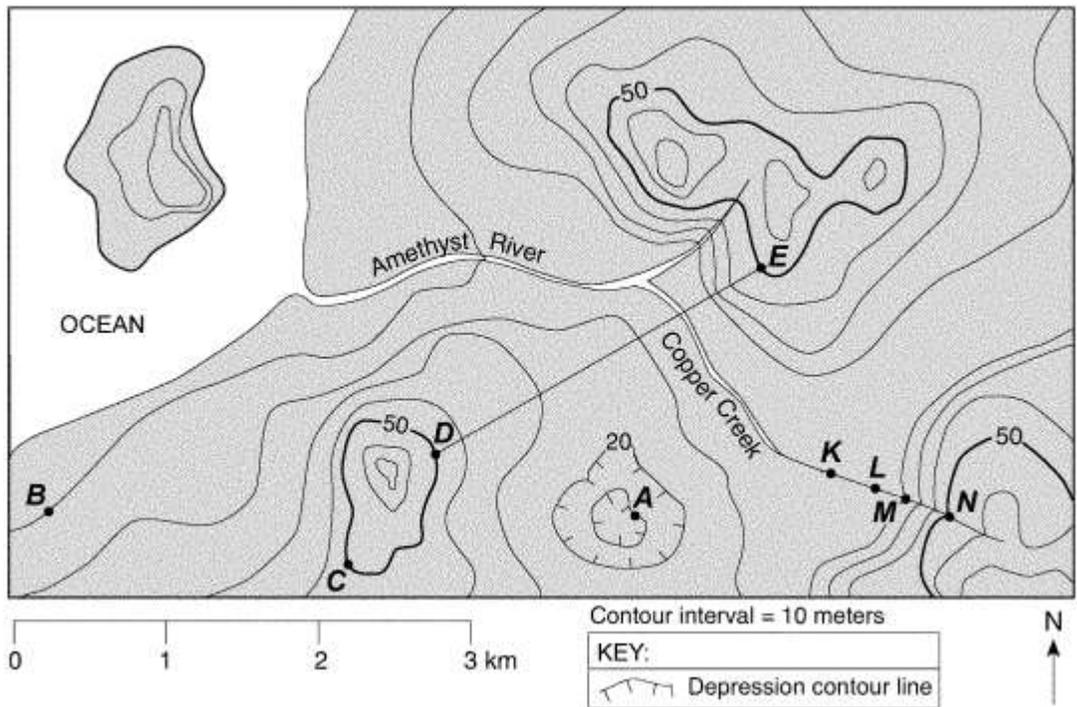
15. What is the contour interval of this map?
16. State the general direction in which Cottonwood Creek is flowing.

PRACTICE PACKET: TOPIC 2 MEASURING EARTH

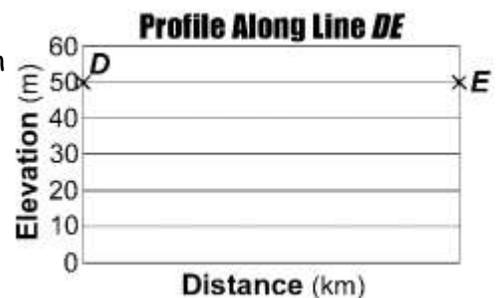
17. State the highest possible elevation, to the nearest meter, for point B on the topographic map.
18. Calculate the gradient of the slope between points X & Y on the topographic map, following the directions below.
 - a. Write the equation for gradient
 - b. Substitute data from the map into the equation.
 - c. Calculate the gradient and label it with the proper units.

ASSESS YOURSELF ON THIS LESSON: _____/18
 If you missed more than 4, do the Additional Practice. If not, go on to the next hw video!!!

Questions 19 through 23 refer to the following: Letters A, B, C, D, and E on the topographic map shown below represent locations on Earth's surface. Letters K, L, M, and N are locations along Copper Creek. Elevations are measured in meters.



19. On the grid provided, construct a topographic profile along line DE of the map shown by plotting an X for the elevation of each contour line that crosses line DE. Connect the Xs with a smooth, curved line to complete the profile.



PRACTICE PACKET: TOPIC 2 MEASURING EARTH

20. What compass direction does Amethyst River flow?
21. Calculate the gradient between points *B* and *C* on the topographic map shown and label your answer with the correct units.
22. What is the elevation of location *A* on the topographic map shown? _____
23. Explain how the map shown indicates that Copper Creek flows faster between points *N* and *M* than between points *L* and *K*.

ASSESS YOURSELF ON THIS ADDITIONAL PRACTICE: _____/5

If you missed more than 1 you should see me for extra help and/or re-watch the lesson video assignment

Mini Lesson: Drawing Contour Lines

Rules for Contour Lines

1. A contour line must never split.
2. A contour line must never simply end in the middle of the map, it must either make a closed circle or end on the side of the map.
3. A contour line must represent one elevation.
4. Contour lines must never cross.
5. Contour lines form a "V" pattern when crossing a river or stream & must point uphill.

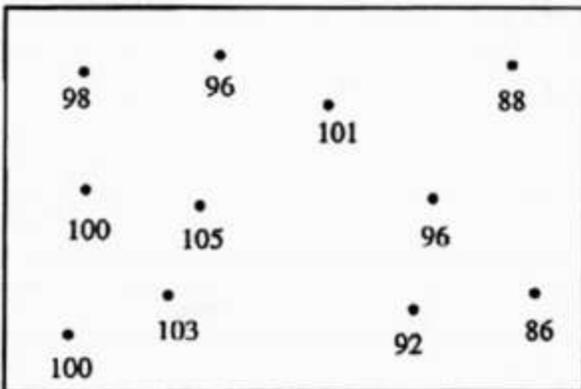


Fig. 1. Map points with elevations.

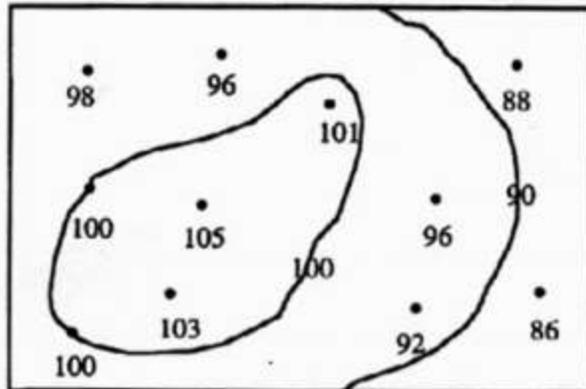
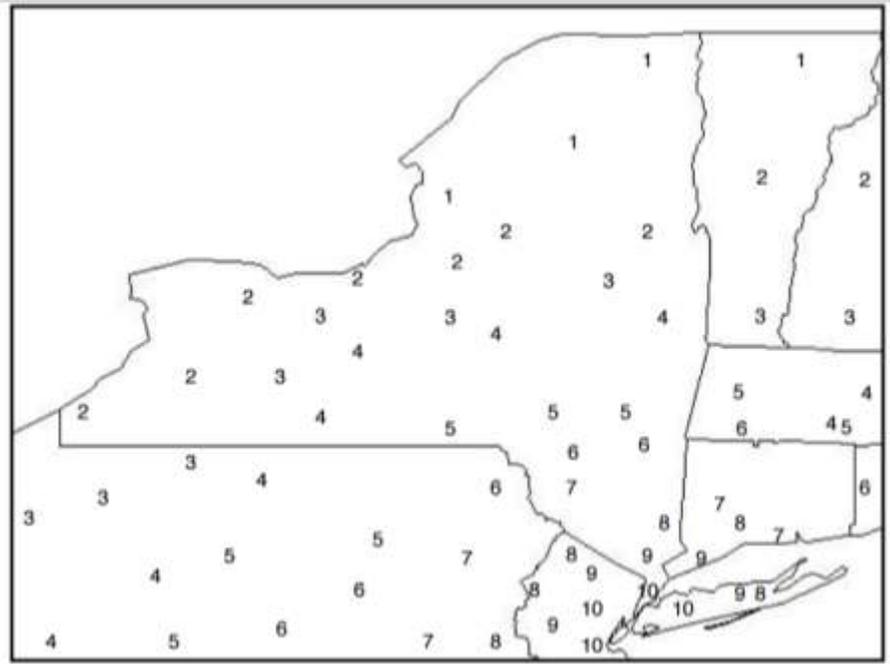


Fig. 2. Same points with 90 and 100 ft contour lines added.

1. What is the contour interval for Fig 2?

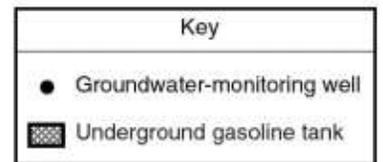
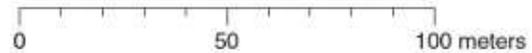
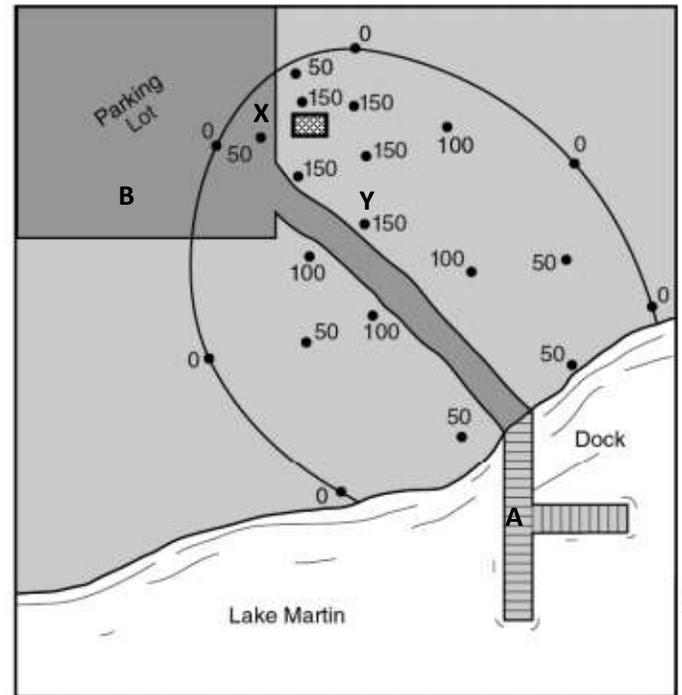
PRACTICE PACKET: TOPIC 2 MEASURING EARTH

- Try drawing isolines on the map below which shows the intensity of air pollution around New York City, NY. A value of 10 signifies a high concentration or air pollution and a value of 1 signifies hardly any pollution at all. Using a contour interval of 1 draw the contour line for 1 - 10.
- Where is the highest air pollution located?



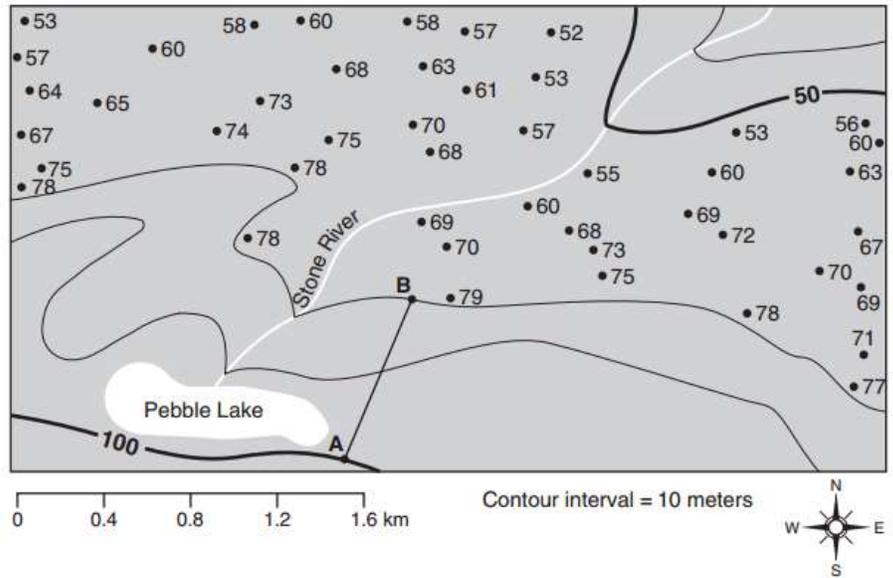
Area of State Park

- On the map draw the 50, 100, and 150 foot isolines.
- Calculate the ground water pollution gradient between points X & Y. **SHOW WORK**
- Around what object is the most intense groundwater pollution found?
- How many meter must you walk from location A on the dock to location B in the parking lot?
- Will the groundwater pollution travel more towards Lake Martin or more towards the parking lot? Explain your answer.
- Park officials do not want to see another incident of groundwater contamination from gasoline tanks. State one action that park officials could take to prevent gasoline from contaminating the groundwater in the future.

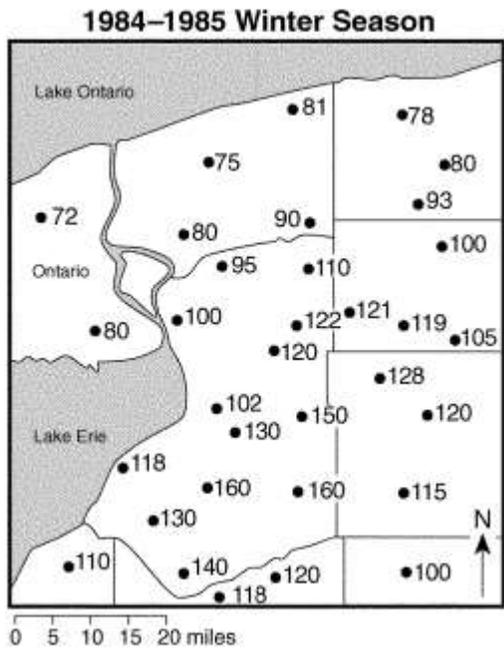


PRACTICE PACKET: TOPIC 2 MEASURING EARTH

10. On the map, draw the 60-meter and 70-meter contour lines. The contour lines should extend to the edges of the map.
11. State a likely surface elevation of Pebble Lake.
12. What compass direction is Stone River flowing?
13. Calculate the gradient along the reference line from A to B, in meters per kilometer.



14. The map shows the total inches of snowfall received at various locations for the 1984-1985 winter season. On this map, draw the 120-inch snowfall isoline.
15. Calculate the average snowfall gradient between points A and B on the winter season map, and label your answer with the correct units.



BONUS: What location is this a map of? (State/City, NOT Ontario which is labeled on the map)

