

Name _____

Pre/Post Test

Must be answered in complete sentences.

1. What is a sugar maple? (5 pts)
2. How do we get maple syrup? (5 pts)
3. What states are considered New England? (5 pts)
4. What are the seasons of New England? (5 pts)
5. What is the best time of the year for getting the Maple Syrup? (5 pts)
6. At which scale is the production of maple syrup in the U.S? (5 pts) Circle One
Global National Regional City
7. What is the major cause of lower maple syrup production? (5 pts)

Pre/Post Test Answer Key

Must be answered in complete sentences.

8. What is a sugar maple? (5 pts) A sugar maple is a kind of tree that produces a sweet tasting sap that can be collected and made into syrup.
9. How do we get maple syrup? (5 pts) Maple syrup is sap that has been collected from a maple tree and boiled down to form a thick syrup.
10. What states are considered New England? (5 pts) The states are Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.
11. What are the seasons of New England? (5 pts) New England has summer, fall, winter, and spring seasons.
12. What is the best time of the year for getting the Maple Syrup? (5 pts) The best time is when the days are above 40 degrees and the nights are below freezing (32 degrees).
13. At which scale is the production of maple syrup in the U.S? (5 pts) Circle One
Global National Regional City
14. What is the major cause of lower maple syrup production? (5 pts) The major cause is global warming (climate change). Changes in temperature (warmer winters) and precipitation (less snowpack) are the causes of lower maple syrup production.

Background Information on New England and the Maple Syrup Industry

New England is located in the northeastern corner of the United States consisting of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut. The dominant trees in the New England area are sugar and red maple. The New England states have beautiful fall color, jagged coastlines, mountains and rolling hills that make it a great tourist area.

The New England area has four very distinct seasons:

- Spring temperatures are usually wet with temperatures between 40-60 degrees.
- Summers are somewhat humid and hot with thunderstorms usually between June-August.
- Fall temperatures are usually 45-50 degrees. The air is cool and crisp with peak beautiful foliage changes.
- Winter climate average is 25 degree and it usually snows and average of 35 inches per year.

Maple sugar producers have kept records (data) for over 50 years. Here are some of the facts gathered:

- The Maple Syrup season is starting three weeks earlier and ending two weeks sooner.
- Scientists are predicting the New England area maple sugaring tradition will end by the century's end.
- The proper condition to get the maple syrup sap to flow properly depends on freezing nights followed by warm days in late winter.
- At one time maple sugar farmers could use buckets to collect the syrup. Today, with a shorter season, they had to become innovative and now use tubes for collection.
- To get the sap, a tree must be "tapped" with a spigot or tube.
- As little as two degrees warmer temperature could make the difference on how much sap will flow.

Making a Climograph

Name _____

Climate Burlington - Vermont



	Jan	Feb	Mar	Apr	May	Jun
Average high in °F	27	31	40	55	67	76
Average low in °F	10	13	22	35	45	55
Days with precipitation	14	11	12	12	14	13
Hours of sunshine	127	146	192	207	251	270
Av. precipitation in inch	2.06	1.76	2.22	2.82	3.45	3.69
Av. snowfall in inch	21	16	16	5	0	0



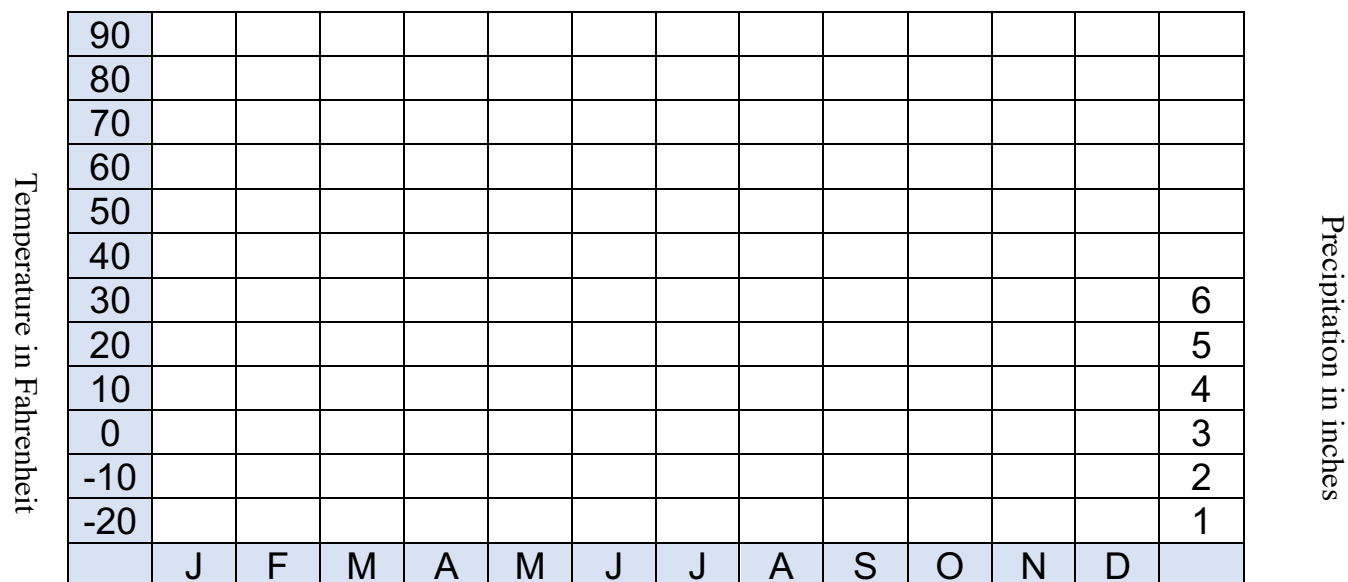
	Jul	Aug	Sep	Oct	Nov	Dec
Average high in °F	81	79	70	57	46	33
Average low in °F	60	58	51	39	31	19
Days with precipitation	12	12	11	12	14	14
Hours of sunshine	300	257	201	158	90	93
Av. precipitation in inch	4.16	3.91	3.64	3.60	3.13	2.38
Av. snowfall in inch	0	0	0	0	5	18

Climograph (Climate Graph) (50 pts) Name _____

Burlington, VT

Create line graphs showing high and low temperatures for each month. Use one color for average high temperatures and a different color for average low temperature.

On the same graph, create a bar graph showing average precipitation for each month. Use a third color for the bar graph.

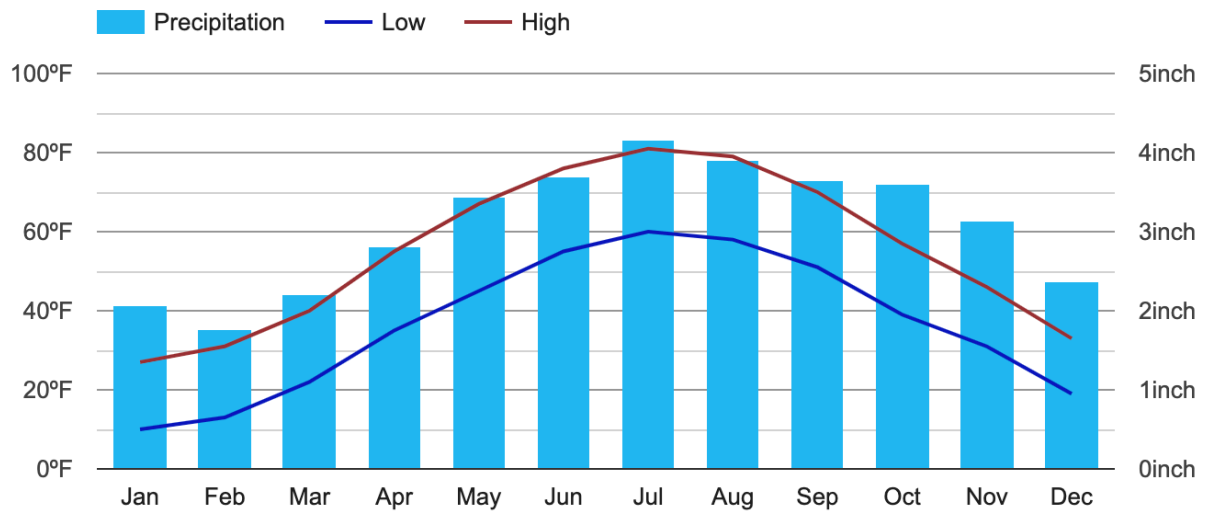


Low Temperature High Temperature Precipitation

The successful maple syrup season in New England depends on the proper combination of freezing nights and warm daytime temperatures greater than 40° F. Once a string of days occurs where nighttime temperatures no longer fall below freezing, sap flow stops. The first sap flow of the season generally has the highest sugar content and the lowest nitrogen content, resulting in the highest quality syrup of a given season. Therefore, the maple industry in New England depends to a large extent on the timing of these critical climate events. For Vermont this has typically been between the middle of March and the middle of April. Yet, for the last several years the sugaring season and first sap flow have occurred as early as the beginning of February. Warmer seasonal temperatures result in reduced sap flow, a shorter tapping season, and a lower grade product. The question that concerns New England regional maple syrup producers in the region is: How will a changing climate affect sap flow and quality?

Climograph (Climate Graph) **Answer Key**

Burlington Climate Graph - Vermont Climate Chart



<https://www.usclimatedata.com/climate/burlington/vermont/united-states/usvt0033>

Drawing Conclusions

Name _____

1. Below 32 degrees is considered freezing. In what months are the low temperatures below 32 degrees (on average)? (5 pts)
2. What months have an average high temperature of above 40 degrees? (5 pts)
3. Looking at #1 and #2, what month in spring is the best for maple syrup production? (5 pts)
4. What are two effects on the state of Vermont due to not having a good production of maple syrup. Feel free to research good answers. (10 pts)
5. What are the 2 factors that are hurting the maple syrup industry? Feel free to research good answers. (10 pts)
6. What are 3 things you can do to curb the cause? Feel free to research good answers. (15) pts)

Drawing Conclusions **Answer Key**

1. Below 32 degrees is considered freezing. In what months are the low temperatures below 32 degrees (on average)? (5 pts) Jan, Feb, Mar, Nov, Dec
2. What months have an average high temperature of above 40 degrees? (5 pts) Mar, Apr, May, June, July, Aug, Sept, Oct, Nov
3. Looking at #1 and #2, what month in spring is the best for maple syrup production? (5 pts) March
4. What are two effects on the state of Vermont due to not having a good production of maple syrup. Feel free to research good answers. (10 pts)
Answers can include: (other answers are acceptable)
 - Maple syrup businesses fail
 - People are unemployed
 - People leave Vermont to find other employment
 - Consumers pay higher prices for maple syrup
 - Only imitation syrup will be available
 - Loss of historical/cultural product in this part of the nation
 - Not much yet—technology is making up for the losses by being more efficient in the making of syrup
 - ????
5. What are the 2 factors that are hurting the maple syrup industry? (10 pts)
climate change/global warming/ = rising temperatures
drought = less snowpack
ice storms = damage the trees
6. What are 3 things you can do to curb the cause? (15 pts) Answers can include: (other answers are acceptable)
 - Consume less fossil fuels (cars, airplanes, factories, homes)
 - Use renewable energy sources (sun, water)
 - Invest in energy efficient technology and appliances
 - Eat local, buy local (saving transportation costs)
 - Speak up to encourage others to change and make personal changes
 - Weatherize homes, etc

- Plant trees
- Promote green spaces and eco-friendly initiatives
- Recycle
- Vote for candidates that favor eco-friendly initiatives