

Name: \_\_\_\_\_

# Activity 1: Steps to Creating a New Food Product

## Directions:

Follow each step to begin the creation of your NEW food product! Read each step carefully and complete requirements as directed. Record your thoughts in the spaces provided. You may work with 1 partner if desired. You do not have to complete the steps in order if you find it easier to jump around.

**STEP 1:** Select and CIRCLE your Food Category, Platform and Market below:

"Product development scenarios will describe a category, platform and market. These may include but are not limited to the following categories, platforms and markets listed below:"

**Category:** (Circle 1)

- i. Cereal
- ii. Snacks (trail mix, etc.)
- iii. Meals (frozen, ready to eat, etc.)
- iv. Side dishes (macaroni, pasta salad, etc.)
- v. Beverages (sodas, sport drinks, etc.)
- vi. Supplements (vitamin/mineral based or supplemental meal bar)
- vii. Condiments (ketchup, mustard, etc.)
- viii. Desserts (cookies, pies, cakes, etc.)

**Platform:** (Circle 1)

- i. Frozen
- ii. Refrigerated
- iii. Shelf-stable: food that can be kept at room temperature without spoiling. (Rice, canned goods, etc.)
- iv. Convenience: food that saves time when preparing and cleaning up. (cake/baking mixes, instant potatoes, etc.)
- v. Ready to eat: food that does not require preparation and is ready to eat. (cold meats, cheeses, precooked meals designed to eat cold, etc.)
- vi. Heat and serve: food that has been prepared and frozen, which can then be heated and served. (frozen TV dinners, frozen pizza, frozen pies, frozen breakfast burritos, etc.)

**Market (Domestic and International):** (Circle 1)

- i. Retail: selling of goods directly to a consumer (grocery stores such as Kroger, Walmart or small/locally owned grocery stores)
- ii. Wholesale: buying of large quantities of items and reselling to customers or other retail stores (large stores such as Costco, Sam's Club)
- iii. Food service (used in a food service program cafeterias — school, college, government)
- iv. Convenience store (gas station)

**STEP 2:** Processing of your product. Answer the following questions about how you plan to process/make your food product.

- Provide a description of how to make your product. (Think recipe style here.)

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- What equipment is needed? (meat processor, oven, dehydrator, etc.)

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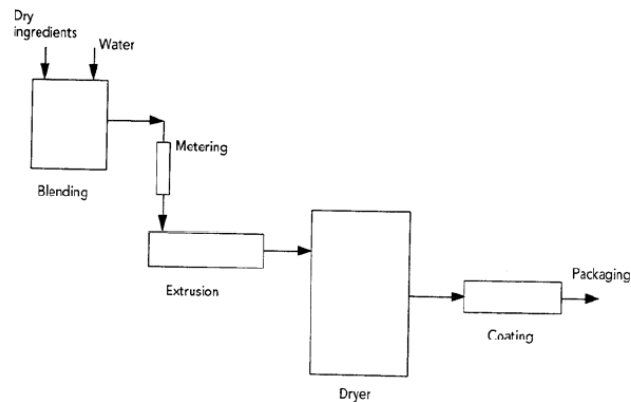
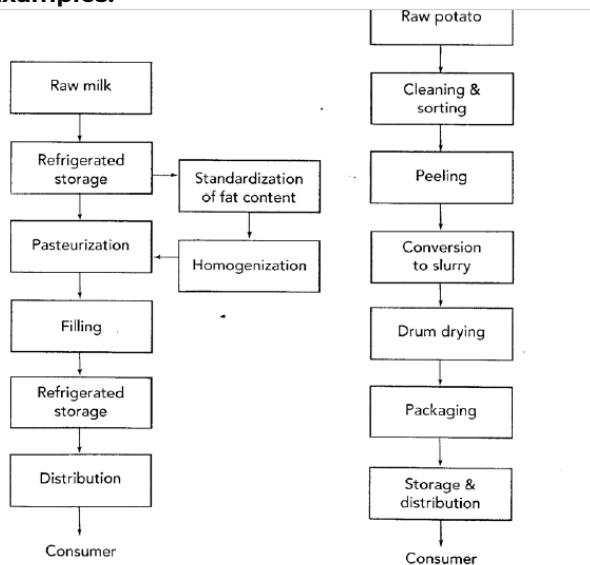
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Name: \_\_\_\_\_

- Flow diagram of how your processing will be set up.

**Examples:**



**10.7** Typical process steps in production of direct expanded snack foods.

**Use the space below to draw YOUR processing flow chart/plan:**

Name: \_\_\_\_\_

- How many people and what type of people do you need working at your processing facility? (managers, machine operators, HR, quality control, packaging, etc.) Your response here will depend on how large you want your company to be. It can be as big or as small as you wish; just be sure to state the number of people required for each job you list.

**Job Title/Role**

**Number of People Needed for Role**

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**STEP 3:** Identify your target audience. Who do you want to purchase your product? (youth ages x to y; young adults ages x to y; middle-aged adults ages x to y; elderly, etc.) Is your target audience athletic? Parents of young children? Busy, working adults?

**Target Audience is** \_\_\_\_\_.

**Why this target audience?**

|  |
|--|
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**STEP 4:** Packaging. What are you going to package your item in? Consider multiple layer packaging depending on your product (like a cereal box) and what is the purpose of the multiple layers (to keep food fresh, from getting soggy, from getting firm, etc.). You must consider the materials used; be sure materials are appropriate for your food item, and be creative.

**Describe your packaging plan:**

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**STEP 5:** Food safety. What food safety concerns are associated with your product? Cross-contamination concerns? Over or under baking? Equipment operation concerns? Think about all phases of processing (from start to finish). How will you combat concerns?

**Food Safety Concern:**

**How to Prevent the Concern:**

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Name: \_\_\_\_\_

**STEP 8:** Quality control

What are the quality control measures you need to look for in your product? (Examples: flavor, texture, consistency, temperature, net wet, size, etc.)

**List the quality control measures you need to look for in your product:**

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**STEP 9:** Marketing and sales

- Use the space below to draw each side of your packaging for your product. You do not need to provide detailed nutrition or nutrition label information here.
- DO include the following areas on your packaging: name of product; net weight of product; nutrition facts panel (draw a box in the location where it would go on your packaging); ingredient list (provide space where this information will go); manufacturer information

**My packaging will be made of: (plastic, cardboard, etc.)**

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**The name of my product is: (Kreiders' Korn, Sadis' Sweet Syrup, etc.) Do not forget about your LOGO! (Created in "Anatomy of a Logo" worksheet)**

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**FRONT of Packaging:**

**Back of Packaging:**

Name: \_\_\_\_\_

**Side of Packaging?**

**Other side of Packaging?**

**Where do you plan to market/sell your product? (Be specific on store location: front, back, side, etc. Free standing case? Or in another case?)**

**Do you plan to run promotions? If so, when and what kind? How will these promotions impact your overall profit?**

#### **STEP 10: Nutrition and nutritional labeling**

Using the information you learned in our previous lesson on “Interpreting and Designing Food Labels,” design a food label for your product. All calculations must be correct.

Example Nutritional Label:

| Nutrition Facts                                                                                                                    |           |                   |             |
|------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------|-------------|
| Serving Size 1 cookie ball (50g)                                                                                                   |           |                   |             |
| Servings Per Container 24                                                                                                          |           |                   |             |
| Amount Per Serving                                                                                                                 |           |                   |             |
| Calories                                                                                                                           |           | Calories from Fat |             |
|                                                                                                                                    |           | % Daily Value*    |             |
| Total Fat                                                                                                                          | g         |                   | %           |
| Saturated Fat                                                                                                                      | g         |                   | %           |
| Trans Fat                                                                                                                          | g         |                   | %           |
| Cholesterol                                                                                                                        | mg        |                   | %           |
| Sodium                                                                                                                             | mg        |                   | %           |
| Total Carbohydrate                                                                                                                 | g         |                   | %           |
| Dietary Fiber                                                                                                                      | g         |                   | %           |
| Sugars                                                                                                                             | g         |                   |             |
| Protein                                                                                                                            | g         |                   |             |
| Vitamin A                                                                                                                          | %         | Vitamin C         | %           |
| Calcium                                                                                                                            | %         | Iron              | %           |
| *Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs: |           |                   |             |
|                                                                                                                                    |           | Calories:         | 2,000 2,500 |
| Total Fat                                                                                                                          | Less than | 65g               | 80g         |
| Saturated Fat                                                                                                                      | Less than | 20g               | 25g         |
| Cholesterol                                                                                                                        | Less than | 300mg             | 300mg       |
| Sodium                                                                                                                             | Less than | 2,400mg           | 2,400mg     |
| Total Carbohydrate                                                                                                                 |           | 300g              | 375g        |
| Dietary Fiber                                                                                                                      |           | 25g               | 30g         |
| Calories per gram:                                                                                                                 |           |                   |             |
| Fat 9 • Carbohydrate 4 • Protein 4                                                                                                 |           |                   |             |

Name: \_\_\_\_\_

**My Food Product Nutritional Label:** Draw lines where needed and fill in the label below to represent your product. You may use the empty space around the label for notes, calculations, etc.

[illegible]

Aligned to the following standards: FPP.01; FPP.04; FFA.PL-A; FFA.PG-G; FFA.PG-J; FFA-CS-M; FFA-CS-N; AG-FD2; AG-FD4; AGPA01.01; AGPA01.02; AGAP01.03; AGPA01.04; CS.03; CS.01; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.1.C; CCSS.ELA.SL.9-10.4; CCSS.ELA.RST.9-10.3; CCSS.ELA.RST.9-10.9; CCSS.ELA.WHST.9-10.2; CCSS.ELA.WHST.9-10.4; CCSS.ELA.WHST.9-10.5; MP1; MP3; MP6; AFNR Career Cluster, Statement 6; AFNR Career Cluster - Food Products and Processing Systems Pathway, Statement 1; AFNR Career Cluster-Food Products and Processing Systems Pathway, Statement 2; Buying Goods and Services, Benchmarks: Grade 12, Statement 1; Buying Goods and Services, Benchmarks: Grade 12, Statement 2; Buying Goods and Services, Benchmarks: Grade 12, Statement 7; CRP.02; CRP.04; CRP.05; CRP.06; CRP.07; CRP.08; CRP.11.

Name: \_\_\_\_\_

# Activity 1: Nutritional Label Calculations

## Directions:

Reference for this worksheet (with explanation of example):

[https://edisciplinas.usp.br/pluginfile.php/5516437/course/section/6014434/2017\\_Book\\_FoodAnalysisLaboratoryManual.pdf](https://edisciplinas.usp.br/pluginfile.php/5516437/course/section/6014434/2017_Book_FoodAnalysisLaboratoryManual.pdf)

## EXAMPLE:

|                                                            |          |      |               |           |             |        |               |       |        |              |         |           |         |      |           |
|------------------------------------------------------------|----------|------|---------------|-----------|-------------|--------|---------------|-------|--------|--------------|---------|-----------|---------|------|-----------|
| Product Name: Yougurt                                      |          |      |               |           |             |        |               |       |        |              |         |           |         |      |           |
| Ingredient composition per 100g of ingredient <sup>1</sup> |          |      |               |           |             |        |               |       |        |              |         |           |         |      |           |
|                                                            | Calories | Fat* | Saturated Fat | Trans Fat | Cholesterol | Sodium | Carbohydrates | Fiber | Sugars | Added sugars | Protein | Vitamin D | Calcium | Iron | Potassium |
| Ingredient                                                 |          | (g)  | (g)           | (g)       | (mg)        | (mg)   | (g)           | (g)   | (g)    | (g)          | (g)     | (mcg)     | (mg)    | (mg) | (mg)      |
| Milk (3.7%)                                                | 64       | 3.66 | 2.278         | 0.135     | 14          | 49     | 4.65          |       | 4.65   |              | 3.28    |           | 119     | 0.05 | 151       |
| Skim milk no Vit A add                                     | 33.5     | 0.0  | 0.0           |           | 1.3         | 42.0   | 4.8           |       | 4.8    |              | 3.6     |           | 112.2   |      | 156.0     |
| Condensed skim milk                                        | 131.9    | 0.3  | 0.2           |           | 0.7         | 198.5  | 19.0          |       | 19.0   |              | 12.8    |           | 445.1   | 0.1  | 616.4     |
| Sweetener, sugar liquid                                    | 268.4    | 0.0  | 0.0           |           |             | 1.0    | 67.1          |       | 67.2   | 67.2         | 0.0     |           |         |      |           |
| Modified starch                                            | 400      | 0.15 | 0.08          |           |             | 100    | 90            | 0.25  |        |              | 0.5     |           | 20      | 0.4  |           |
| Stabilizer, gelatin                                        | 335      | 0.1  | 0.07          |           |             | 196    | 0             |       |        |              | 85.6    |           | 55      | 1.11 | 16        |

\* Sample calculation

$$\text{Net weight of ingredient} = \frac{38.2}{100} \times 227g = 86.7g$$

$$\text{Calories of ingredient} = \frac{64\text{ cal}}{100g} \times 86.7g = 55.50\text{ cal}$$

|                                  |                          |             |          |                        |               |           |             |         |               |       |        |              |         |           |         |       |           |
|----------------------------------|--------------------------|-------------|----------|------------------------|---------------|-----------|-------------|---------|---------------|-------|--------|--------------|---------|-----------|---------|-------|-----------|
| Serving per container:           | 1                        |             |          | Ingredient composition |               |           |             |         |               |       |        |              |         |           |         |       |           |
| Serving size:                    | 8oz (227g)               | per serving |          |                        |               |           |             |         |               |       |        |              |         |           |         |       |           |
|                                  | Formula (%) <sup>2</sup> | Net weight  | Calories | Fat*                   | Saturated Fat | Trans Fat | Cholesterol | Sodium  | Carbohydrates | Fiber | Sugars | Added sugars | Protein | Vitamin D | Calcium | Iron  | Potassium |
| Ingredient <sup>2</sup>          |                          | (g)         |          | (g)                    | (g)           | (g)       | (mg)        | (mg)    | (g)           | (g)   | (g)    | (g)          | (g)     | (mcg)     | (mg)    | (mg)  | (mg)      |
| Milk (3.7%)*                     | 38.2                     | 86.7        | 55.50    | 3.174                  | 1.975         | 0.117     | 12.140      | 42.491  | 4.032         |       | 4.032  |              | 2.844   |           | 103.192 | 0.043 | 130.942   |
| Skim milk no Vit A add           | 35.7                     | 81.1        | 27.14    |                        |               |           | 1.021       | 34.042  | 3.866         |       | 3.866  |              | 2.918   |           | 90.965  | 0.000 | 126.442   |
| Condensed skim milk              | 12.9                     | 29.3        | 38.60    | 0.081                  | 0.050         | 0.000     | 0.208       | 58.070  | 5.562         |       | 5.562  |              | 3.741   |           | 130.204 | 0.033 | 180.339   |
| Sweetener, sugar liquid          | 11.9                     | 27.0        | 72.53    |                        |               |           |             | 0.270   | 18.133        |       | 18.160 | 18.160       |         |           |         |       |           |
| Modified starch                  | 0.8                      | 1.8         | 7.26     | 0.003                  | 0.001         |           |             | 1.816   | 1.634         | 0.005 |        |              | 0.009   |           | 0.363   | 0.007 |           |
| Stabilizer, gelatin              | 0.5                      | 1.1         | 3.80     | 0.001                  | 0.001         |           |             | 2.225   | 0.000         |       |        |              | 0.972   |           | 0.624   | 0.013 | 0.182     |
| Sum:                             | 100.0                    | 227.0       | 204.83   | 3.259                  | 2.028         | 0.117     | 13.370      | 138.913 | 33.228        | 0.005 | 31.621 | 18.160       | 10.483  | 0.000     | 325.349 | 0.096 | 437.9     |
| Sum-rounding                     |                          |             | 200      | 3.5                    | 2             | 0         | 15          | 140     | 33            | 0     | 32     | 18           | 10      | 0         | 330     | 0     | 440       |
| DV (2,000 calories) <sup>1</sup> |                          |             | 2000     | 78                     | 20            |           | 300         | 2300    | 275           | 28    |        | 50           | 50      | 20        | 1300    | 18    | 4700      |
| DV (%)                           |                          |             | 10       | 4.49                   | 10            |           | 5           | 6.09    | 12            | 0     |        | 36           | 20      | 0         | 25.38   | 0.00  | 9.4       |
| DV(%) -rounding                  |                          |             | 10       | 4                      | 10            | 0         | 5           | 6       | 12            | 0     |        | 36           | 20      | 0         | 25      | 0     | 10        |

Name: \_\_\_\_\_

# Grading Rubric for Product Development Verbal Presentation

## National FFA Scoring Rubric for Reference:

| Product Development Oral Presentation                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Cost of Goods Sold <ul style="list-style-type: none"> <li>◦ Costing</li> <li>◦ Accuracy</li> </ul> </li> </ul>                                                                                  |
| <ul style="list-style-type: none"> <li>• Nutrition <ul style="list-style-type: none"> <li>◦ Communicate nutritional quality of product</li> <li>◦ Apply nutritional quality to health benefits</li> </ul> </li> </ul>                    |
| <ul style="list-style-type: none"> <li>• Target Audience <ul style="list-style-type: none"> <li>◦ Identification of key consumer</li> </ul> </li> </ul>                                                                                  |
| <ul style="list-style-type: none"> <li>• Quality Control <ul style="list-style-type: none"> <li>◦ Key quality attribute of consistent product</li> <li>◦ Examples: Flavor, color, texture, net weight, size, etc.</li> </ul> </li> </ul> |
| <ul style="list-style-type: none"> <li>• Marketing &amp; Sales <ul style="list-style-type: none"> <li>◦ Communicated with future users</li> <li>◦ Promotions</li> <li>◦ Market location</li> </ul> </li> </ul>                           |

|                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Product <ul style="list-style-type: none"> <li>◦ Appearance</li> <li>◦ Texture</li> <li>◦ Shelf-life</li> <li>◦ Interaction of ingredients</li> <li>◦ Creativity</li> </ul> </li> </ul>                                                                                      |
| <ul style="list-style-type: none"> <li>• Processing <ul style="list-style-type: none"> <li>◦ Description of how to make product</li> <li>◦ Equipment</li> <li>◦ Flow diagram, unit operations</li> <li>◦ People</li> </ul> </li> </ul>                                                                                |
| <ul style="list-style-type: none"> <li>• Packaging <ul style="list-style-type: none"> <li>◦ Materials used</li> <li>◦ Appropriate for use of product</li> <li>◦ Creativity</li> </ul> </li> </ul>                                                                                                                     |
| <ul style="list-style-type: none"> <li>• Food Safety <ul style="list-style-type: none"> <li>◦ Discussed potential hazards/concerns associated with products</li> </ul> </li> </ul>                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• Formulation Concepts <ul style="list-style-type: none"> <li>◦ How well did product match concept/product development scenario</li> </ul> </li> </ul>                                                                                                                         |
| <ul style="list-style-type: none"> <li>◦ Category</li> </ul>                                                                                                                                                                                                                                                          |
| <ul style="list-style-type: none"> <li>◦ Platform</li> </ul>                                                                                                                                                                                                                                                          |
| <ul style="list-style-type: none"> <li>• Quality of Presentation <ul style="list-style-type: none"> <li>◦ Equitable participation of team members</li> <li>◦ Organization</li> <li>◦ Use of time allowed</li> <li>◦ Professionalism</li> <li>◦ Presence &amp; enthusiasm</li> <li>◦ Mannerisms</li> </ul> </li> </ul> |

- Students declared: \_\_\_\_\_/\_\_\_\_
  - Category (cereal, snack, etc.)
  - Platform (frozen, ready to eat, etc.)
  - Market (retail, food service, etc.)
- Clear processing plan of product shown: \_\_\_\_\_/\_\_\_\_
  - Description of how to make product was provided: \_\_\_\_\_/\_\_\_\_
  - Equipment needed to make product was provided: \_\_\_\_\_/\_\_\_\_
- Target audience identified and explanation of why: \_\_\_\_\_/\_\_\_\_
- Food safety issues addressed: \_\_\_\_\_/\_\_\_\_
- Covered cost of goods sold: \_\_\_\_\_/\_\_\_\_
- Discussed/shared quality control measures taken: \_\_\_\_\_/\_\_\_\_
- Marketing and sales plan for product: \_\_\_\_\_/\_\_\_\_
- Description of product packaging: \_\_\_\_\_/\_\_\_\_

Name: \_\_\_\_\_

| Package Design                                         |
|--------------------------------------------------------|
| o Use and development of nutrition label               |
| o Required information present                         |
| o Correct calculations                                 |
| o Correct organization                                 |
| o Use and development of the ingredient statement      |
| o Present                                              |
| o Correct order and all ingredients included           |
| o Location on package                                  |
| o Use of principle display panel to convey information |
| o All required components                              |
| o Correct information                                  |
| o Location on package                                  |

**TOTAL SCORE:** \_\_\_\_\_ / \_\_\_\_\_

Name: \_\_\_\_\_

## **KEY: Product Development Packaging**

Optional Use: National FFA Food Science and Technology CDE Grading Rubric for “Package Design”.

| <b>Package Design</b>                                  | <b>Possible Score</b> | <b>Team Score</b> |
|--------------------------------------------------------|-----------------------|-------------------|
| ○ Use and development of nutrition label               |                       |                   |
| ○ Required information present                         | 10                    |                   |
| ○ Correct calculations                                 | 10                    |                   |
| ○ Correct organization                                 | 10                    |                   |
| ○ Use and development of the ingredient statement      |                       |                   |
| ○ Present                                              | 10                    |                   |
| ○ Correct order and all ingredients included           | 10                    |                   |
| ○ Location on package                                  | 10                    |                   |
| ○ Use of principle display panel to convey information |                       |                   |
| ○ All required components                              | 15                    |                   |
| ○ Correct information                                  | 15                    |                   |
| ○ Location on package                                  | 10                    |                   |
| <b>Package Design Subtotal</b>                         | <b>100</b>            |                   |