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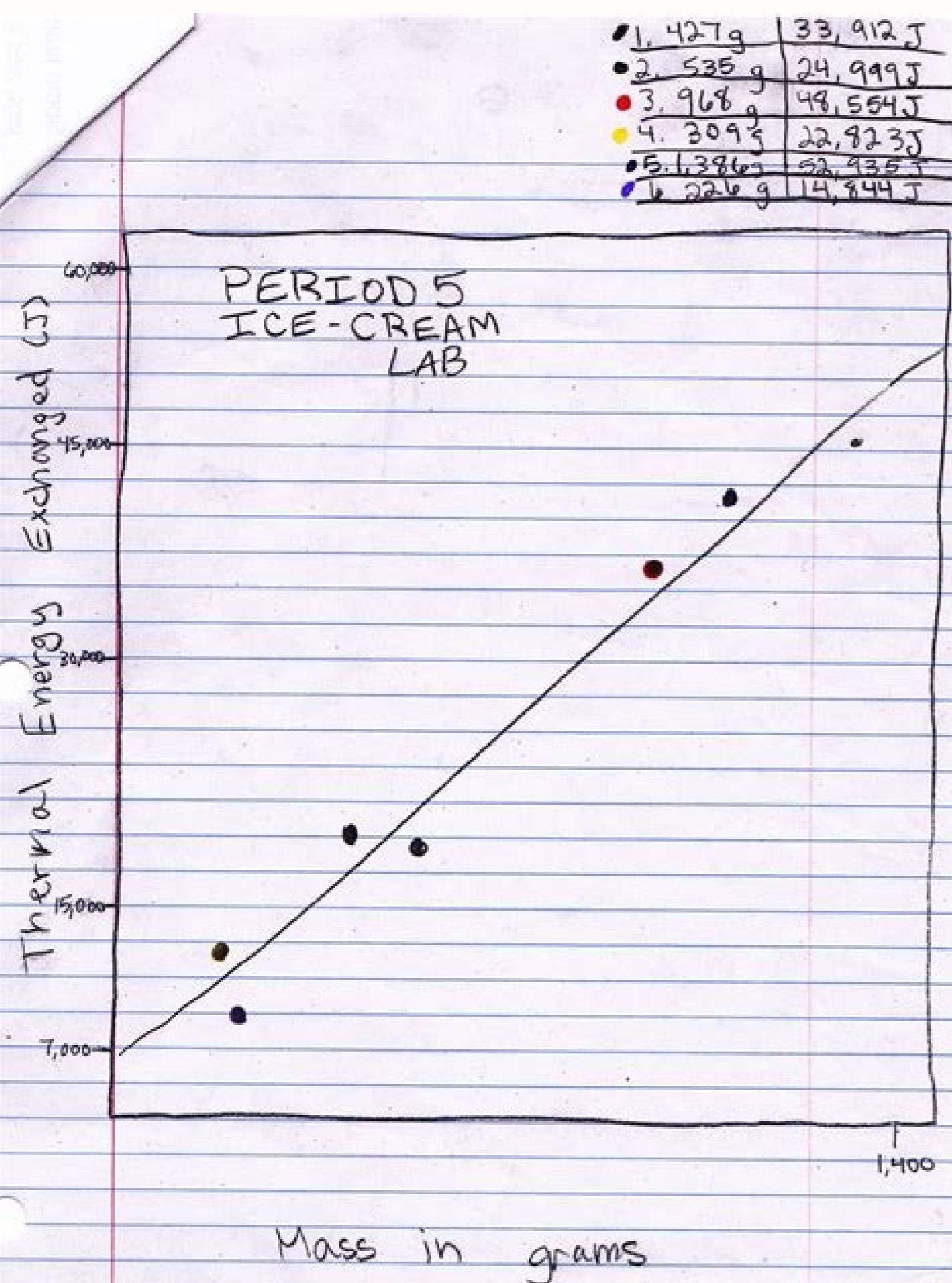
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$$\text{Moles of unknown} = \frac{\text{mass of unknown}}{\text{molar mass}}$$

$$\text{Molar mass} = \frac{\text{mass of unknown}}{\text{moles of unknown}}$$

1. 427 g	33,912 J
2. 535 g	24,999 J
3. 968 g	49,554 J
4. 309 g	22,923 J
5. 1,386 g	92,935 J
6. 226 g	14,944 J

PERIOD 5  
ICE-CREAM  
LAB



## FREEZING POINT DEPRESSION ICE CREAM LAB



Freezing Point Depression Ice Cream Lab

1. Calculate the freezing point depression of each sample. Use the following formula:  
 $\Delta T_f = \frac{m}{M} \cdot K_f$

## calculations

1. Freezing point depression:  $\Delta T_f = K_f \times \text{Molality}$

where  $\Delta T_f = T_{\text{final}} - T_{\text{initial}}$

$$\text{solution 1: } -3.0^\circ\text{C} - 0.5^\circ\text{C} = -3.5^\circ\text{C}$$

The freezing point depression of solution 1 is  $-3.5^\circ\text{C}$

2.  $\Delta T_f = T_{\text{final}} - T_{\text{initial}}$

$$\text{solution 2: } -6.0^\circ\text{C} - 0.5^\circ\text{C} = -6.5^\circ\text{C}$$

The freezing point depression of solution 2 is  $-6.5^\circ\text{C}$

3. Molality of solution 1 (using  $K_f = -1.86^\circ\text{C} \cdot \text{kg/mol}$ )

$$\Delta T_f = K_f \cdot \text{Molality}$$

$$(-3.0^\circ\text{C} - 0.5^\circ\text{C}) = (-1.86^\circ\text{C} \cdot \text{kg/mol})(m)$$

$$-3.5^\circ\text{C} = (-1.86^\circ\text{C} \cdot \text{kg/mol})m$$

$$-3.5^\circ\text{C} / (-1.86^\circ\text{C} \cdot \text{kg/mol}) = m$$

$$m = 1.88 \frac{\text{mol}}{\text{kg}}$$

$$\text{Molality Solution 1: } 1.88 \frac{\text{mol}}{\text{kg}}$$

4. Molality of solution 2 ( $K_f = -1.86^\circ\text{C} \cdot \text{kg/mol}$ )

$$(-6.0^\circ\text{C} - 0.5^\circ\text{C}) = (-1.86^\circ\text{C} \cdot \text{kg/mol})(m)$$

$$-6.5^\circ\text{C} = (-1.86^\circ\text{C} \cdot \text{kg/mol})m$$

$$-6.5^\circ\text{C} / (-1.86^\circ\text{C} \cdot \text{kg/mol}) = m$$

$$m = 3.49 \frac{\text{mol}}{\text{kg}}$$

$$\text{Molality Solution 2: } 3.49 \frac{\text{mol}}{\text{kg}}$$

5. # of grams of antifreeze per 1000 grams solvent

$$\frac{\text{mass of 250mL beaker w/ antifreeze} - \text{mass of 250mL beaker}}{\text{mass of antifreeze}} = \text{mass of antifreeze}$$

Set proportion as

$$\frac{\text{mass of antifreeze}}{\text{grams solvent}} = \frac{x \text{ mass of antifreeze}}{1000 \text{ grams solvent}}$$

6. Solution 1

$$\frac{(117.70\text{g} - 112.70\text{g})}{21\text{grams solvent}} = \frac{x \text{ mass of antifreeze}}{1000 \text{ grams solvent}}$$

## Freezing Point Depression

{f.pt. Equil}

{f.pt. Lower}

- The change in freezing point is proportional to the molality of the solution :

$$\boxed{\Delta T_f = K_f \cdot m}$$

- Here  $K_f$  is the molal freezing point depression constant of the solvent.

Solvent	Normal Boiling Point (°C)	$K_b$ (°C/m)	Normal Freezing Point (°C)	$K_f$ (°C/m)
Water, H <sub>2</sub> O	100.0	0.51	0.0	1.86
Benzene, C <sub>6</sub> H <sub>6</sub>	80.1	2.53	5.5	5.12
Ethanol, C <sub>2</sub> H <sub>5</sub> OH	78.4	1.2	-114.6	.99
Carbon tetrachloride, CCl <sub>4</sub>	76.8	5.02	-22.3	29.8
Chloroform, CHCl <sub>3</sub>	61.2	3.6	-63.5	.68

$\Delta T_f$  is subtracted from the normal freezing point of the solvent.

The first known ice cream cone was sold in 1904 at the world fair in St. Louis, Missouri. Characteristics of the pipe: Let dry. Add any ingredient that you like to make your mix or get into a proven and true recipe. Finally, ingredients are added, ranging from vanilla to the fruit are added to change the taste of ice cream. How to make the ingredients of the ice cream mix and add them to a freezer, but the work does not end there by making ice cream. The constant whip avoids the mixture from becoming ice by adding air to create the family texture of the ice cream. In the 17th century, a napole named Antonio Latini created a sorbet that contains milk that many consider the first official ice cream. The ice cream in the ice cream of the United States dates back to the arrival of the European settlers in the DA © each of 1700.. The United States requires any ice cream sold to have at least 10% milk milk. More from consumersearch.com James Baigrie These mini take ice cream cakes are charged with possibilities. You may find more information about it and similar content on our website. Ice cream c. More ice cream is sold on Sunday than any other day of the week, which is ironic, considering that the soda sources were opened years ago, enjoying an ice cream soda on Sunday was packed. The soft service is mixed with more frequently and maintained at lower temperatures, while the frozen custard ice cream contains egg yolks. Advertisement - Continue reading below Cal / Serv: 286 yields: 4 Preparation time: 0 hours 30 minutes Total time: 1 hour 30 minutes 1/2 c. The frozen yogurt is the yogurt that falls like ice cream, and the gelato is more dense and it contains more milk than cream. Other interesting facts about ice cream. It is produced and eaten in U.S. U.S. That any other country in the world, and California produces. More than any other state. Topping frozen shake Colors of foods (optional) Garnish: 4 BABIES BETES BETES CINANAMIENTO Graham Cookies, decorated This ingredient buying module is created and maintained by a third party, and is imported into this page. Noble members of the Tang Dynasty enjoyed a frozen snack that included milk and camphor, according to PBS. After the war, it became even more conventional, as it was mass-produced and sold in grocery stores. What's in the ice cream? Not all ice creams have the same ingredients, but cream and sugar are the basic base for traditional ice cream. Some people choose to make their own ice cream at home by buying a refrigerator. Where to buy ice cream The exact origin of ice cream is not clear, but history suggests that it started with an affinity for ice cream drinks. These top ice cream machines do the job for you so you can save your energy for other fun summer activities. Chocolate syrup is the most popular filling. Once the milk chocolate shell is set, it can be filled with any flavor of frozen confectionery. Brush the inside of the top aluminum foil cups with chocolate. Historical figures such as King Solomon, Alexander the Great and Nero Claudius Caesar supposedly enjoyed eating snow that tasted everything from honey to fruit juices. You may be able to find more information about this and similar content at piano.io Advertisement - Continue Reading Below Former presidents, including George Washington, Thomas Jefferson and Abraham Lincoln enjoyed ice cream. Spoon each in a small zipper bag; cut a small tip in the corner. This content is created and maintained by a third party, and imported into this page to help users provide their email addresses. When the ice cream is finished, it should be stored in a freezer in an airtight container. Variations in ice cream These days there are many variations in ice cream. The average household eats 48 pints per day, and simple vanilla is the most popular flavor. If each person eats three tablespoons of ice cream, the gal's serve 10 people with a cup cup Many commercially sold ice cream contain stabilizers to improve texture, and some may include sugar substitutes to reduce the content of Azúcar. The first Heladore of the New World opened its doors in 1790 in New York, but continued to be a gift for outstanding citizens during years. Spoon in zipper bags, cut a corner of each and ice cream filling pipe. Some shops and restaurants specialize in ice cream as Dairy Queen, Baskin-Robbins, Cold Stone Creamery and Bruster's. Photo Please: Pixabay Ice Cream is one of the most popular treats for a hot summer day. When the ice houses were invented, the ice cream became a more conventional gift that was sold mainly through soda and ice-holder sources. Freeze to Set. Drop 1 tablespoon of ice cream in each cup of chocolate; Remove from the stack, return to freezer if tinting tinting, divide between mugs and tint pastel colors. During World War II, it was a popular gift for troops. Then, just add a buggy topping portion and decorate with a cute cookie for a single-way gift. Throughout the little medieval, the aristocrats in Europe adapted an icy drink known as Sherbet of the Middle East. The ice cream is widely available in the United States. Tips and techniques can be frozen for 1 week. While you can go to the store and pick up a pint of your favorite flavor, not a hold a candle to beat a lot of creamy kindness at home. Using 32 cups of aluminum foil oven with paper coatings, assembling 4 batteries (8 cups in each), with a cup of aluminum foil on top. Savor chocolate as the package directs. A œThere is also available both in rapid food restaurants and sitting. Many ice cream containers have Recommended portion size is listed along with nutritional information, although some people may eat more or less than that amount, based on their appetites, age, number of ingredients, whether the ice cream is in a cone or served with cake or cake, and other factors. If each person eats 1 cup, it will serve 16 people because there are 16 cups in a gallon. Milk chips and chocolate 1 pt. Utroja/Pixabay The number of people serving a gallon of ice cream depends on how much each person eats. Leave 1 white; dye the others with the color of the food. Find it in the frozen section of most grocery stores, convenience stores, and anywhere else that sells food. Divide between 5 cups (approximately 2 teaspoons each). Decorate with a cookie. Mix 1 A'2 cup of sugar from the confectioners and 2 teaspoons of water until smooth. The higher the fat in the milk, the smoother the ice cream. If a person eats half a cup, approximately the amount in the average spoonful of ice cream, the gallon will serve 32 people, people.

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