By the end of this unit, students will be able to...

- Define each of the following: a. Feeding Ration   b. Balanced Ration   c. Nutrient Composition   d. Total Digestible Nutrients
- Describe how nutrients in a ration are measured.
- Summarize how crude protein is measured in a ration.
- Explain the roles and purposes of each of the following kinds of protein/nitrogen in a ration: a. Crude Protein   b. DIP   c. UIP   d. NPN   e. All of the above
- Identify the source of most of the fiber in a cattle ration and summarize the roles played by fiber in a ruminant.
- Define scratch factor and explain its importance to a ration and to ruminant health.
- Explain how minerals are measured in a ration.
- Identify concerns related to meeting vitamin requirements of a ration.
- Summarize how to ensure that an animal is receiving an adequate amount of water and identify its importance to the ration of a ruminant.
- Determine the minimum amount of water needed for a given animal per day.
- Summarize the unique nutritional needs and demands of each of the following groups of cattle: a. Growing weaned calves   b. First-calf heifers   c. Mature Cows   d. Mature bulls e. Newborn Calves
- Summarize how the nutrient needs of an animal are best determined.
- Summarize the options available for determining the nutrient content of a feeding ration.
- Explain the significance and role played by land grant universities and extension offices in regards to animal nutrition.
- Summarize the role played by ionophores and implants in cattle rations.
- Explain how and why acidosis occurs and how it can be prevented.
- Use a Pearson Square in order to balance a ration for a variety of groups of cattle and for different rations.
- Show how a Pearson Square can be used to determine both TDN ratios as well as Crude Protein ratios of ration ingredients.
- Use a Pearson Square to determine if the minimum requirements of an animal are met for a ration in regards to crude protein and determine how much, if any, additional protein is needed for a ration.

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