



TAPPING INTO MAPLE TRADITION

Lesson Title: Maple Syrup Temperatures

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Grade Level:

- Early Elementary (K – 2nd)
- Upper Elementary (3rd – 5th)
- Middle School (6th – 8th)
- High School (9th – 12th)

What National Agriculture Literacy Outcomes does your lesson address?

<http://www.agclassroom.org/get/doc/NALObooklet.pdf>

T4.3-5d

What Common Core Standards does your lesson address?

CCSS.MATH.CONTENT.3.NF.A.1

CCSS.MATH.CONTENT.4.NF.B.4

CCSS.MATH.CONTENT.5.NF.B.4

Brief description of your lesson plan:

In this activity, students will explore different temperatures involved with maple sugaring. They will learn about using a thermometer to take temperature and will use fractions to convert from Fahrenheit to Celsius and back.

Time: 1 hour

Materials:

- Worksheet - Maple Syrup Temperature Challenge
- Colored Pencils/Markers
- Calculator

Vocabulary:

Fahrenheit: of or denoting a scale of temperature on which water freezes at 32° and boils at 212° under standard conditions, mainly used in the U.S.

Celsius: of or denoting a scale of temperature in which water freezes at 0° and boils at 100° under standard conditions, used throughout the world, including Canada.

Background:

(celsius)		(fahrenheit)
100	the boiling point of water	212
104	maple syrup	219.2
111.5	maple butter	232.7
113	maple taffy	235.4
114.5	soft sugar	238.1
118	hard sugar	244.4

123

Interest Approach – Engagement:

Discuss with students how some of their favorite foods are made. Would changing the temperature change the food at all? Would it make it something completely different?

Procedures:

Follow the instructions on the worksheet.

1. Discuss with students why it is important to know the different temperature scales. What does that have to do with maple producers?

Did you know? (Ag Facts):

Maple Cream (butter) is 100% pure maple syrup heated to 235 degrees, stirred, and poured into jars¹

Sources/Credits:

1. <http://www.massmaple.org/making.php>
2. http://www.thermoworks.com/pdf/candy_temperature_chart.pdf
3. <https://www.scientificamerican.com/article/maple-syrup-science-cooking-up-some-candy/>

Name: _____

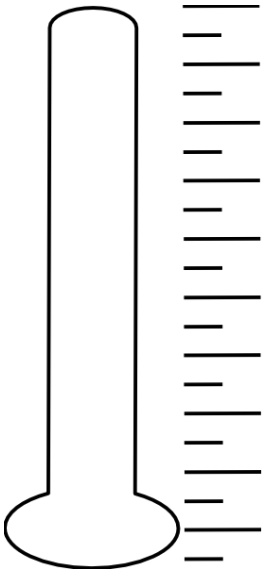
Maple Syrup Temperature Challenge!

Color in the thermometer to the appropriate temperature and then convert the temperature using the formulas below!

Formulas: $Celsius = \frac{5}{9}(Fahrenheit - 32)$ $Fahrenheit = \frac{9}{5}(Celsius) + 32$

1. Water Boils at 100F. What would that be in Celsius?

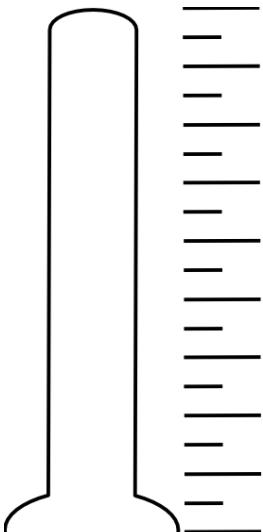
Celsius _____



2. Maple Syrup boils at 4C higher than water. What temperature is that? What temperature is that in Fahrenheit?

Celsius _____

Fahrenheit _____

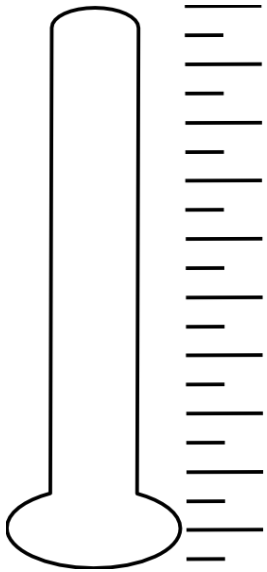


Name: _____

3. Raising the temperature an additional 13F produces maple butter. What temperature is that? What temperature is that in Celsius?

Celsius _____

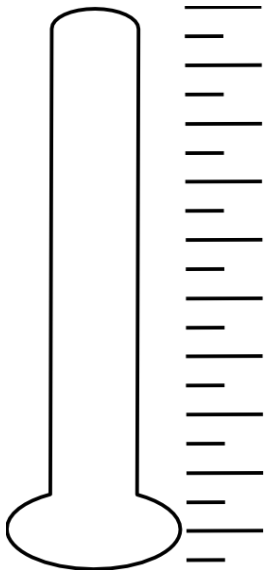
Fahrenheit _____



4. Taffy can be made by raising the temperature 2C. What temperature is that? What temperature is that in Fahrenheit?

Celsius _____

Fahrenheit _____



Name:

5. Once maple sap has been boiled into syrup it must be lowered to room temperature, about 70F. How many degrees does the boiling liquid need to drop to be at room temperature?