

Name _____

Chapter _____

ID # _____

A. Ground Beef Formulation Problem

Processors responsible for manufacturing ground beef for distribution to retail food stores must adhere to food safety standards as well as provide high quality products. Manufacturers must be in compliance with all industry regulations, meat inspections, and retail store specifications. Each retail store has particular specifications for ground beef and costs must be as low as possible. Therefore, least-cost formulations must be calculated.

USDA Ingredient Standard List and Labeling Requirements for Ground Beef Products:

Ground Beef (also 100% Pure Ground Beef or Pure Ground Beef): In order to be labeled "ground beef", the product cannot contain more than 30% fat. Ground Beef shall consist of chopped fresh and/or frozen beef from skeletal muscle, skeletal trimmings, or head meat trimmings. No more than 25% of the product may consist of beef cheek meat, and if the cheek meat percentage exceeds 2%, it must be listed on the label. The following ingredients are not allowed in Ground Beef: added beef fat; partially defatted chopped beef; partially defatted beef fatty tissue; edible lean organ meats (trimmed beef heart, etc.); water; binders; fillers; extenders.

If the name is qualified by the name of a particular cut, such as "Ground Chuck" or "Ground Round", then the product must consist **entirely** of meat from that particular cut or part.

If a product is to qualify for "lean" or "low fat" labeling, the product must contain less than 10% total fat. If a product is to be labeled "extra lean", the product must contain less than 5% total fat.

Specifications of this particular retail store's ground beef formulation are as follows:

- Follow all government regulations and retail food store specifications
- Only two meat ingredients will be used for each batch
- Must be least-cost formulated, determine ingredients used, and amount of each ingredient
- Manufacturing date = August 25, 2018
- Batch Size = 1000 lbs.
- Fat content of finished product = 15%
- All ingredients must be received fresh, not frozen
- Product must be received at the plant within 96 hours (4 days) of animal harvest date
- No product over 4 days old may be used for grinding (from date of harvest)
- No product with a receiving temperature of over 35° F may be used

Available Boneless Meat Ingredient Information:

Meat Ingredients	Date of Harvest	Date Received	Receiving Temperature (° F)	Condition Received	Fat (%)	Price/lb.
50% Lean Trim	8/21/18	8/24/18	34°	Fresh	50.0	\$1.01
90% Lean Trim	8/21/18	8/24/18	33°	Fresh	10.0	\$2.21
Beef Cheek Meat	8/20/18	8/24/18	36°	Fresh	15.0	\$0.86
Beef Heart Meat	8/21/18	8/24/18	29°	Fresh	4.0	\$0.33
Boneless Chuck	8/22/18	8/24/18	33°	Fresh	25.0	\$1.71

1. For least-cost formulation of 85% lean ground beef meeting all government specifications, as well as those of the retail store, which combination listed below would be used?
 - A. 50% lean trim and 90% lean trim
 - B. 50% lean trim and beef heart meat
 - C. 50% lean trim and boneless chuck
 - D. 90% lean trim and beef cheek meat
 - E. 90% lean trim and boneless chuck

2. For a least-cost ground beef formulation meeting the retail store's specifications, use the Pearson square method to calculate the amount of meat ingredients needed in a 1,000 pound batch of 85% lean ground beef. What would be the proportion of the two meat ingredients?
 - A. 666.67 and 333.33 lbs.
 - B. 222.22 and 777.78 lbs.
 - C. 239.13 and 760.87 lbs.
 - D. 000.00 and 1000.00 lbs.
 - E. 125.00 and 875.00 lbs.

3. What would be the price per pound of the least-cost formulated ground beef meeting the retail store's specifications? Round to the nearest penny (ex., 0.00).
 - A. \$2.04/lb.
 - B. \$0.86/lb.
 - C. \$0.45/lb.
 - D. \$1.51/lb.
 - E. \$1.62/lb.

4. If the ground beef you've formulated to meet these specifications was marked up 25% to cover overhead costs and make a profit for this store, what would this batch sell for per pound? Round to the nearest penny (ex., 0.00).
 - A. \$2.03/lb.
 - B. \$1.89/lb.
 - C. \$2.55/lb.
 - D. \$0.56/lb.
 - E. \$1.08/lb.

5. The ground beef formulation would:
 - A. Be labeled as ground beef
 - B. Be labeled as ground chuck
 - C. Qualify as lean product
 - D. Qualify as extra lean product

B. Beef Carcass Pricing Problem

Thompson Farms, Inc. retains ownership of their cattle. The farm receives payment for their cattle on a value-based pricing system that depends on carcass weight, USDA Quality Grades (QG) and Yield Grades (YG). They have recently marketed **100 head** of cattle.

The average live weight, dressing percentage, yield grades, quality grades, and pricing information of the 100 head lot are as follows:

Average live weight:	1,340 lbs.
Average dressing percent:	62%
USDA Yield Grade (YG):	40% were YG 2's 60% were YG 3's *Assume equal distribution of yield grades within the four quality grades
USDA Quality Grade (QG):	15% were USDA Average or High Choice 70% were USDA Low Choice 15% were USDA High Select

USDA carcass yield and quality grades, prices, and adjustments/cwt.

Base Price of YG3 low Choice = \$193.75/cwt.

YG 2 carcasses = add \$2.00/cwt. to base price

Carcass Weight Discounts (\$) per cwt.

Acceptable Hot Carcass Weight range	= 600 to 900 lbs.
400 – 500 lbs.	= deduct \$30.71/cwt. from base price
500 – 600 lbs.	= deduct \$14.97/cwt. from base price
900 – 1000 lbs.	= deduct \$ 4.50/cwt. from base price
1000 lbs. and up	= deduct \$23.67/cwt. from base price

Quality Grade Premiums/Discounts (\$) per cwt.

Prime Carcasses	= add \$12.50/cwt. to base price
Average and High Choice Carcasses	= add \$4.00/cwt. to base price
Low Choice Carcasses	= No Premium/Discounts
Select Carcasses	= deduct \$ 9.25/cwt. from base price
Standard Carcasses	= deduct \$28.50/cwt. from base price

1. Are you producing cattle with average carcass weights within the acceptable range (no discounts)?











- A. Yes
- B. No

2. What is the price/cwt. of the Average Choice Yield Grade 3 carcasses?

- A. \$193.75/cwt.
- B. \$195.75/cwt.
- C. \$197.75/cwt.
- D. \$199.75/cwt.

3. What is the price/cwt. of the Select Yield Grade 2 carcasses?
- A. \$184.50/cwt.
 - B. \$186.50/cwt.
 - C. \$193.75/cwt.
 - D. \$195.75/cwt.
4. What is the average price/cwt. for the lot of 100 cattle?
- A. \$192.98/cwt.
 - B. \$193.50/cwt.
 - C. \$193.78/cwt.
 - D. \$194.98/cwt.
5. Which of the following may affect the quality and yield grades of feedlot cattle? Circle your answer.
- A. Genetics
 - B. Humane animal welfare and handling systems
 - C. Nutrition
 - D. All of the above

2018 Meats Problem Solving ▼ (10 pts)

Correct	Type	Characters	Points	Standards
1. <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D <input checked="" type="radio"/> E	 Multiple Choice	ABCDE	1	0
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