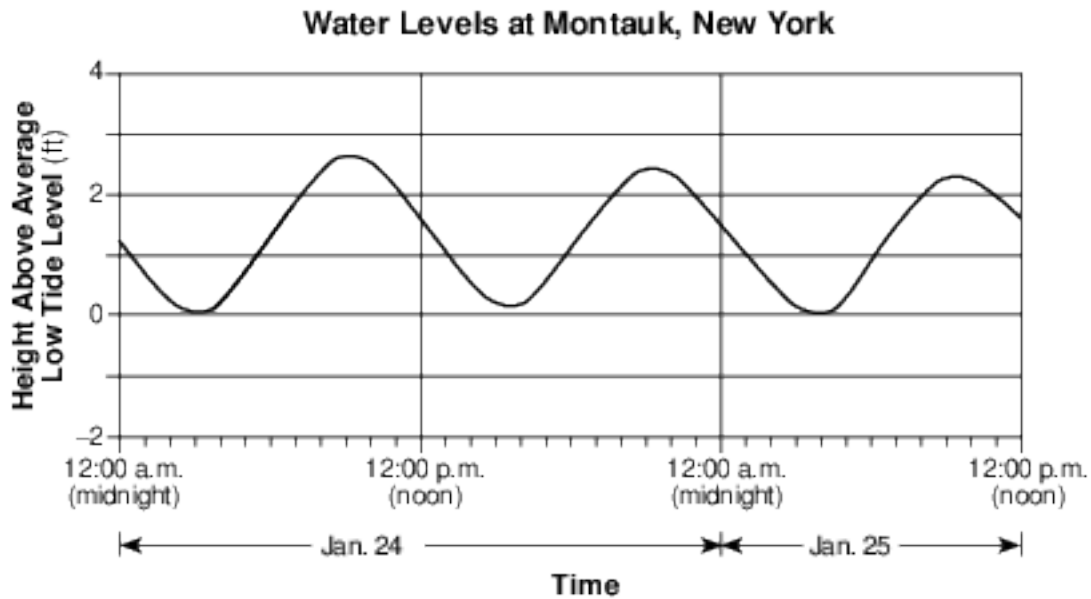


Generalized Bedrock Geology Of New York State

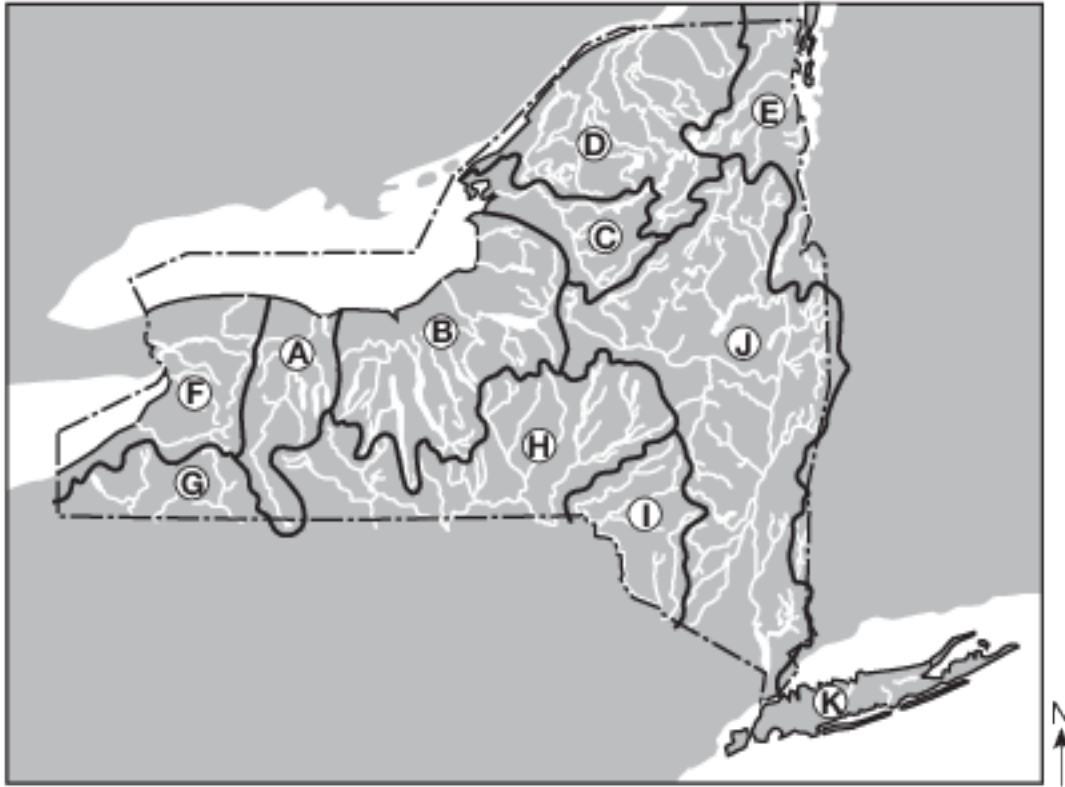
- 1 Which type of surface bedrock is most commonly found in the Utica, New York area?
- (1) sedimentary, with limestone, shale, sandstone, and dolostone
 - (2) sedimentary, with limestone, shale, sandstone, and conglomerate
 - (3) metamorphic, with quartzite, dolostone, marble, and schist
 - (4) metamorphic, with gneiss, quartzite, marble, and slate

Base your answers to questions 2 on the graph below and on your knowledge of Earth science. The graph shows the observed water levels, in feet (ft), for a tide gauge located at Montauk, New York, on the easternmost end of Long Island, from January 24, 2008 to noon on January 25, 2008.



- 2 What is the approximate latitude and longitude of the tide gauge?
- | | |
|-----------------------|-----------------------|
| (1) 40°30' N 72°00' W | (3) 41°00' N 72°00' W |
| (2) 40°30' N 74°00' W | (4) 41°00' N 74°00' W |

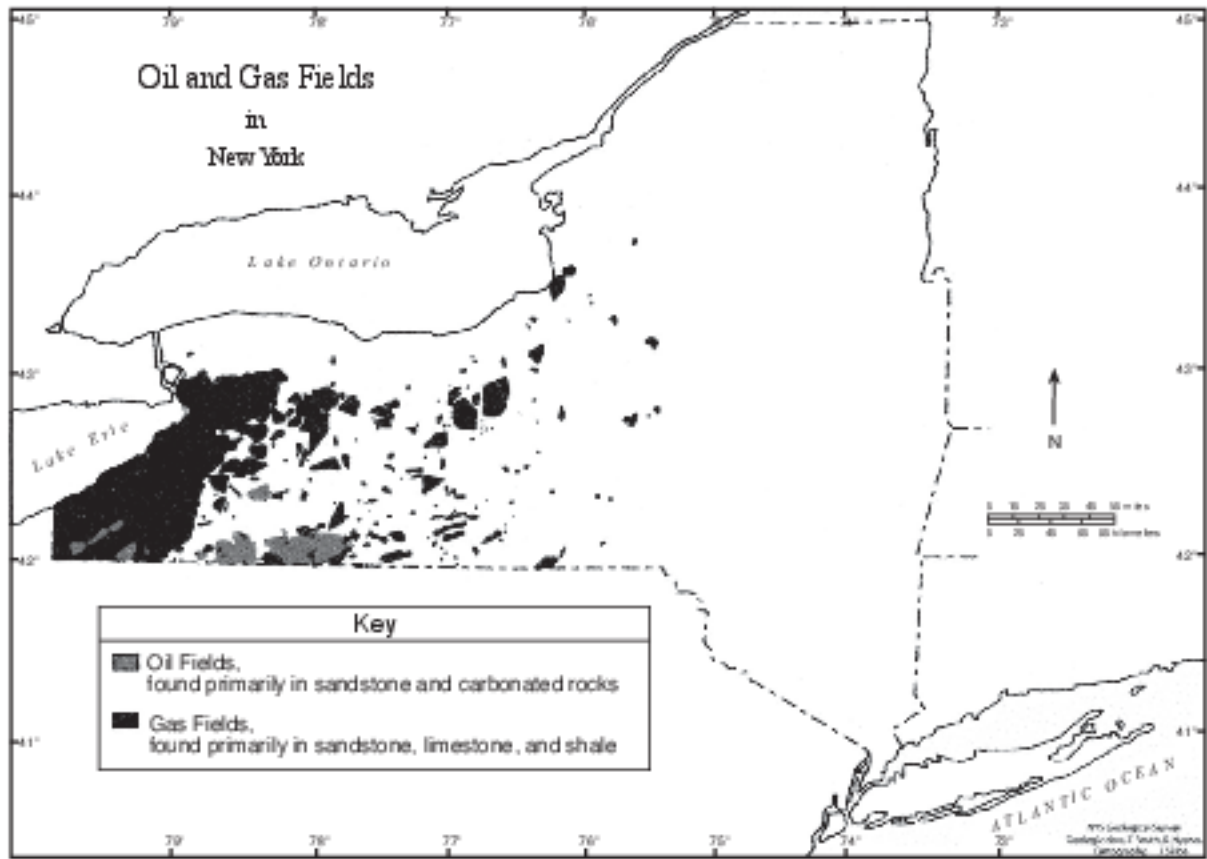
Base your answers to questions 3 on the map below and on your knowledge of Earth science. The map shows the locations of major watersheds in New York State. Letters A through K represent individual watersheds.



3 In which major watershed is the Susquehanna River located?

- | | |
|-------|-------|
| (1) F | (3) I |
| (2) H | (4) J |

4 The map below shows the locations of some oil and gas fields in New York State.

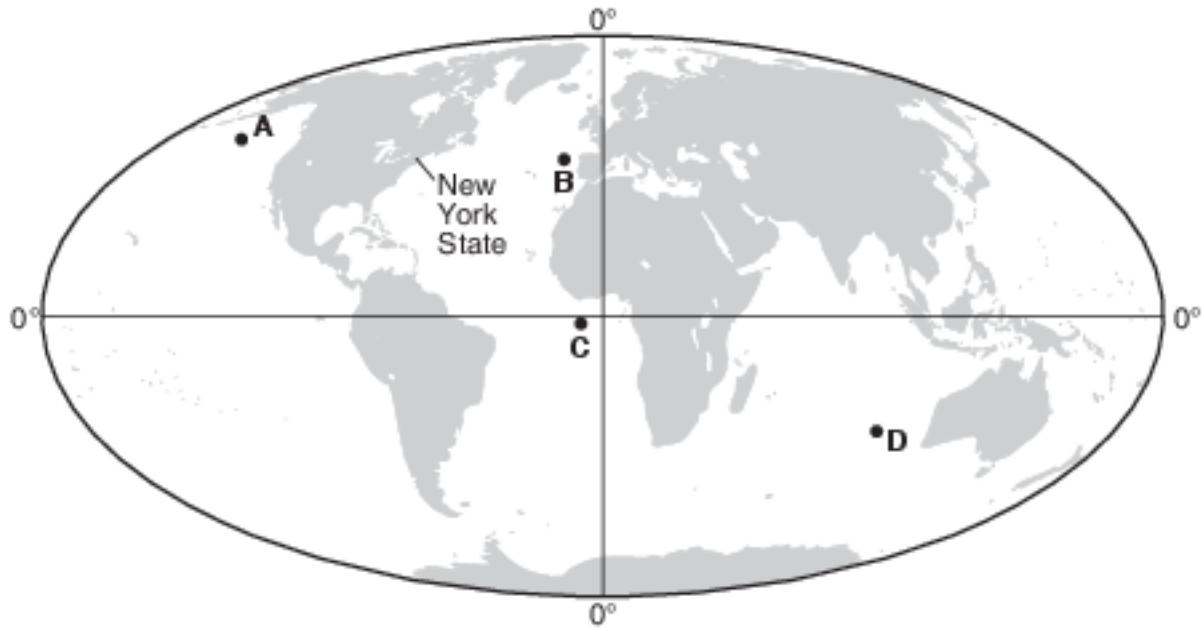


Source: New York State Museum, State Geological Survey

Which type of bedrock contains these oil and gas deposits?

- (1) extrusive igneous rock
- (2) intrusive igneous rock
- (3) metamorphic rock
- (4) sedimentary rock

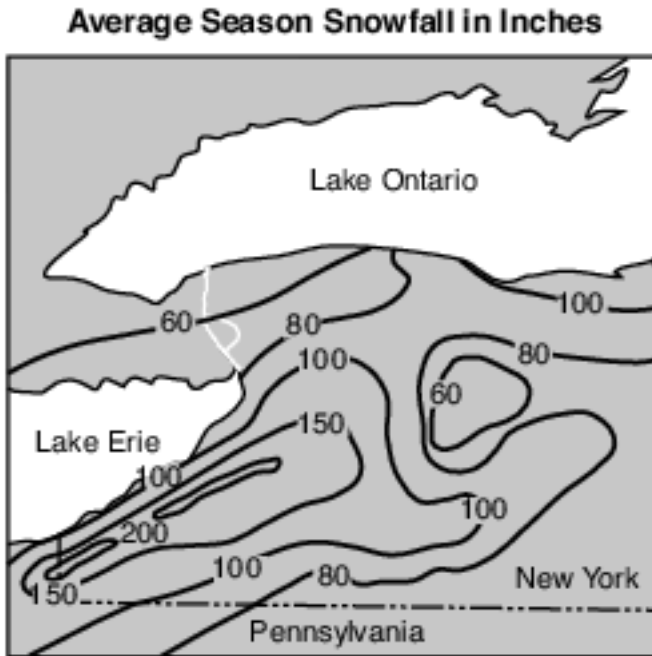
5 The map below shows the present-day positions of the continents. Points A through D represent locations on Earth's surface. The location of New York State on the North American continent is indicated.



Which letter best represents the inferred position of the New York State region on Earth at the end of the Devonian Period?

- (1) A
- (2) B
- (3) C
- (4) D

- 6 The map below shows the average annual snowfall, in inches, for western New York State.



According to the map, which of these cities receives the greatest average annual snowfall?

- | | |
|---------------|-------------------|
| (1) Buffalo | (3) Niagara Falls |
| (2) Jamestown | (4) Elmira |

- 7 Sedimentary rock layers that were deposited between 488 million and 444 million years ago are found on the surface at which two New York State locations?

- | |
|--------------------------|
| (1) Ithaca and Jamestown |
| (2) Utica and Syracuse |
| (3) Oswego and Old Forge |
| (4) Albany and Massena |

- 8 Which two cities are located in the Interior Lowlands?

- | |
|---------------------------------|
| (1) Elmira and Binghamton |
| (2) Riverhead and New York City |
| (3) Massena and Old Forge |
| (4) Buffalo and Watertown |

- 9 What is the approximate altitude of Polaris when viewed from New York City?

- | | |
|---------|---------|
| (1) 90° | (3) 49° |
| (2) 74° | (4) 41° |

- 10 The surface bedrock of Mt. Marcy, New York, is composed primarily of which rock?

- | | |
|-----------------|---------------|
| (1) anorthosite | (3) quartzite |
| (2) marble | (4) hornfels |

- 11 Which New York State landscape region is composed of mostly horizontal sedimentary bedrock and has a high elevation?

- | | |
|----------------------|-----------------------|
| (1) Hudson Highlands | (3) the Catskills |
| (2) Manhattan Prong | (4) Taconic Mountains |

Base your answers to questions 12 on the calendar and data table below. The calendar shows the month of February 2007, indicating the dates when some lunar phases occurred. February 24 lists only the name of the Moon phase that occurred on that day. The data table shows the highest and lowest tides (in feet) recorded for the Hudson River at Kingston, New York, over a 2-day period in February 2007.

February 2007						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 Full	2 3
4	5	6 Old gibbous	7	8	9	10 Last quarter
11	12	13	14	15	16	17 New
18	19	20 New crescent	21	22	23	24 First quarter
25	26	27	28			

High and Low Tides for Kingston, New York

Date	Time of Day	Tide Height (ft)
Friday, February 2	1:30 a.m.	3.5
	7:30 a.m.	-0.2
	1:30 p.m.	4.1
	8:00 p.m.	-0.4
Saturday, February 3	2:00 a.m.	3.6
	8:30 a.m.	-0.2
	2:00 p.m.	4.0
	9:00 p.m.	-0.4

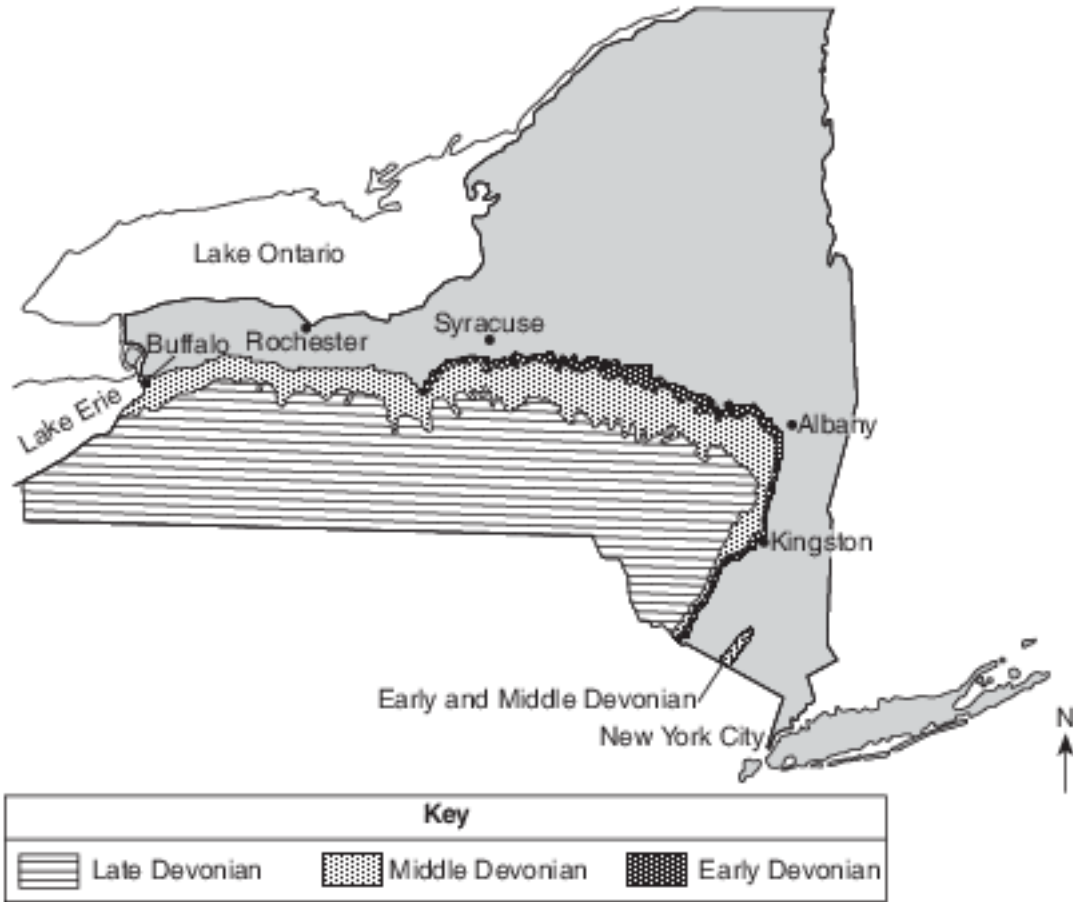
12 Determine the altitude of Polaris at Kingston, New York, to the nearest degree. [1]

Base your answers to questions 13 on the map in image provided and on your knowledge of Earth science. The map shows surface air temperatures for some locations in the United States on a day in November. The 20°F, 30°F, 40°F, and 70°F isotherms are shown. Points A, W, X, Y, and Z represent locations on Earth's surface. The air temperature at location A is shown.

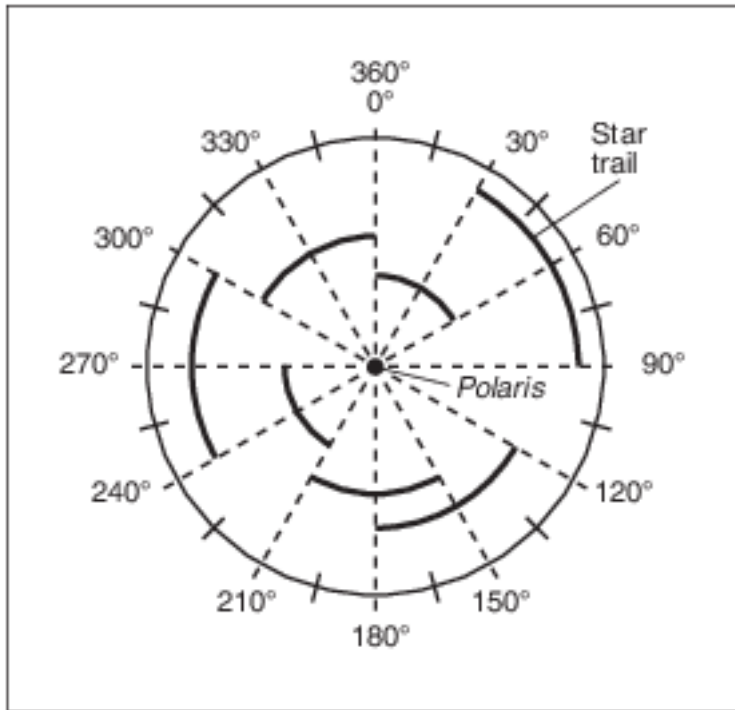
13 Identify the air temperature at Watertown, New York. [1]
_____ °F

Base your answers to questions 14 on the partial geologic map in image provided and on your knowledge of Earth science. The map shows the geographical distribution of most of the Devonian-age surface bedrock in New York State.

14 On the map in the image provided, place an X at a location where the gastropod fossil *Platyceras* might be found in the surface bedrock. [1]



Base your answers to questions 15 on the diagram below and on your knowledge of Earth science. The diagram represents a time-exposure photograph taken by aiming a camera at Polaris in the night sky and leaving the shutter open for a period of time to record star trails. The angular arcs (star trails) show the apparent motions of some stars.



- 15 Record, to the nearest whole degree, the altitude of Polaris when it is viewed from the top of New York State's Mt. Marcy. [1]

o

Answer Keys

1 1

2 3

3 2

4 4

5 3

6 2

7 4

8 4

9 4

10 1

11 3

12 Allow 1 credit for 42°.

13 Allow 1 credit for any value from 39°F to 41°F.

14 Allow 1 credit if the center of the X is within the Middle Devonian zone or the Early and Middle Devonian zone located northwest of New York City.

15 Allow 1 credit for 44°.

- Note: Do not allow credit if a compass direction is given (e.g., 44 N or 44° N) because that
- denotes latitude, not altitude.