2012 Iowa State FFA Meat Judging Contest August 25, 2012

Name_____ Chapter_____

ID #_____

A. Ground Beef Formulation Problem

Assume that you are the manager of a company which manufactures ground beef for distribution to retail food stores. You must adhere to high quality and food safety standards. Your company goal is to produce a fresh and wholesome product that is 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 (least-cost formulations).

Ground beef regulations (USDA) are defined as follows:
Ground Beef: The terms "Ground Beef" and "Chopped Beef" are synonymous. Products so labeled must be made with fresh and/or frozen beef with or without seasoning, without the addition of fat as such, and shall contain no more than 30% fat. It may not contain added water, binders, extenders or phosphates. It may contain beef cheek meat not to exceed 25%. Heart meat and tongue meat are not acceptable ingredients.

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.

Industry guidelines for ground beef manufacture:
To get the most desirable color and maximum shelf life, all boneless meats used to manufacture ground beef must be fresh (not frozen), well chilled (temperature no higher than 35^{o} F), and shall arrive at the plant within 96 hours (4 days) of animal harvest. A least-cost formulation shall be calculated using acceptable meat ingredients, selecting those meats that produce the lowest cost product, while meeting all ground beef guidelines. To simplify the grinding and blending operation **only two meat ingredients will be used for each batch.**In order to make specification ground beef in a least-cost formulation process, you must determine the ingredients to use and in what amounts. All government regulations and retail food store specifications must be followed.

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

- Fat content of finished product = 15%
- Batch Size = 5000 lbs.
- Manufacturing date = August 29
- 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.
- Product must be received at the plant within 96 hours (4 days) of animal harvest date.
- All ingredients must be received fresh, not frozen.
- Must be least-cost formulated.

Available Boneless Meat Ingredient Information:

Meat Ingredients	Date Slaughtered	Date Received	Receiving Temperature (^{o} F)	Condition Received	Fat (%)	Price/lb.
50% Lean Trim	8/25	8/27	33^{o}	Fresh	50.0	$0.75
80% Lean Trim	8/25	8/27	33^{o}	Fresh	20.0	$1.90
Beef Cheek Meat	8/25	8/28	35^{o}	Fresh	19.0	$1.44
Beef Heart Meat	8/22	8/28	35^{o}	Fresh	15.0	$0.60
Boneless Chuck	8/26	8/28	32^{o}	Fresh	18.0	$2.14
Bull Meat	8/26	8/28	34^{o}	Fresh	8.0	$2.26

1. For least-cost formulation of 85% lean ground beef meeting all specifications of your retail store you would use a combination of:

    a. 50% lean trim and bull meat
    b. 50% lean trim and boneless chuck
    c. 80% lean trim and beef cheek meat
    d. 80% lean trim and beef heart meat
    e. 80% lean trim and bull meat

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 5000 pound batch of 85% lean ground beef. What would be the proportion of the two meat ingredients? Round to the whole number.

    a. 512 lbs. and 4488 lbs.
    b. 2917 lbs. and 2083 lbs.
    c. 400 lbs. and 4600 lbs.
    d. 833 lbs. and 4167 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 cent (ex., 0.00).

    a. $2.05/lb.
    b. $1.96/lb.
    c. $2.01/lb.
    d. $1.85/lb.

4. If the ground beef was marked up 25% to cover overhead costs and make a profit for the store, what would this batch sell for per pound? Round to the nearest cent (ex., 0.00).

    a. $2.31/lb.
    b. $2.51/lb.
    c. $2.05/lb.
    d. $2.56/lb.

5. The ground beef formulation would:

    a. qualify as ground chuck
    b. be labeled as ground beef
    c. be labeled as "low fat" ground beef
    d. be labeled as "extra lean" ground beef

B. Beef Carcass Pricing Problem

RSO Livestock, Inc. retains ownership of their cattle until the cattle are harvested. The ranch is paid for their cattle on a value-based pricing system that depends on carcass weight, USDA Quality Grades (QG), and USDA Yield Grades (YG). They have recently marketed a **325 head** lot of cattle.

The average live weight, dressing percentage, yield grades, quality grades, and pricing information of the 325 head lot are as follows:

Average live weight: 1330 lbs.
Average dressing percent: 62%
USDA Yield Grade (YG): 60% were YG 2's
40% were YG 3's
*Assume equal distribution of yield grades within the three quality grades.

USDA Quality Grade (QG): 50% were high Choice (Ch+)
15% were low Choice (Ch-)
35% were USDA Select (Se)

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

Base Price of YG3 low Choice = $175.85/cwt.
Acceptable hot carcass weight range = 600 to 900 lbs.
Under 600 lbs. = deduct $13.04/cwt. from base price
Over 900 lbs. = deduct $1.70/cwt. from base price
YG 2 carcasses = add $4.01/cwt. to base price
Average and high Choice carcasses = add $3.38/cwt. to base price
Select carcasses = deduct $2.90/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 and high Choice Yield Grade 2 carcasses?

    a. $183.24/cwt.
    b. $179.23/cwt.
    c. $179.86/cwt.
    d. $175.85/cwt.

3. What is the price/cwt. of the Select Yield Grade 3 carcasses?

    a. $175.85/cwt.
    b. $172.95/cwt.
    c. $178.75/cwt.
    d. $180.34/cwt.

4. What is the average price/cwt. for the lot of 325 cattle?

    a. $183.24/cwt.
    b. $175.85/cwt.
    c. $172.95/cwt.
    d. $178.93/cwt.

5. What would be the best strategy to increase the value of these cattle?

    a. increase the percentage of Yield Grade 2 high Choice carcasses
    b. increase the percentage of Yield Grade 3 Select carcasses
    c. decrease carcass size
    d. increase carcass size

Key

Part 1
1. A
2. D
3. C
4. B
5. B

Part 2
1. A
2. A
3. B
4. D
5. A