**Main Problem #4**

Topic: *Model Equivalent Fractions*

Problem: Your friend Giulia is a cheese enthusiast and needs your help buying the best cheese in her local Italian market. She really wants to buy fresh Asiago cheese and there are three stands which sell Asiago at different prices. *Venice the Menace* sells one fourth of a kilogram for $2.00, *Verona’s Beauty* sells four eighths of a kilogram for $3.50, and *Trento like Bento* sells four twelfths of a kilogram for $4.00. Jessie needs your help calculating the different prices and determining the best stand to buy fresh Asiago cheese.

Q1. Express all the fractions as fractions with a similar denominator.

Q2. If Giulia wants to buy a kilogram of Asiago cheese, which stand sells Asiago cheese at the best price?

A1. To solve this problem, students have to find the least common multiple of the denominators in order to have all the fractions with a similar denominator. Before that, students should first convert from adjective-noun to regular fractions.

Venice the Menace: one fourth = $\frac{1}{4}$

Verona’s Beauty: four eights = $\frac{4}{8}$

Trento like Bento: four twelfths = $\frac{4}{12}$

The denominators for these fractions are 4, 8, and 12, therefore the least common multiple is 24. To convert a fraction from one denominator to another, the whole fraction must be multiplied by 1. For each case, the fraction is multiplied by $\frac{r}{r}$, in which *r* is the factor needed by the denominator to equal 24.

Venice the Menace: $\frac{1}{4}⋅1=\frac{1}{4}⋅\frac{6}{6}=\frac{1⋅6}{4⋅6}=\frac{6}{24}$

Verona’s Beauty: $\frac{4}{8}⋅1=\frac{4}{8}⋅\frac{3}{3}=\frac{4⋅3}{8⋅3}=\frac{12}{24}$

Trento like Bento: $\frac{4}{12}⋅1=\frac{4}{12}⋅\frac{2}{2}=\frac{4⋅2}{12⋅2}=\frac{8}{24}$

A2. Now that all the fractions have the same denominator, we can find the total number of pieces needed to equal a kilogram. Students should think about how many times the numerator can fit into the denominator to equal 1; this problem help students review division. The total number of pieces need to equal 1 kilogram for each cheese stand is:

Venice the Menace: 4 because $24÷6=4$

Verona’s Beauty: 2 because $24÷12=2$

Trento like Bento: 3 because $24÷8=3$

The number of pieces needed to equal a kilogram times the price for each fraction is:

Venice the Menace: $\$2.00⋅4=\$8.00$

Verona’s Beauty: $\$3.50⋅2=\$7.50$

Trento like Bento: $\$4.00⋅3=\$12.00$

The stand that offers the best price for one kilogram of fresh Asiago cheese is *Verona’s Beauty.*