M&M Rations

Group Names: Hour Date:

**Overview**: This activity is a simulation for creating profitable rations for a cow using household food ingredients as substitutes. In dairy production, it is common to feed TMR (Total Mixed Ration), a mixture of various substances, each meant to address a specific dietary need of cattle. You will be creating your own TMR out of kitchen ingredients.

**Directions**: in this exercise, you will be designing a ration for your cattle. Using an actual farmer’s sample ration, you will design your own based on the cost of the ingredients and their availability. Once you have received instructor approval, you will create your ration using kitchen ingredients as substitutes for the real components of a dairy cow’s ration. Once you have accurately created your ration and received instructor approval, you will have the opportunity to “test” your ration.

**Sample Ration**: The ration below is taken from an actual dairy farmer with a high-performance herd and should be used as a guide when designing your own ration:

* 2 year , high producing cows, early lactation – 50 lbs per day per head
	+ Forage (47%)
		- Hay , 2.5 lbs (5%)
		- Haylage, 7 lbs (14%)
		- Corn Silage, 14 lbs (28%)
	+ Energy Concentrate (33%)
		- High Moisture Corn, 10.64 lbs (20%)
		- Cottonseed, 3.92 lbs (8%)
		- Wet Distillers Grain, 2.6 lbs (5%)
	+ Protein (20%)
		- Protein Mix (canola, soy, etc.), 10 lbs (20%)

*Ration courtesy of Allen Kohn, Krakow, WI, 2011*

You will design a 1 lb (or 16 oz) ration using the following ingredients:

* Forages
	+ Pretzels ($2.29 per lb) = Hay
	+ Corn Chips ($3.50 per lb) = Corn Silage
* Energy Concentrates
	+ M&Ms ($6.24 per lb) = High Moisture Corn
* Protein
	+ Goldfish ($3.98 per lb) = Soybeans
	+ Cereal ($2.44 per lb) = Dried Distillers Grain

**Rules**

1. No single ingredient can exceed 5 oz.
2. The total ration must not exceed 16 oz. or be below 15 oz.
3. You must receive instructor approval before creating your TMR as well as before consuming it.
4. Use a balance or scale to measure out your ingredients. Be sure to use a paper plate or bowl to hold your items before measuring (be sure to subtract the weight of the plate or bowl).
5. You must complete all questions and receive instructor approval before eating your ration.

# Questions

1. In the space below, design your ration. Provide both A) the weight of each ingredient, and B) the percentage of the weight of that ingredient (e.g. 4 oz. would be 25% of the total weight – 4/16 = .25).

	1. **Ingredient: Amount used oz Percent of Total %**
	2. **Ingredient: Amount used oz Percent of Total %**
	3. **Ingredient: Amount used oz Percent of Total %**
	4. **Ingredient: Amount used oz Percent of Total %**
	5. **Ingredient: Amount used oz Percent of Total %**
	*Instructor Approval*
2. Why did you formulate your ration the way you did? Provide reasons for why you think this would be effective for both production of the dairy cow and profitability of the farm.

1. How much would your ration cost to feed per pound? (Take the percentage of each ingredient and multiple times its cost per pound).

**Cost of Pretzels Cost of Corn Chips Cost of M&Ms

Cost of Goldfish Cost of Cereal Total Cost Per lb**

1. How does your cost compare to the other groups? List them below (circle your group’s cost).

**Group 1: Group 2: Group 3:**

**Group 4: Group 5: Group 6:**

1. Do you think the cheapest group’s ration is also the most profitable ration? Explain:

1. Do you think your ration is the best ration? Explain: