

Example for study: State of Missouri, 2003

Point values

Contestant CODE _____

**FFA DAIRY FOODS CONTEST
PROBLEM SOLVING**

Your assignment is to calculate **the price per one-hundred weight (cwt)** of grade A milk sold through a Federal Order in which there are provisions for **classified pricing, component pricing, quality incentives and hauling charges** that vary with delivery size and distance hauled. *(Note that the new Federal milk marketing orders are somewhat more complicated than this, but that they are based on the same principles.)*

Calculate the value of the milk of each class according to the percentages of milk used in the market for each of the respective classes. Adjust these values then for the **milk fat and protein differentials** and for **quality incentives**, which are for **somatic cell count (SCC)** and **bacterial Standard Plate Count (SPC)**.

- (5) **A. Calculate the value of the milk prior to adjustment for components, quality and hauling costs.**

Class	Price/cwt	Utilization	Value
I	\$14.50	40%	\$5.80
II	\$12.80	20%	\$2.56
III	\$12.30	30%	\$3.69
IV	\$12.50	10%	\$1.25
Total unadjusted value			\$13.30

B. Adjust the price for content of milk fat and protein. This milk contained 3.3% milk fat and 3.3% protein. Assume the unadjusted price is \$15.00 per hundred pounds.

- (2) **Milk fat differential** per 0.1% above or below 3.5% = \$0.12

So, $(3.3\% - 3.5\%) = -0.2\%$ and for each 0.1% the milk price is adjusted by \$0.12

Therefore, the adjustment is $-2 \times \$0.12 = -\0.24

Calculate the price adjusted for fat: $\$15.00 - \$0.24 = \$14.76$

- (2) **Protein differential** per 0.1% above or below 3.1% = \$0.30

So, $(3.3\% - 3.1\%) = 0.2\%$ and for each 0.1% the milk price is adjusted by \$0.30

Therefore, the adjustment is $2 \times \$0.30 = \0.60

Calculate the price adjusted for fat and protein: $\$14.76 + \$0.60 = \$15.36$

C. Assuming the **all milk price** adjusted for fat and protein content is **\$15.00**, adjust the price based on **Quality Incentives**. Use this same “all milk price” in calculations you make for each of the Quality Incentives set by the market order and the marketing cooperative that follow:

- (2) 1. *Apply the quality incentive for somatic cell count by adjusting the price/cwt by the factor \$0.00055 per 1000 somatic cells. The producer in this problem had an average somatic cell count of 1,000,000/ml during the pay period.*

Formula:

All milk price/cwt – ((Somatic cell count/1000) x adjustment factor = Adjusted price/cwt

$$\text{\$15.00} - ((1,000,000/1000) \times \$0.00055 = \text{\$14.45/cwt (adjusted price)}$$

- (2) 2. **Standard Plate Count (SPC) incentive/disincentive table.** The dairy laboratory reported that the plate containing 1/1000 milliliter of milk showed 150 colonies. Calculate the SPC/ml then locate that level in the table below and adjust the “all milk price of \$12.00/cwt.

(Here you multiply #colonies, 50, by the reciprocal of the dilution, or 100/1 = 5000/ml so the level is 1)

Level	Bacteria/ml		\$/cwt
1	1,000	to 25,000	+\$0.10
2	26,000	to 50,000	+\$0.05
3	51,000	to 75,000	free zone
4	76,000	to 100,000	-\$0.05
5	>100,000		-\$0.10

The Standard Plate Count of the milk was within level 5 which allows -\$ 0.10 adjustment of price, so the price now becomes \$ 15.00 - \$0.10 = **\$14.90**

- (2) 3. Compare the **freezing points** presented below with the maximal value permitted, which is -0.508°C. Each delivery of milk having a freezing point **above** this value (toward zero) results in a deduction of \$0.10 per cwt delivered during that pay period.

Freezing points for 7 deliveries of milk were: -0.512°C, -0.507°C, -0.514°C, -0.512°C, -0.513°C, -0.516°C, -0.502°C.

The number of **freezing point tests** above the cut-off of -0.508 °C was 2.

Therefore the adjusted price per cwt becomes \$ 15.00 +/- \$0.20 = \$11.80

D. Adjust the price for the cost of hauling. There will be a **base rate charge**, a **stop charge** based on volume, and a **hauling zone charge** based on distance from the point of delivery. The **BASE HAULING RATE** for this cooperative was **\$0.90/cwt**. The “producer price” for this milk is **\$18.00** and this producer shipped an average of **42,000 pounds** per pickup from **zone 3**.

- (2) 1. Apply the hauling **stop charge** to the **base hauling rate** on a single hundred weight basis.

Pounds hauled per pickup	Adjustment to charge per cwt
<10,000	+\$0.20
11,000 to 20,000	+\$0.10
21,000 to 40,000	free zone
41,000 to 60,000	-\$0.10
>61,000	-\$0.20

Since **42,000 lb** of milk were delivered, the adjustment to the hauling charge is

$$\$0.90 - \$0.10 = \mathbf{\$0.80/cwt}$$

- (1) 2. Apply the hauling **zone charge** to the **adjusted hauling charge**:

Zone	Charge/cwt
1	\$0.00
2	\$0.02
3	\$0.04
4	\$0.06
5	\$0.08

1 Because the milk was picked up in **zone 4**, the charge is **\$0.04** and the

1 **adjusted hauling cost** is $\$0.80 + \$0.04 = \mathbf{\$0.84}$

- (2) How much does this producer receive per cwt of milk after paying the hauling charge?

Producer price \$18.00 –adjusted hauling cost \$0.84 = Net Payment/cwt \$17.16