Ch. 1 Notes
Mapping
and
Topography

Mrs. Giblin

Earth Science

Room 414

Ch 1-2 Notes

Earth's Major Spheres:

1) **Biosphere – made up of all life forms on Earth.**

2) **Atmosphere – gaseous envelope that surrounds Earth. The air we breathe, protects us from the sun's radiation, helps produce weather.**

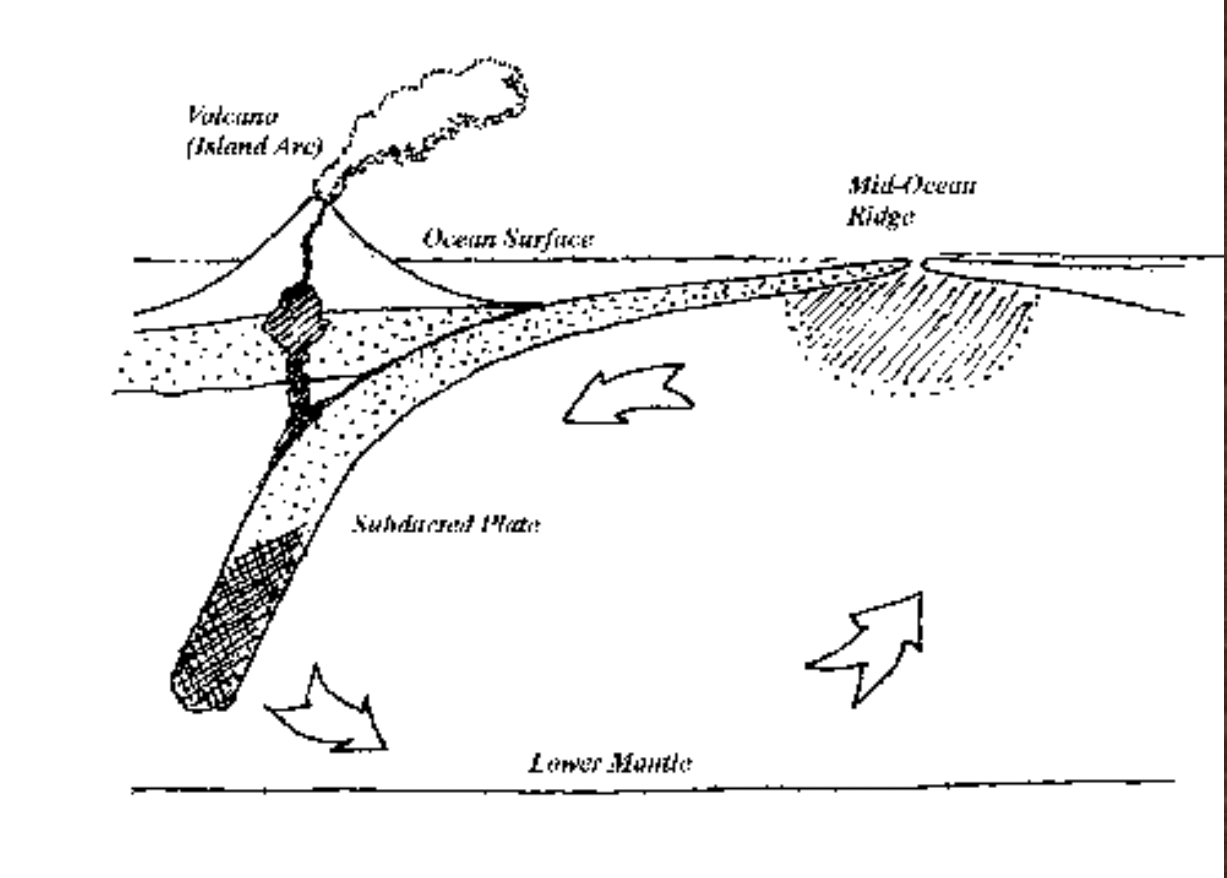
3) **Hydrosphere – all of the water on Earth.**
   -Oceans make up ~97% of all water.
   -Icecaps, glaciers, lakes, streams make up ~3% of water on Earth.

4) **Geosphere – core, mantle, crust.**
   -Lithosphere - uppermost mantle and crust.
   -Asthenosphere – melted, plastic-like mantle.

Plate Tectonics – Plates on the Earth move around.

- Some crust is formed, while some is destroyed.

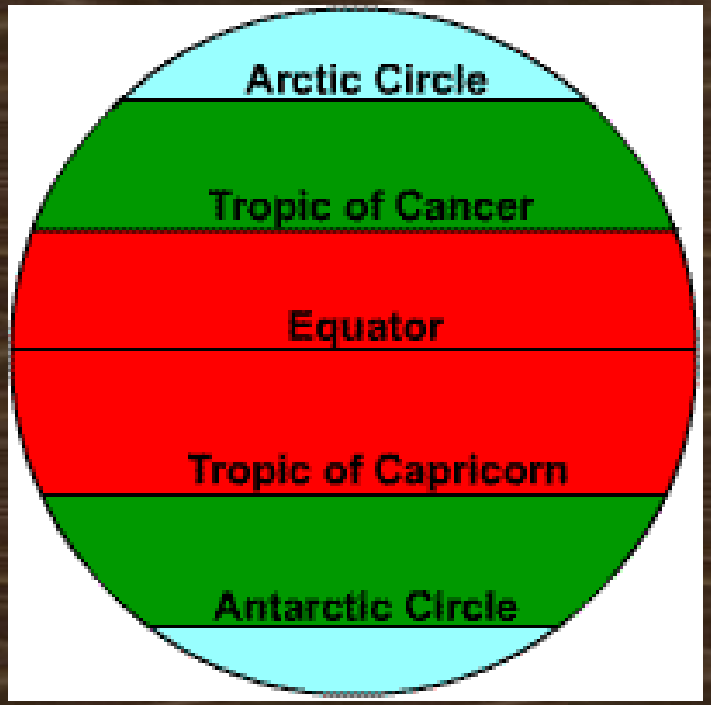
- caused by unequal distribution of heat. (lava lamp)

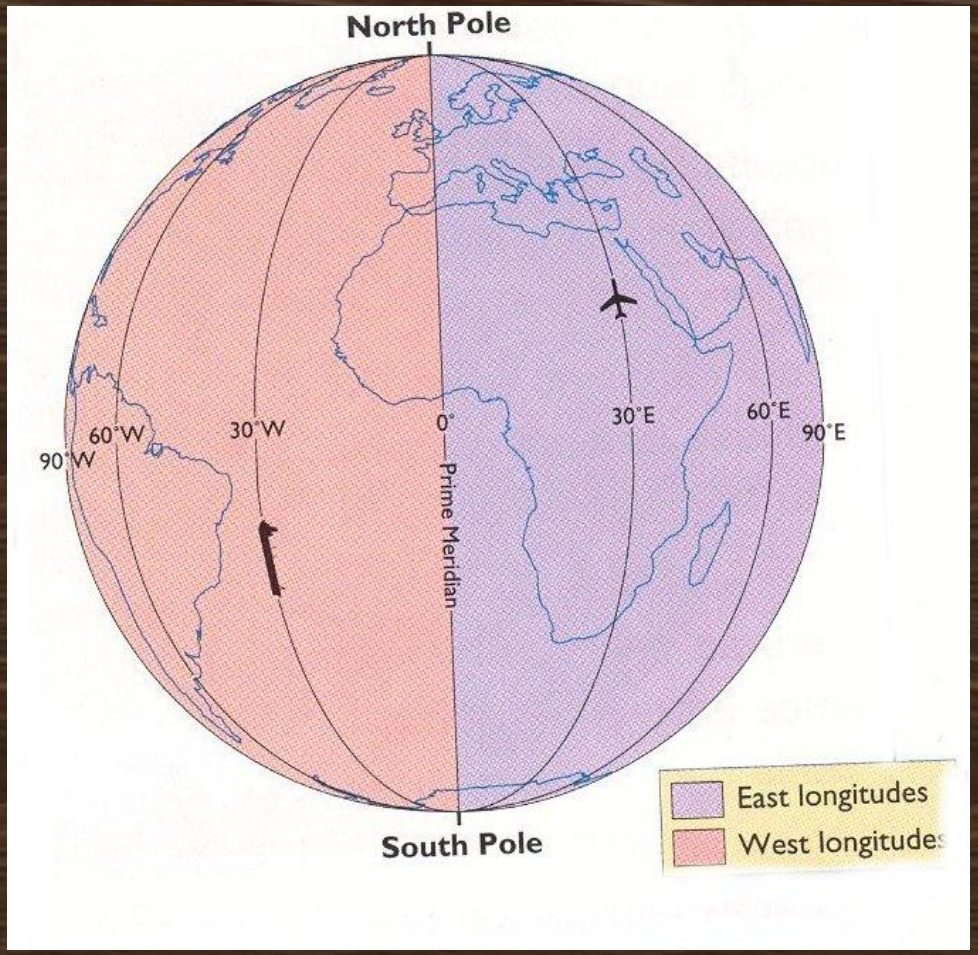


Ch. 1.3 Notes

Latitude – The distance north or south of the equator.

Longitude – The distance east or west of the Prime Meridian.





Questions:

1. Find the latitude and longitude of Albany, NY.
   Lat –
   Long –

2. The Mediterranean Sea is located NORTH of what latitude?

3. What is the approximate location of:
   a. Havana, Cuba _____
   b. Columbo, Sri Lanka _____
   c. Baghdad, Iraq _____

Types of Maps:

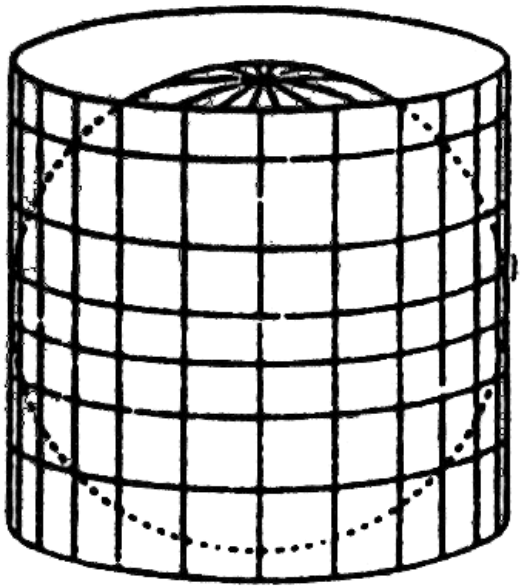
Mercator – used by sailors for accurate directions.

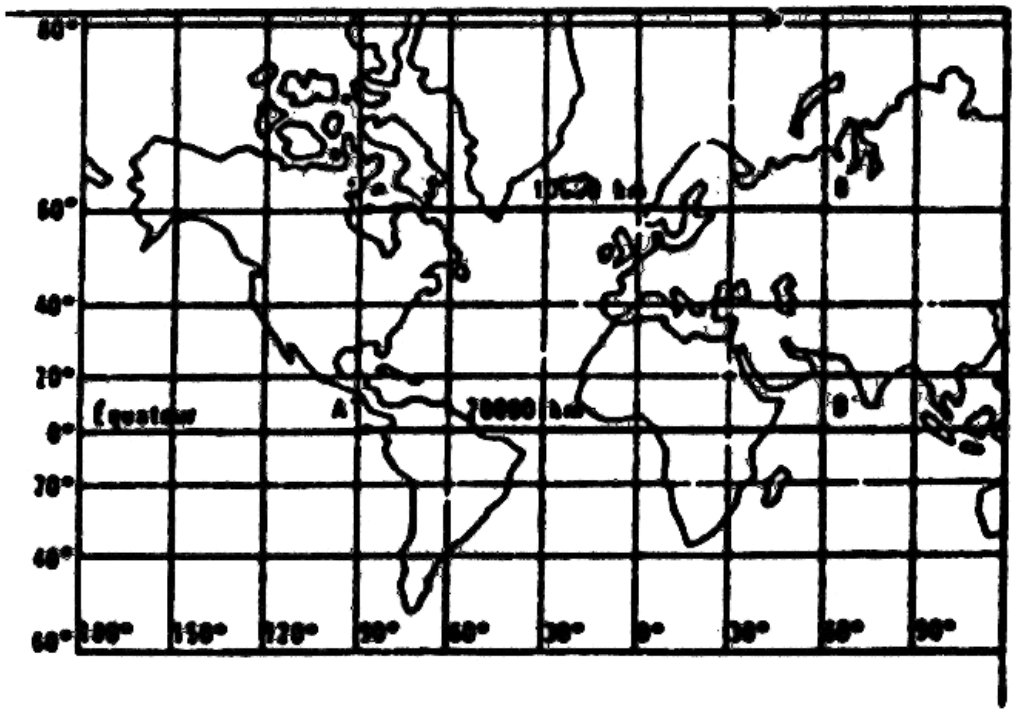
Conic Projection – for road and weather maps.

Gnomic Projection – used by sailors for more accurate distance and direction.

Robinson Projection – most widely used! This type shows distances, sizes, and shapes accurately.

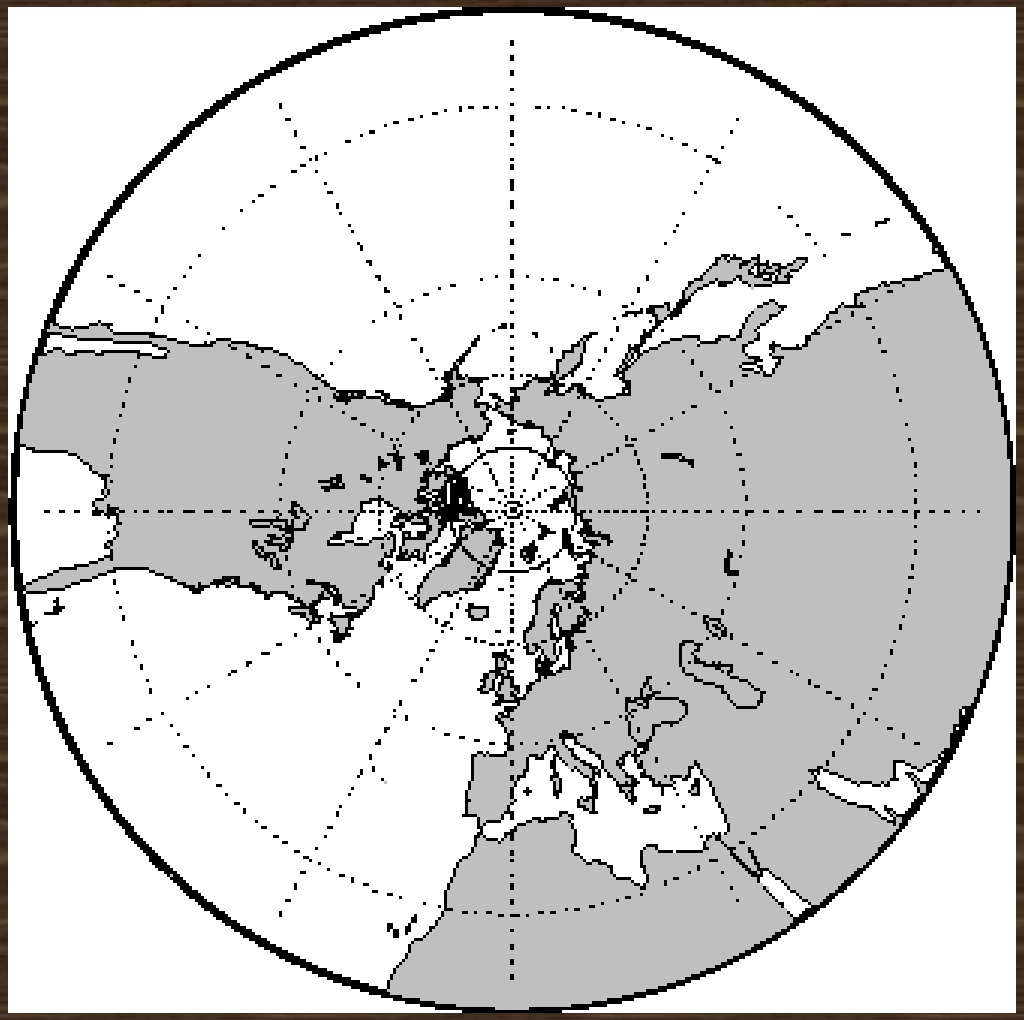
Mercator Projection



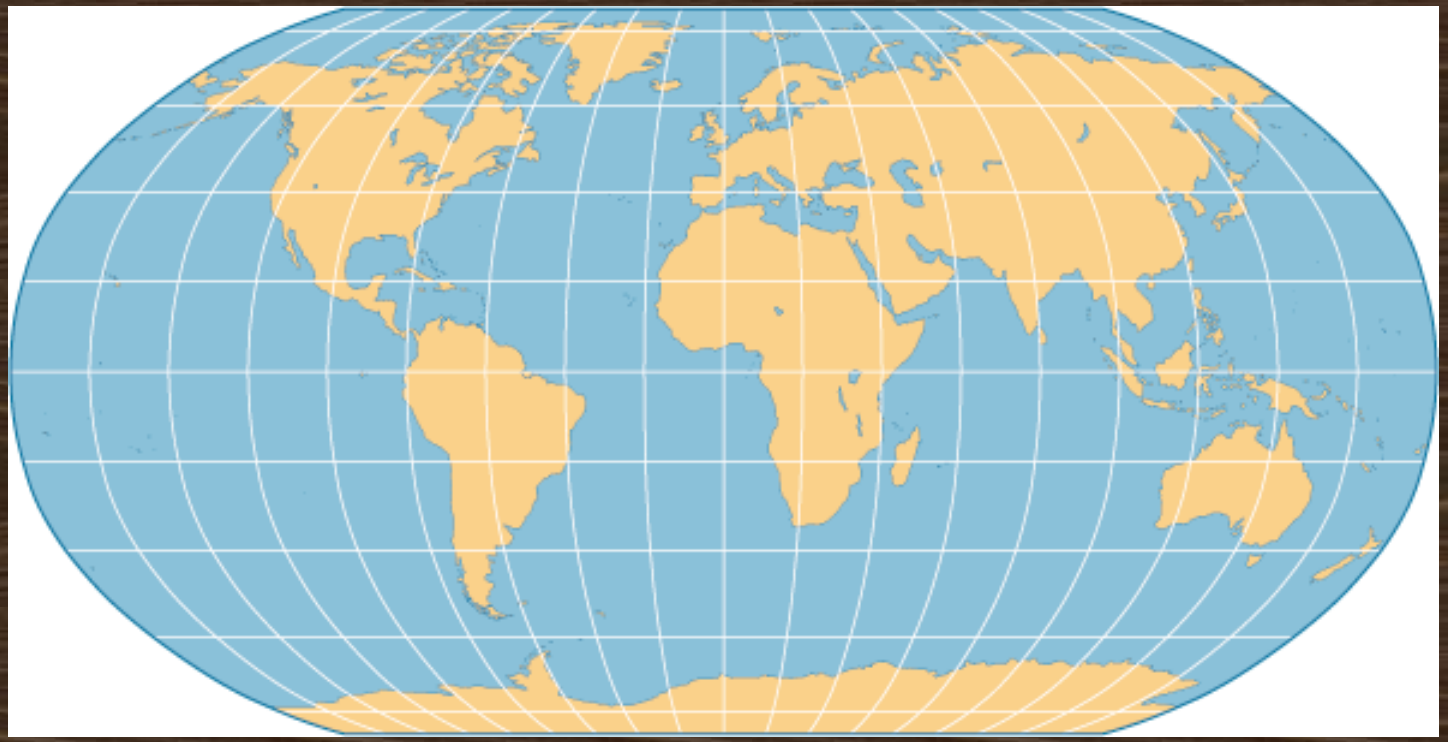


Conic Projection

Gnomic Projection



Robinson Projection



1-4 Contour Mapping Rules:

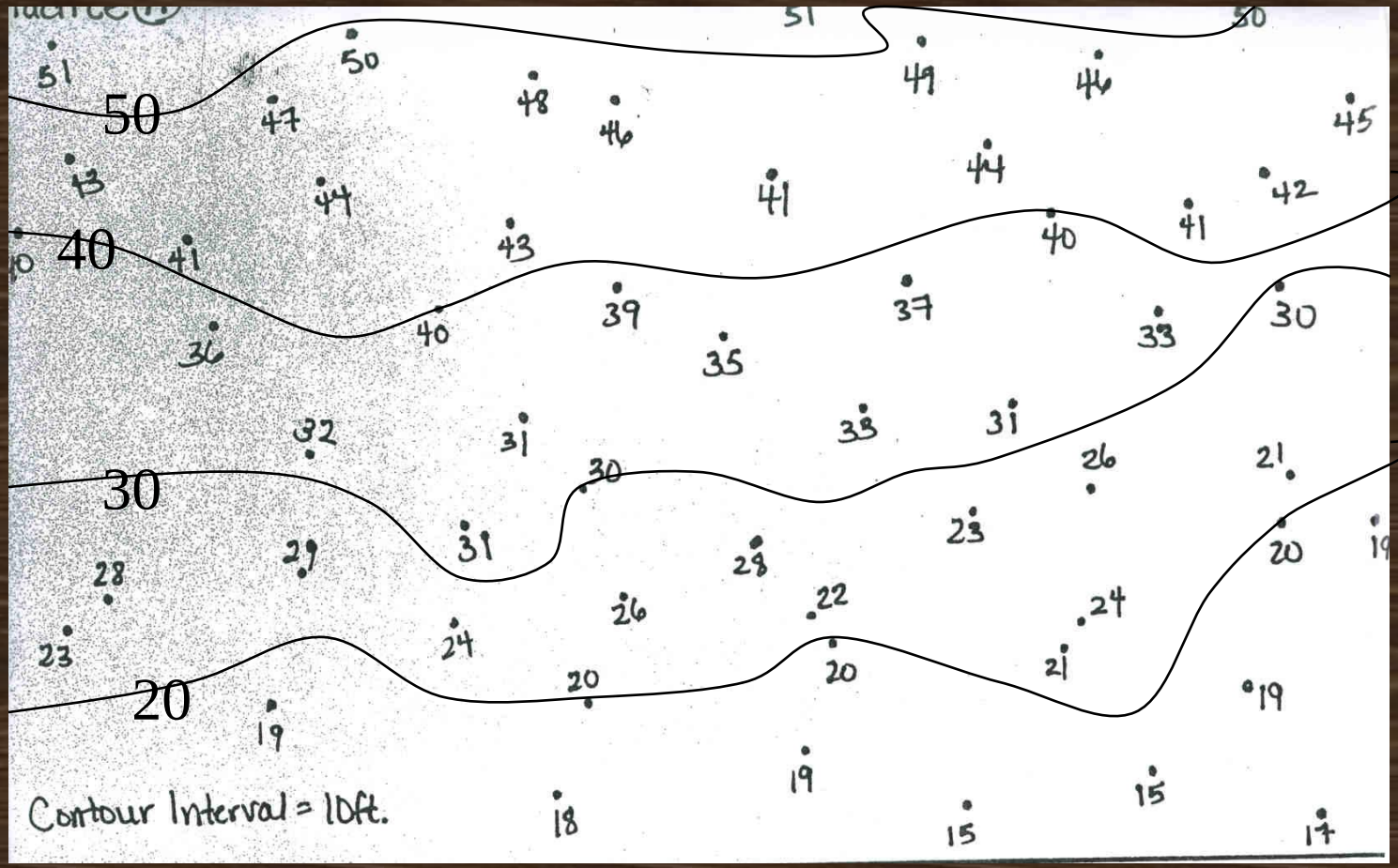
1. Every point on a contour line is at the same elevation.
2. Contour lines always separate a point that is higher (uphill) from a point that is lower (downhill).
3. Contour lines are continuous and never split. They often form circles.
4. They never CROSS each other.
5. The closer the contour lines are together, the steeper the slope.
6. Contour lines point upstream.

TODAY YOU WILL NEED:

Please find these items on the front bench!

- PENCIL
- RULER
- SCRAP PAPER

Homework Pass Challenge

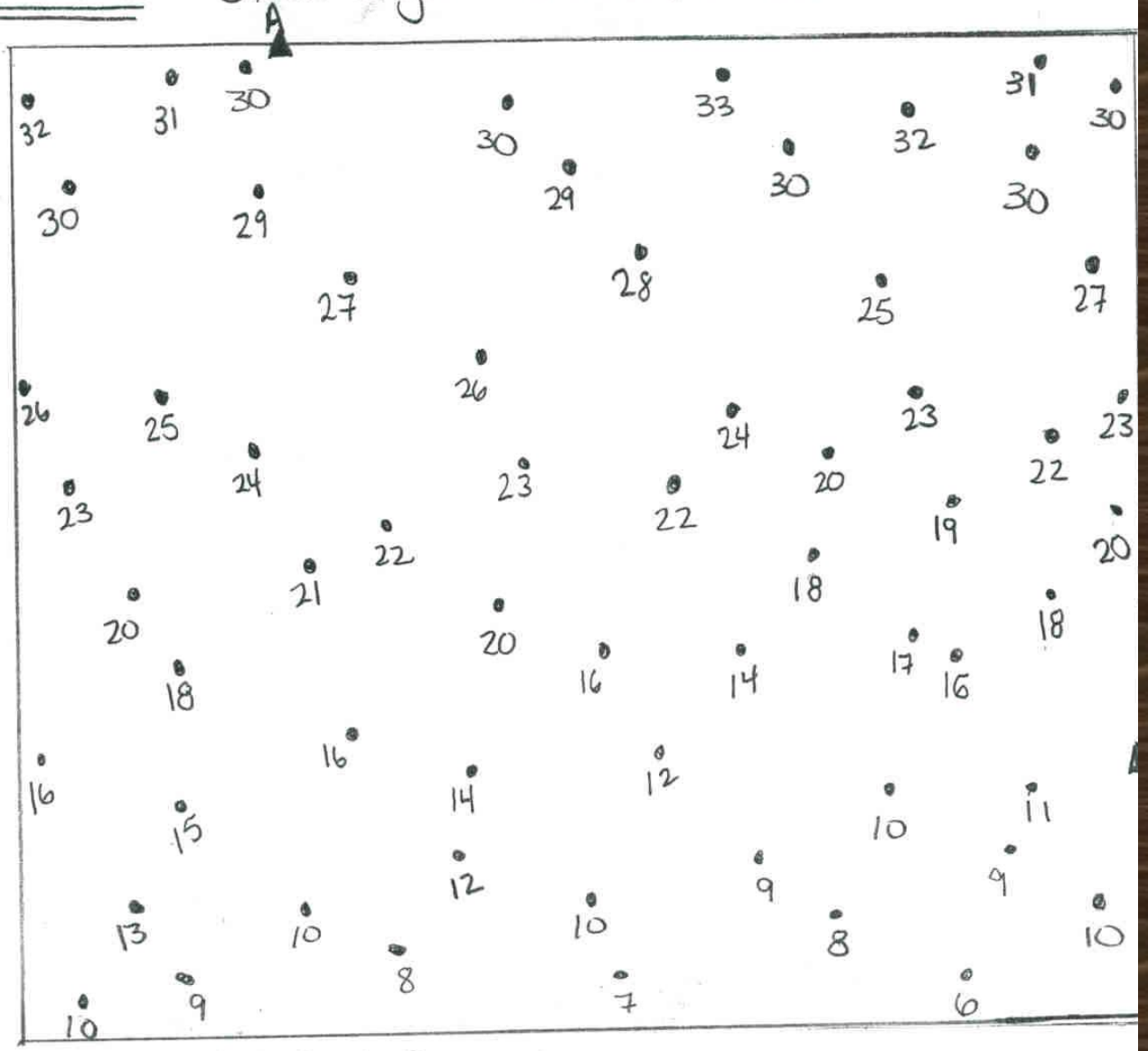


Topographic Profiles

- 1. Draw in your contour lines!
- 2. Use a ruler to draw a line between the two points on your map.
- 3. Mark a point on your line anywhere a contour line crosses your profile line.
- 4. Transfer the points from your profile line onto a scrap paper and label each point with its elevation.
- 5. Label the profile grid with a scale if it needs one.
- 6. Plot your points on your grid making sure to keep your scrap lined up properly.
- 7. Connect your points with a smooth line. (Use your ruler!)

Name _____

PRACTICE – DRAW IN YOUR CONTOUR LINES.

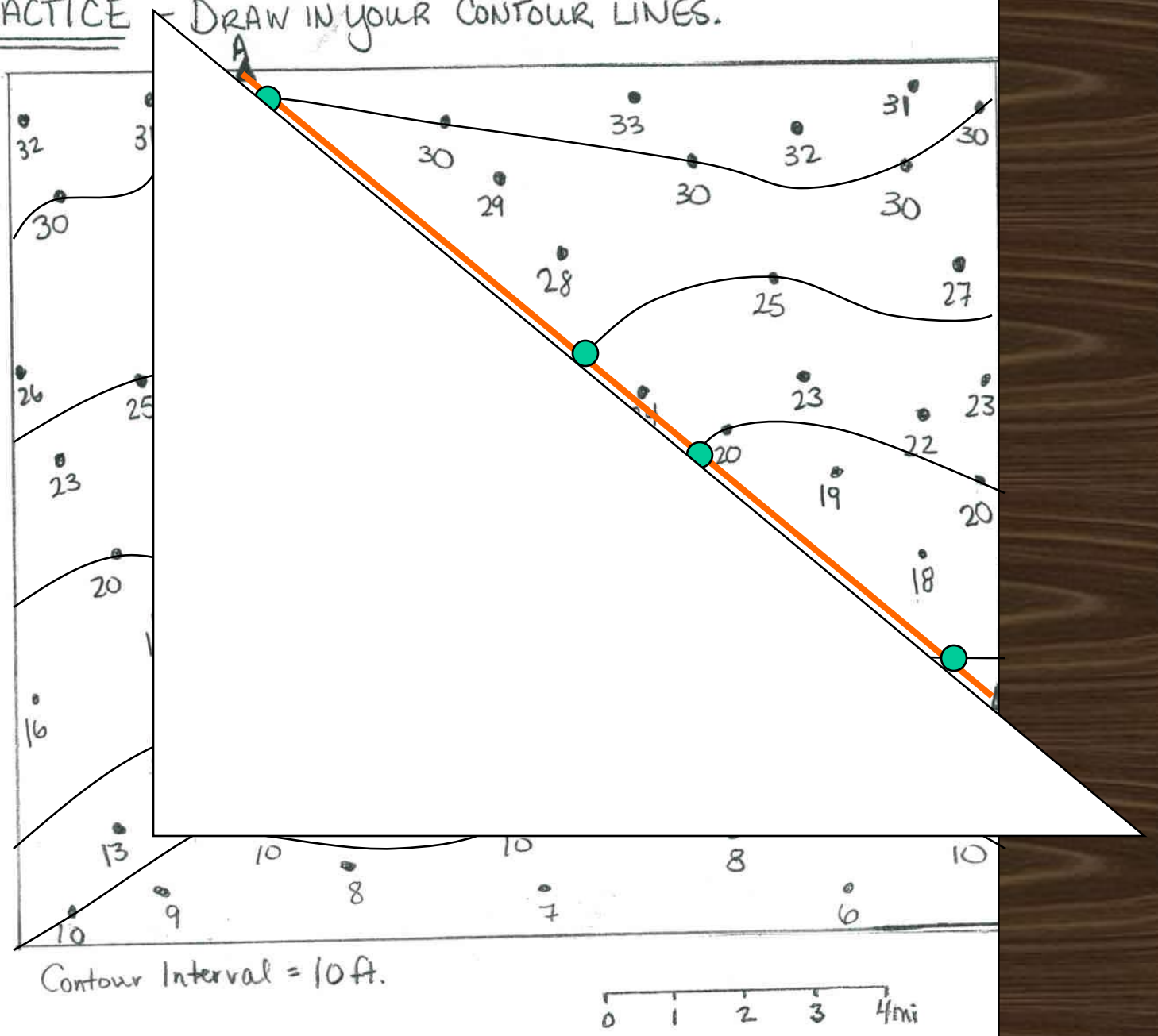


Contour Interval = 10 ft.

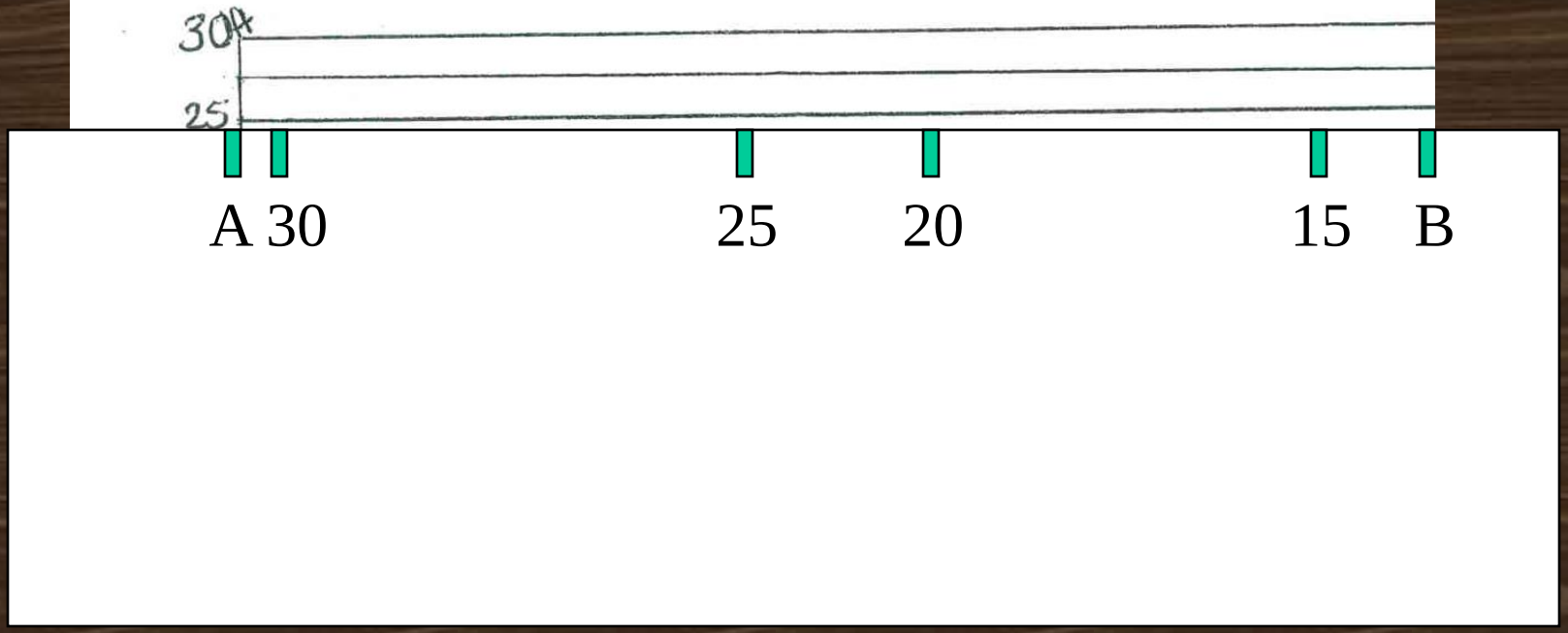
0 1 2 3 4mi

Name _____

PRACTICE - DRAW IN YOUR CONTOUR LINES.

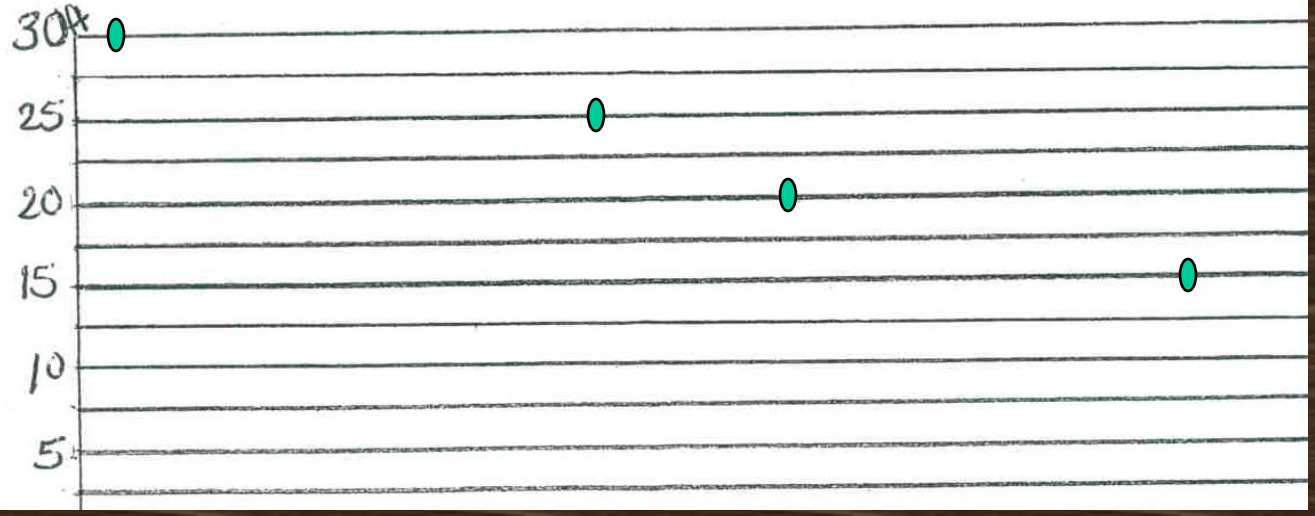


③ Draw the profile from ▲A to ▲B below.



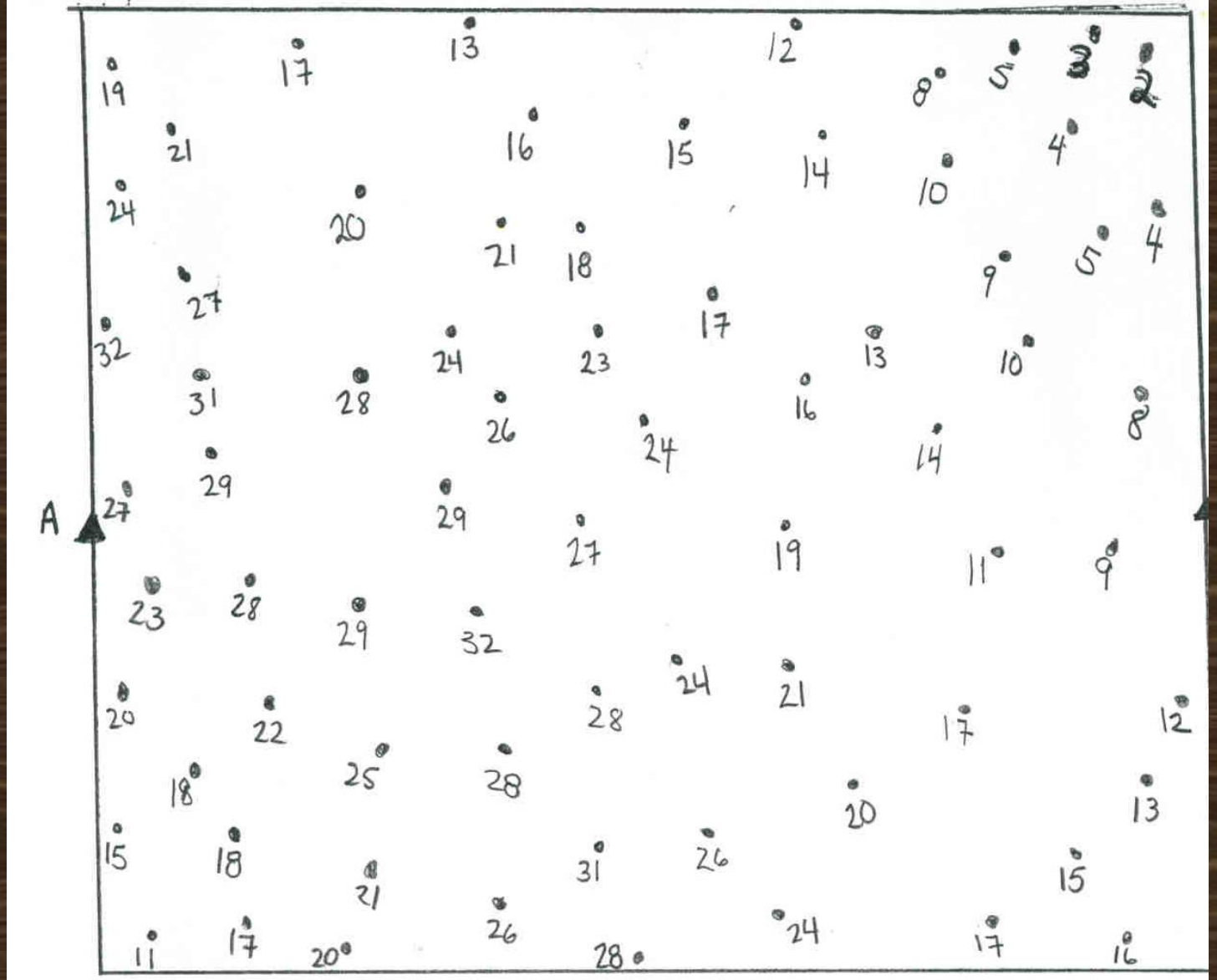
what is the distance between ▲A and ▲B? _____

③ Draw the profile from ▲A to ▲B below.



Contour Practice (2)

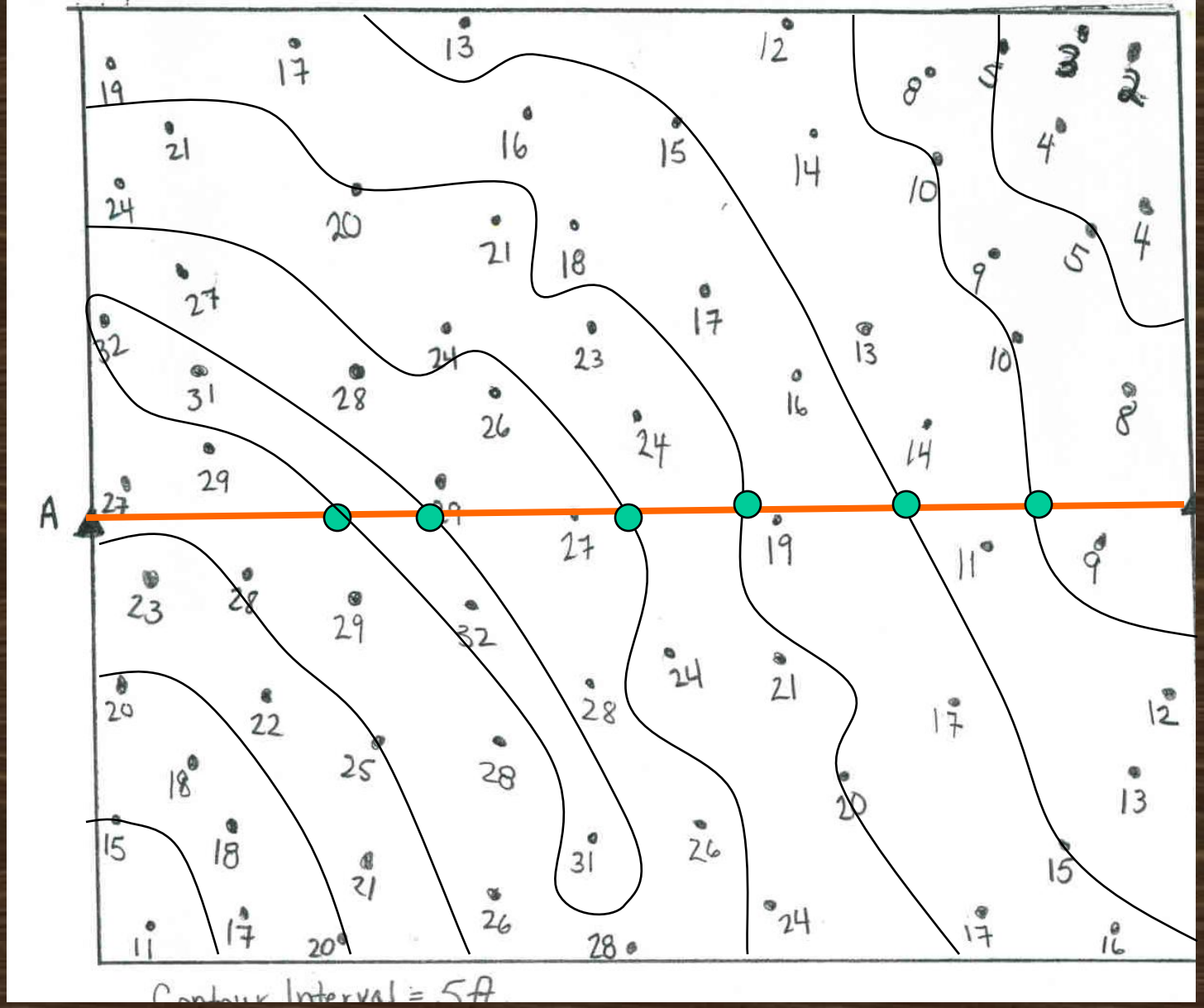
Name _____



Contour Interval = 5ft

Contour Practice (2)

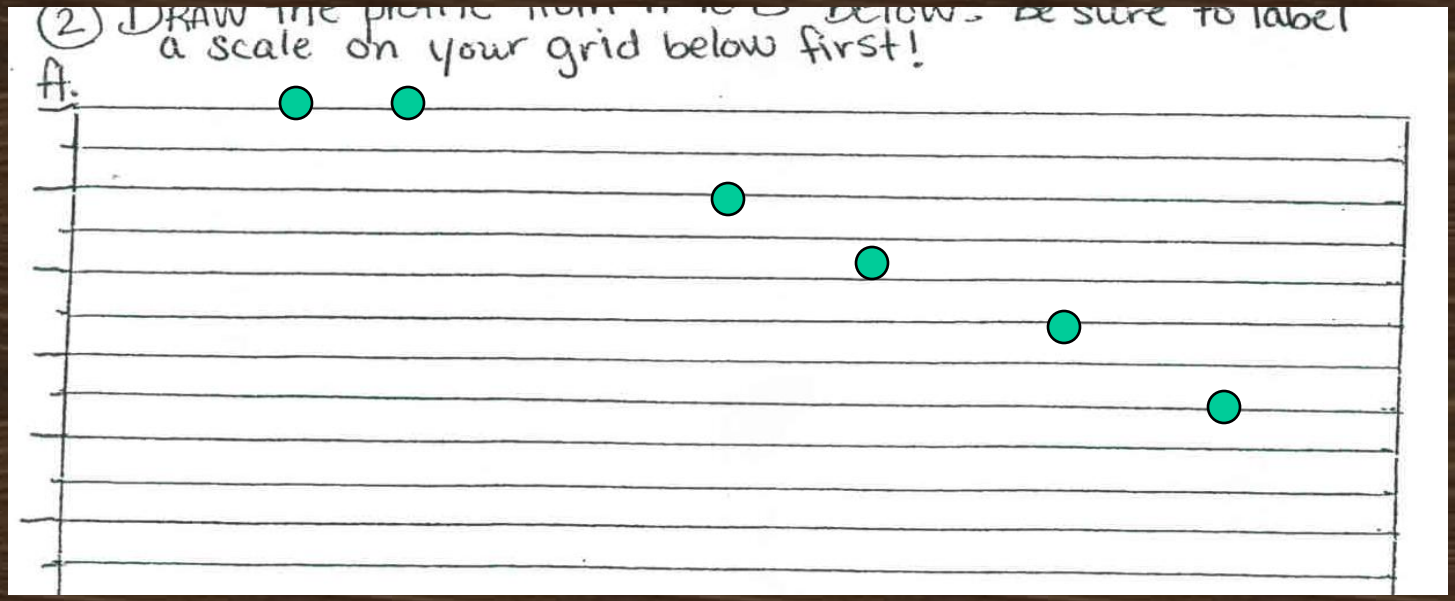
Name _____

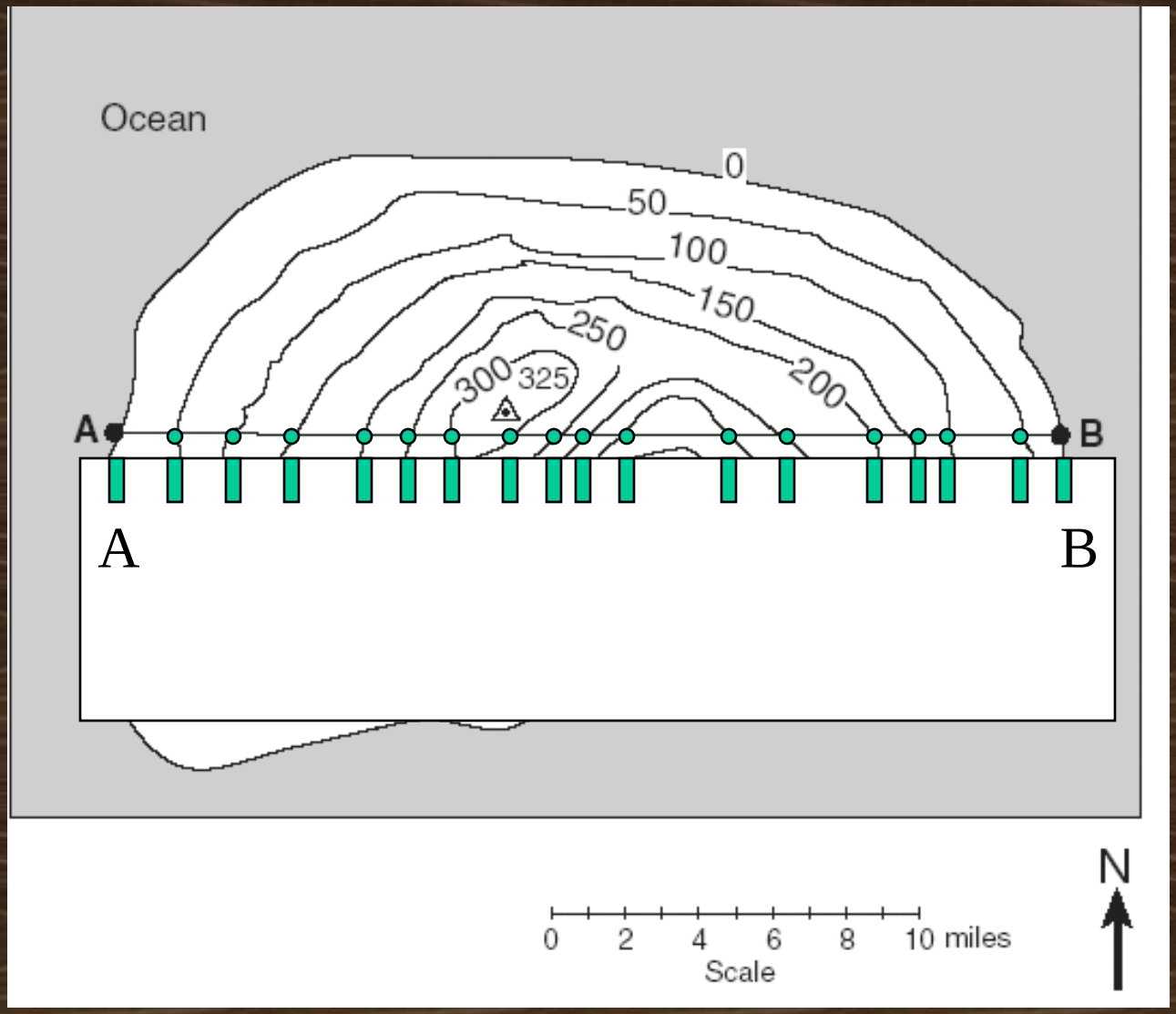


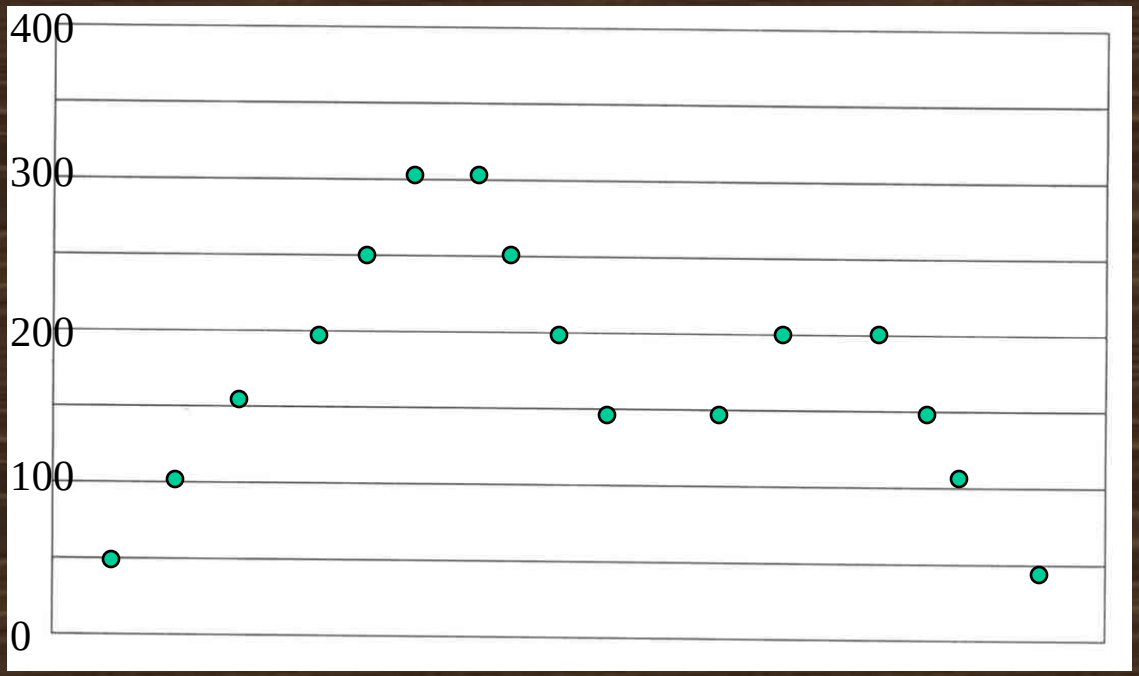
Contour Interval = 5ft

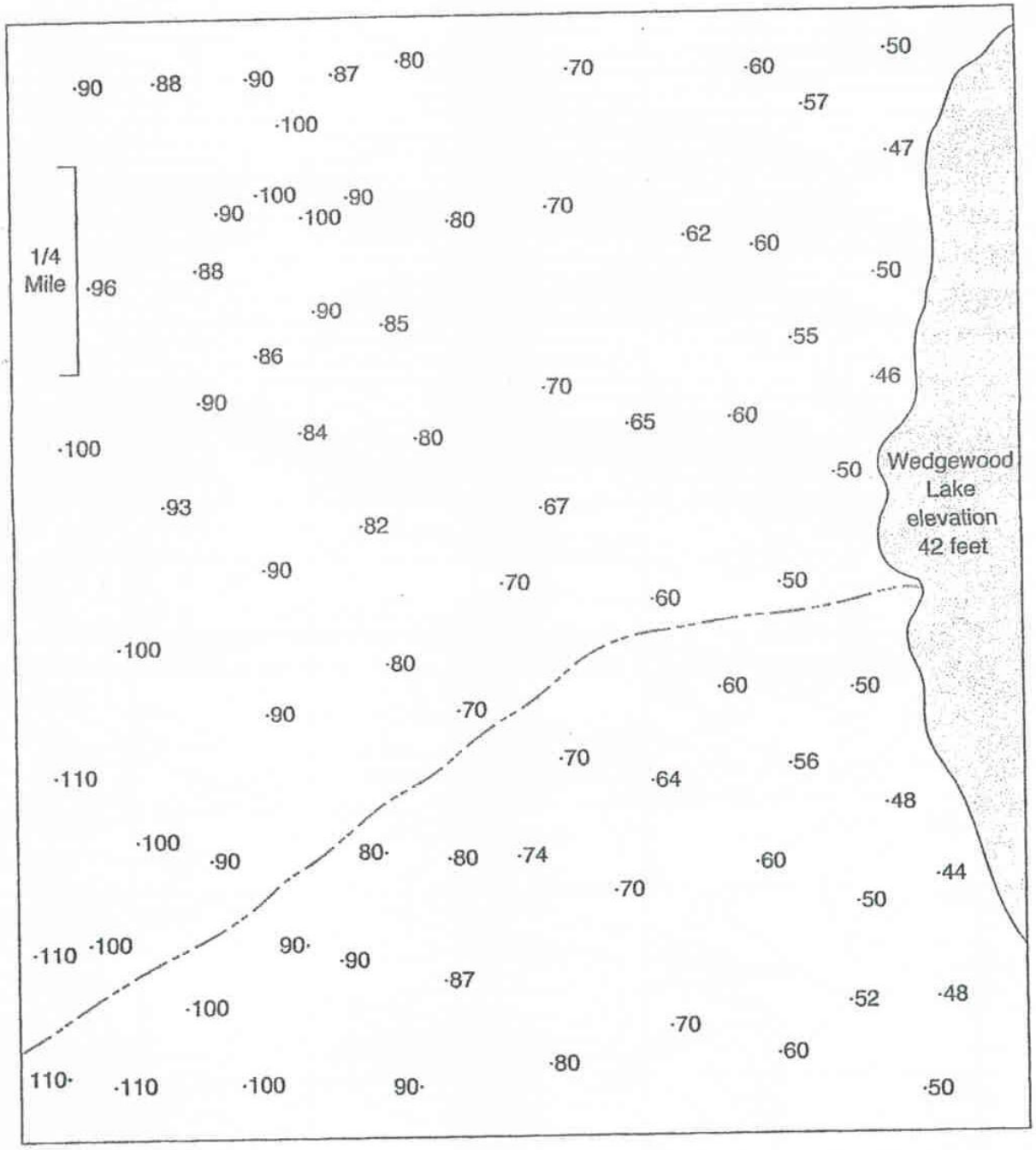
(2) DRAW the picture from #1 above. Be sure to label a scale on your grid below first!

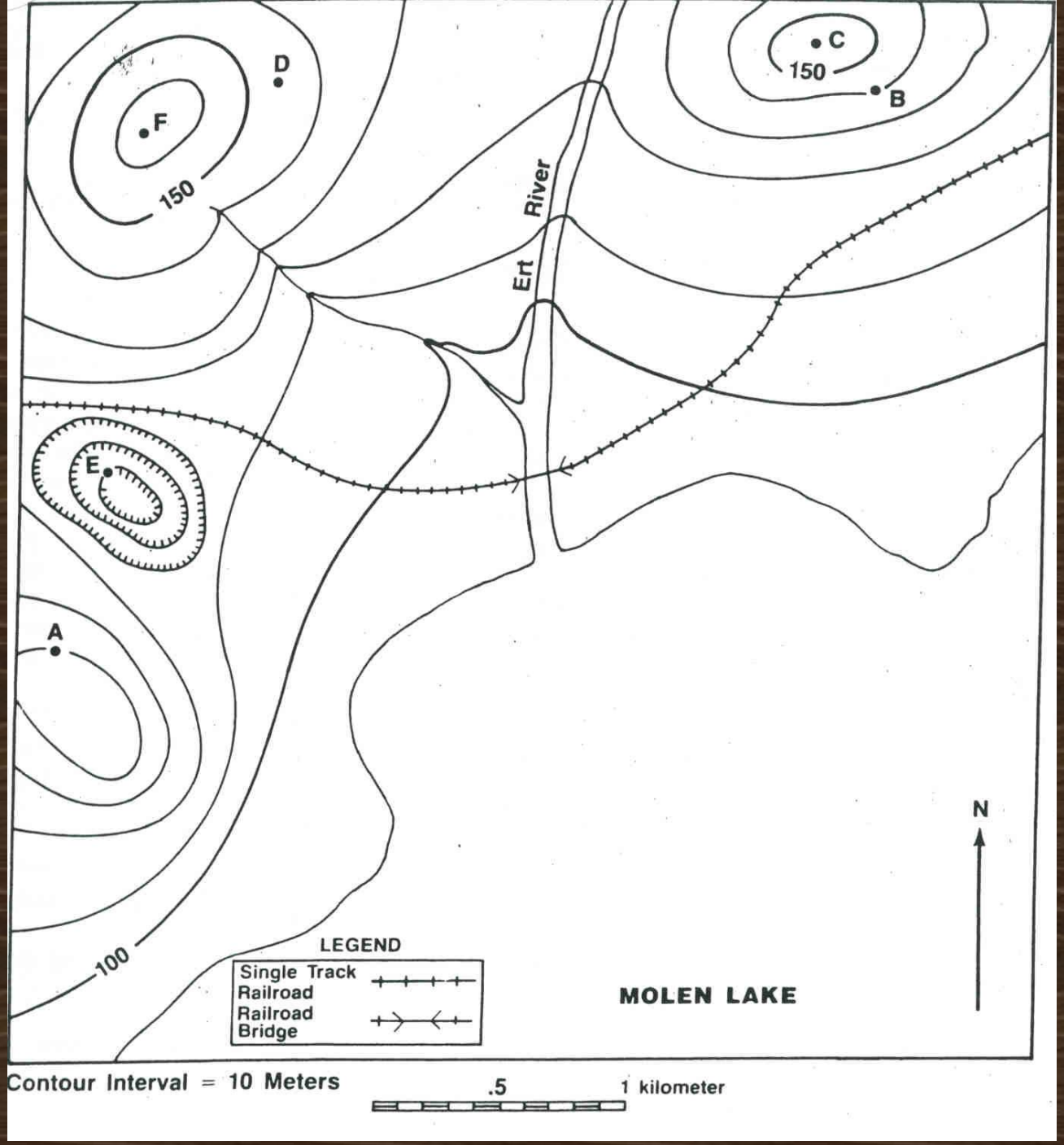
A.

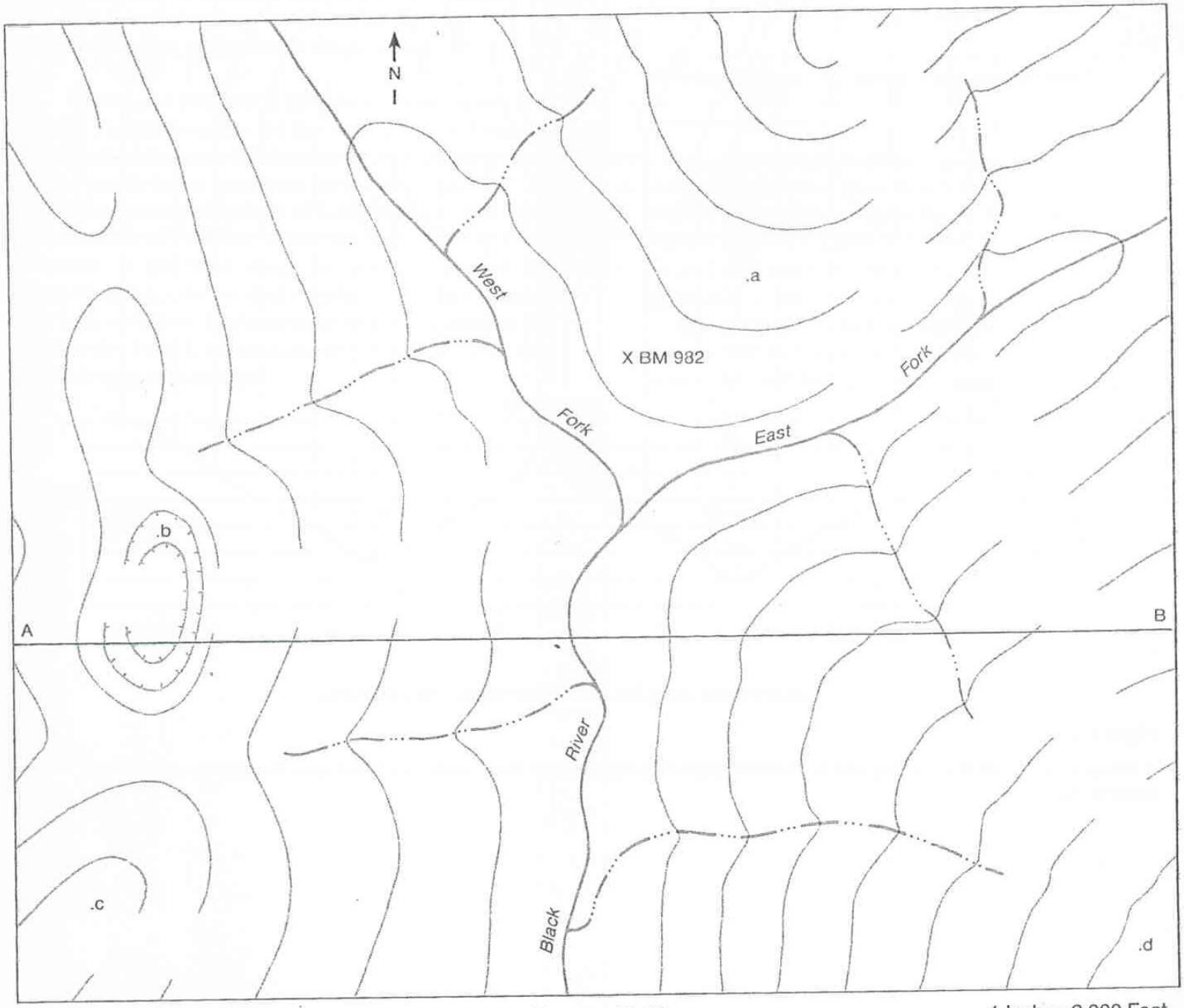



Ocean
0
50
100
150
200
250
300
325
A
B
A
B
0 2 4 6 8 10 miles
Scale
N


400
300
200
100
0


1/4
Mile
Wedgewood
Lake
elevation
42 feet

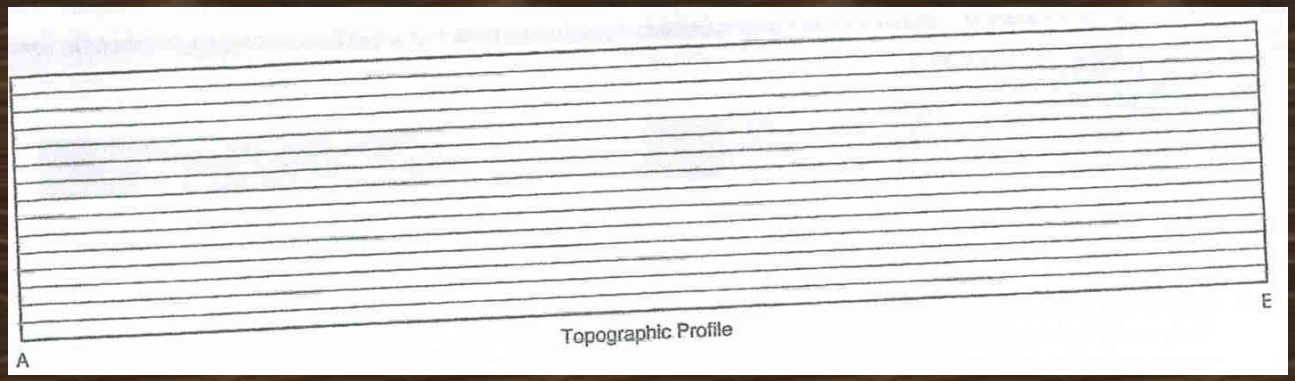

C
150
B
D
F
150
Ert River
E
A
100
LEGEND
Single Track Railroad
Railroad Bridge
MOLEN LAKE
N
Contour Interval = 10 Meters
.5
1 kilometer



Contour Interval 20 Feet

Topographic Map

1 Inch = 2,000 Feet


Topographic Profile
A
B

GRADIENT = $\frac{\text{change in elevation}}{\text{distance}}$

1. Pt. A has an elevation of 200 ft. and Pt. B has an elevation of 150 ft. The distance between Pt. A and Pt. B is 0.5 miles. What is the gradient between Pt. A and Pt. B?

2. The summit of Mt. Rainier is 14,411 ft and the elevation of Reflection Lake at the base of the mountain is 6, 177 ft. The distance between the summit of Mt. Rainier and Reflection Lake is 2 miles. What is the gradient?

3. The gradient of the longest ski trail down Gore Mountain is 1000ft/mile. When you get on the chair lift at the base, you are at an elevation of 1500 ft. The longest ski trail is 2.1 miles long. What is the elevation of the summit of Gore Mountain?

Gradient Challenge-SOLVED!!

1. Pt. A has an elevation of 400ft and Pt. B has an elevation of 200ft. The distance between Pt. A and Pt. B is 0.5 miles. What is the gradient between Pt. A and Pt. B?

   $\frac{400-200}{0.5 \text{ mi.}} = \frac{200\text{ft}}{0.5 \text{ mi.}} =$ 400 ft/mi

2. The summit of Mt. Rainier is 14,411 ft and the elevation of Reflection Lake at the base of the mountain is 6, 177 ft. The distance between the summit of Mt. Rainier and Reflection Lake is 4 miles. What is the gradient?

   $\frac{14{,}411 - 6177}{4 \text{ mi.}} = \frac{8234 \text{ ft.}}{4 \text{ mi.}} =$ 2058.5 ft/mi.

3. The gradient of the longest ski trail down Gore Mountain is 800ft/mile. When you get on the chair lift at the base, you are at an elevation of 1500 ft. The longest ski trail is 2.5 miles long. What is the elevation of the summit of Gore Mountain?

   $\frac{800 \text{ ft}}{1 \text{ mi.}} = \frac{x - 1500 \text{ ft.}}{2.5 \text{ mi.}}$ $\quad 20{,}000 = x - 1500$

   $+1500 \quad +1500$

   21,500 ft. = X