

2017 Food Science CDE Problem Solving/Math Practicum

Directions — You will have 30 minutes to complete the problems listed below. You will not write on this sheet. You have a separate sheet to work out your answers. Please write your name and state on the top of the scratch paper provided to you. You will need to bubble your answers in the appropriate boxes on your scantron.

1. As part of your responsibility with Kraft Foods, you have been asked to develop a jalapeno jelly as a line extension for the jelly product line. Your initial formulation is:

Red Peppers	9 oz
Green Peppers	9 oz
Jalapeno Peppers	6 oz
Cider Vinegar	8 oz
Fruit Pectin	49.7 g
Butter	2.3 g
Sugar	35 oz

What percent of the formulation are jalapenos? (AFNR #FPP.03.02.01b and c)

- a. 5.0 %
 - b. 25.0 %
 - c. 10.2 %
 - d. 8.7 %
2. You have been tasked with creating an innovative dairy beverage. You have 30% heavy cream and 3.5%fat milk. Your target dairy product should have 7% fat. Since this is a test batch in your product development lab, you will be making an 8 pound batch. How much heavy cream will the batch require? (AFNR #FPP.03.02.02c)
 - a. 1.35 pounds
 - b. 6.64 pounds
 - c. 1.06 pounds
 - d. 6.94 pounds

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3. You are formulating a product that will contain 0.03% of a flavoring agent. How many parts per million (ppm) does this equate for this ingredient? (AFNR #FPP.03.02.01b)
 - a. 30 ppm
 - b. 300 ppm
 - c. 3000 ppm
 - d. 30000 ppm

4. A shipping container is 48 inches wide x 40 inches deep x 48 inches tall. You have a case of parmesan cheese for export to Japan that it is an 20 cm x 20 cm x 20 cm box. In order to maximize your shipment over the ocean, how many of the parmesan boxes can you fit inside the shipping container? (AFNR #FPP.03.02.01b and c)
 - a. 230
 - b. 180
 - c. 37
 - d. 11.5

5. You are preparing hams for the upcoming holiday season. You started with 2000 lbs of pork fresh hams and you are injecting the hams with a 10% solution that includes water, salt cure and phosphate. The injected hams are cooked in the smokehouse to internal 148 degrees Fahrenheit for 1.78 minutes. After the thermal process, hams were weighed 2046 pounds. What yield did you have on this batch of hams? (AFNR #FPP.03.02.02c)
 - a. 102.3 %
 - b. 97.8 %
 - c. 101.3 %
 - d. 93.0%