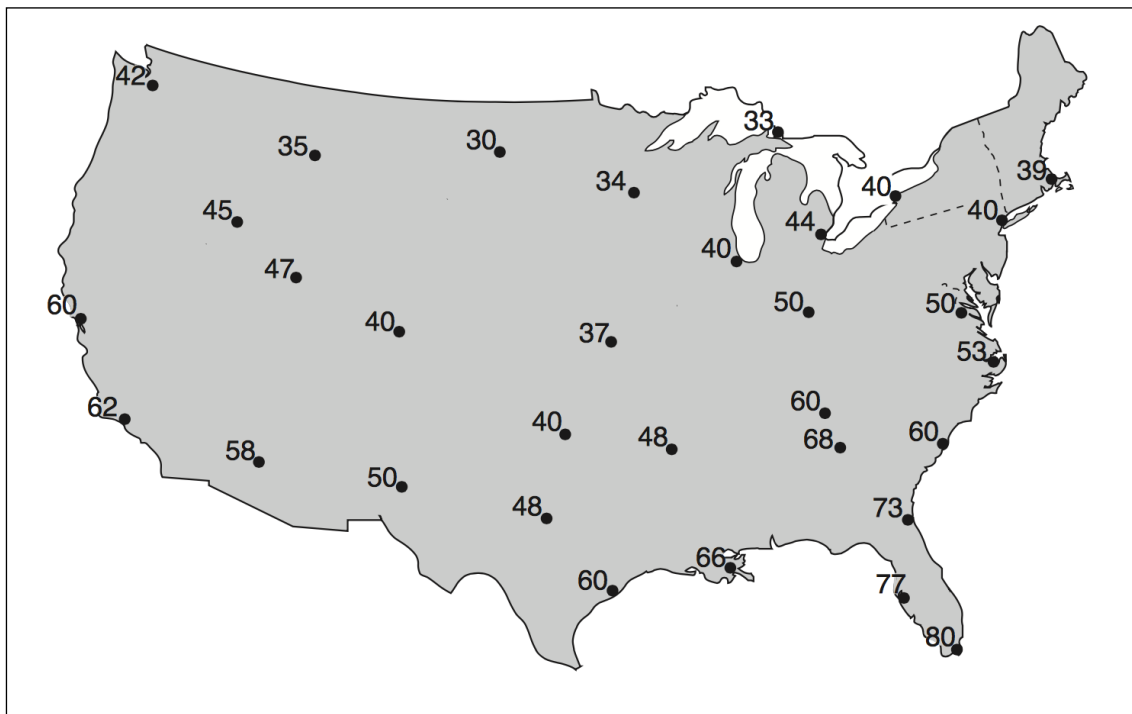# Packet: Field Maps and Isolines

CLASS NOTES

- Field - _____

  _____

  - Example: _____

- Isolines - _____

  _____

  - Example: _____

- Points represent values of data found at a specific location

- To construct a field map connect the points of equal data

  - Do not connect every value… just whole numbers

  - Isolines form complete circles or end at the edge of the map

Temperature Values in the United States

Packet: Field Maps and Isolines

- Different Types of Isoline
    - Isotherm - lines that connect equal points of _____
    - Isohyet - lines that connect equal points of _____
    - Isobar - lines that connect equal points of _____
    - Contour Line - lines that connect equal points of _____

- Rules of Isolines:
    - Connect equal points of _____
    - Close around hills and depressions or extend to the edge of the map border
    - Isolines _____ cross one another
    - Close together represent _____ gradient
    - Far apart represent _____ gradient

- Gradient [slope] - _____
  _____

New York Snowfall Amounts [inches]
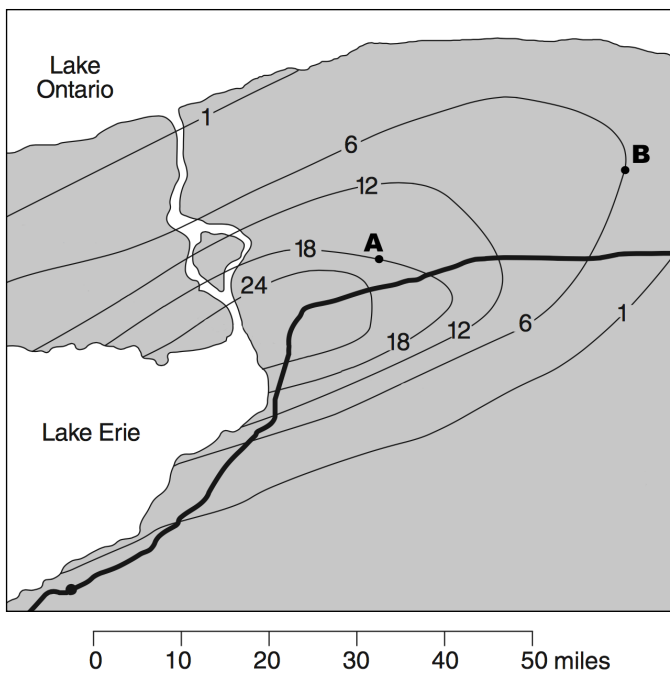
$$\text{Gradient} \ = \ \frac{\text{change in field value}}{\text{change in distance}}$$

$$\text{Gradient} \ = \ \frac{18 \text{ inches} - 6 \text{ inches}}{30 \text{ miles}}$$

$$\text{Gradient} \ = \ \frac{12 \text{ inches}}{30 \text{ miles}}$$

$$\text{Gradient} \ = \ 0.4 \ ^{\text{inches}}/_{\text{mile}}$$

Packet: Field Maps and Isolines

PART I QUESTIONS: MULTIPLE CHOICE

Base your answers to questions 1 through 4 on the map below and on your knowledge of Earth Science. The map shows the depth of Lake Ontario. Isoline values indicate water depth, in feet. Point C represents a location on the shoreline of Lake Ontario. Points D and E represent locations on the bottom of the lake.

Water Depth of Lake Ontario
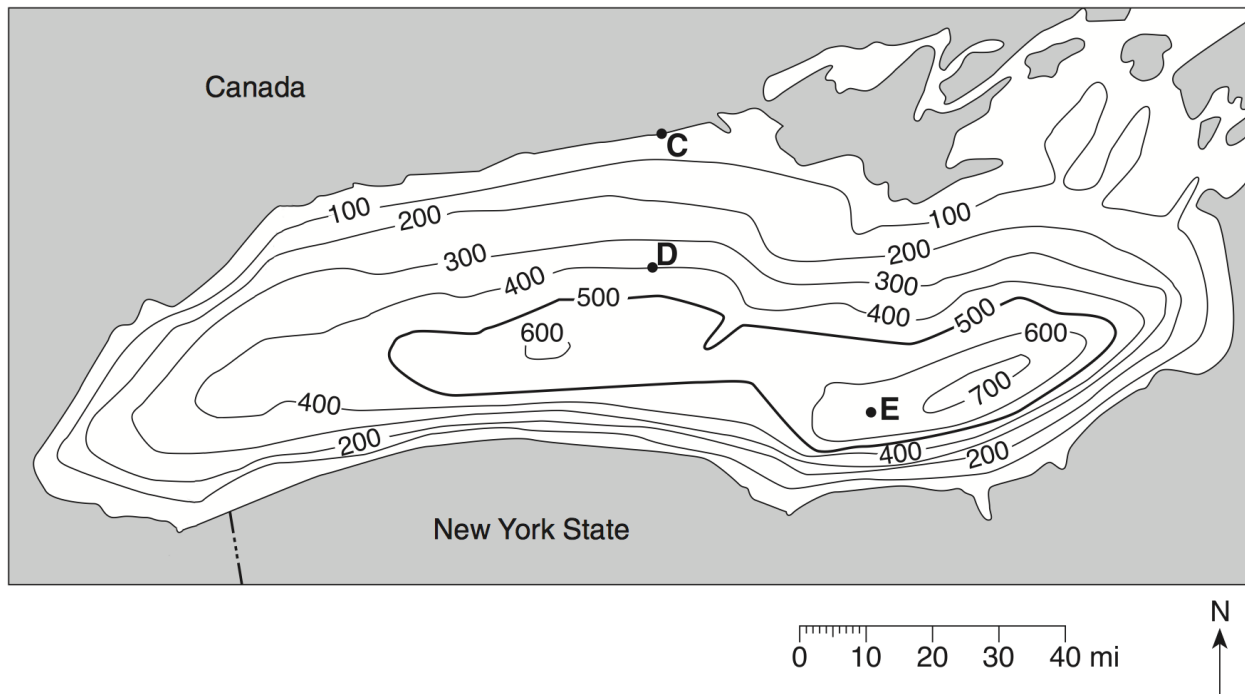
1. What is the depth of the water at location D?
     a.   200 feet
     b.   300 feet
     c.   400 feet
     d.   500 feet

2. What is a possible depth of the water at location E?
     a.   250 feet
     b.   450 feet
     c.   650 feet
     d.   850 feet

3. Calculate the approximate gradient of the lake bottom between point C and point D.
     a.   10 ft/mile
     b.   20 ft/mile
     c.   30 ft/mile
     d.   40 ft/mile

Packet: Field Maps and Isolines

PART II QUESTIONS: FREE RESPONSE

Base your answers to questions 4 through 5 on the map below and on your knowledge of Earth Science. The temperature field map below shows temperature readings [°F] recorded across a portion on the United States. Temperature readings for points A, B and C are labeled on the map.
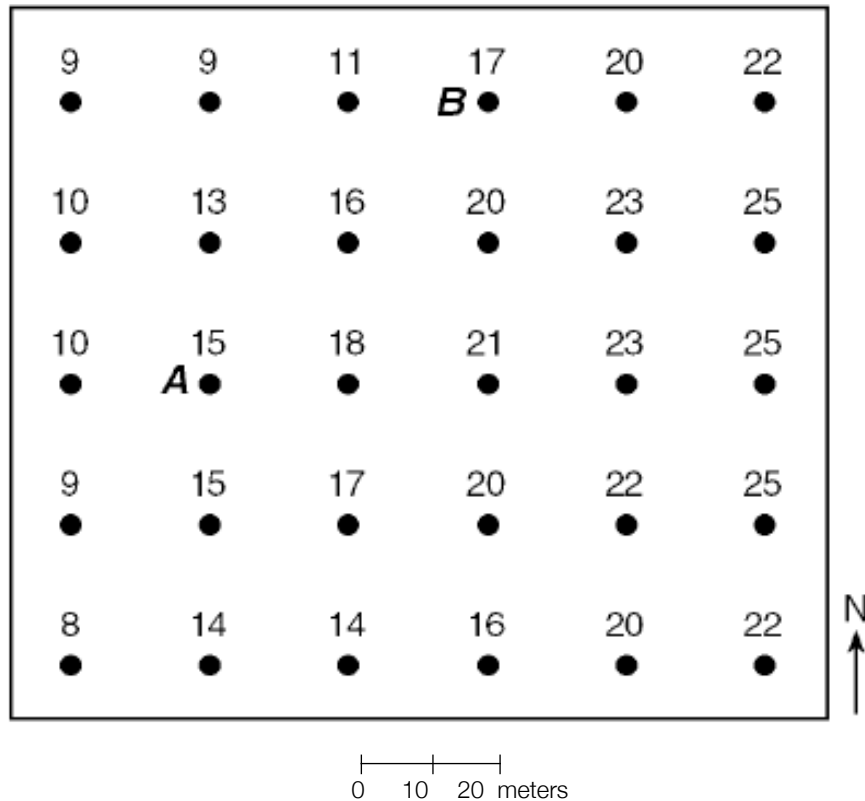
Temperature Field Map

4. On the temperature field map, draw the 30ºF, 40ºF, 50ºF, 60ºF, 70º F and 80ºF isotherms.

5. Calculate the gradient between points A and B on the given map [be sure to include units].

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Base your answers to questions 6 through 7 on the map below and on your knowledge of Earth Science. The field map below showing ground level air temperature at specific locations in an area near a school in New York State. Accurate temperature readings were taken by Earth Science students at 10 am on August 1. Two reference points, A and B, are shown. Temperature is in degrees celsius [°C].

Temperature Field Map

9	9	11	17	20	22
●	●	●	B ●	●	●

10	13	16	20	23	25
●	●	●	●	●	●

10	15	18	21	23	25
●	A ●	●	●	●	●

9	15	17	20	22	25
●	●	●	●	●	●

8	14	14	16	20	22
●	●	●	●	●	●

N
↑

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├──────┼──────┤
0    10    20  meters
```

6.   On the given field map, draw the 15°C and the 20°C isotherms. [isotherms must be extended to the border].

7.   Calculate the gradient between points A and B on the given map [be sure to include units].
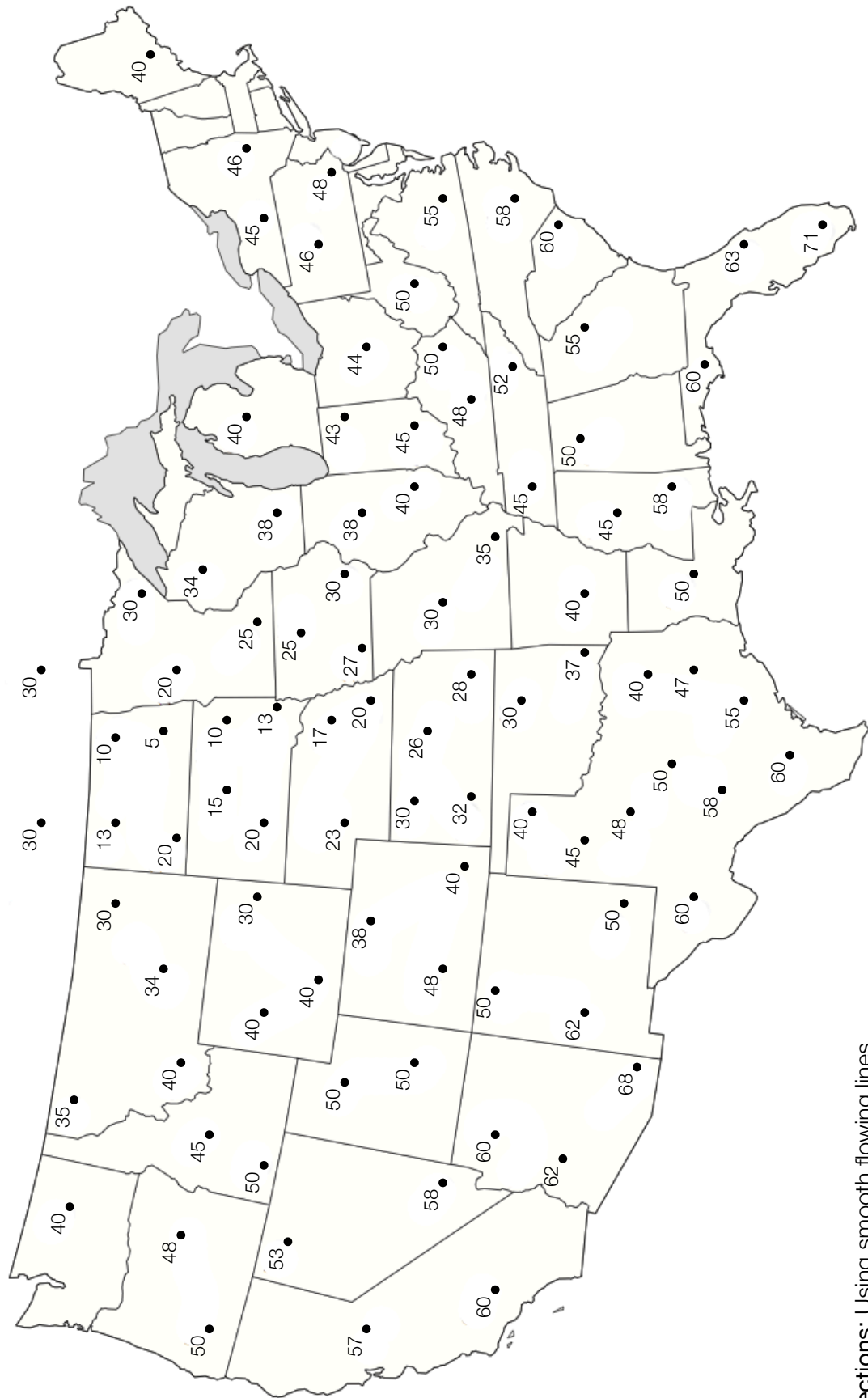
Directions: Using smooth flowing lines, connect the same temperatures using isotherms at 10 °C intervals.