**Main Problem #1**

Topic: *Finding Equivalent Fractions*

Problem: You and your friend Nigel are two of the best jet fighters in the British Royal Air Force. Your captain calls you both to try out the new jet fighters by going on a test run. The captain gives you the signal and the both of you fly off at the same time and cruise at the same speed. After a half hour of flying, you notice that your gas meter hasn’t change, therefore you conclude that must be a problem with it. You call Nigel about the problem and he tells you not to worry because he will keep track of the amount of gas.

 12/24

 0/24 24/24

 4/8

 0/8 8/8

 Nigel’s Gas Meter Your Gas Meter

Q1. If Nigel says that he has$\frac{3}{4}$of gas left in his engine, what fraction does $\frac{3}{4}$ represent on his Gas Meter? What about on your gas meter?

Q2. If Nigel says that he has$\frac{1}{8}$of gas left in his engine, what fraction does $\frac{1}{8}$ represent on his Gas Meter?

What about on your gas meter?

 Q3. Repeat question 1 and 2 but this time, Nigel’s Gas Meter reads in $\frac{1}{16}$ and yours reads in$\frac{1}{32}$ .

**Note:** To represent one fraction in terms of another, students should think about what the value of *n* should be so that $\frac{n}{n}$times the fraction with the smallest denominator results in a fraction whose denominator is that of the second biggest. This is one approach to solving these questions if students have yet to review division of fractions.

This approach will be used to solve the problems. Answers are in red.

A1. Nigel: *n*=6. Therefore, $\frac{3}{4}$translates to $\frac{18}{24}$since $\frac{3}{4}⋅\frac{6}{6}=\frac{18}{24}$.

 You: *n*=2. Therefore, $\frac{3}{4}$translates to $\frac{6}{8}$since $\frac{3}{4}⋅\frac{2}{2}=\frac{6}{8}$.

A2. Nigel: *n*=3. Therefore, $\frac{1}{8}$translates to $\frac{3}{24}$since $\frac{1}{8}⋅\frac{3}{3}=\frac{3}{24}$.

 You: *n*=1. Therefore, $\frac{1}{8}$translates to $\frac{1}{8}$since $\frac{1}{8}⋅\frac{1}{1}=\frac{1}{8}$.

A3. (Part 1)

Nigel: *n*=4. Therefore, $\frac{3}{4}$translates to $\frac{12}{16}$since $\frac{3}{4}⋅\frac{4}{4}=\frac{12}{16}$.

You: *n*=8. Therefore, $\frac{24}{32}$translates to $\frac{6}{8}$since $\frac{3}{4}⋅\frac{8}{8}=\frac{24}{32}$.

 (Part 2)

Nigel: *n*=2. Therefore, $\frac{1}{8}$translates to $\frac{2}{16}$since $\frac{1}{8}⋅\frac{2}{2}=\frac{2}{16}$.

 You: *n*=4. Therefore, $\frac{1}{8}$translates to $\frac{4}{32}$since $\frac{1}{8}⋅\frac{4}{4}=\frac{4}{32}$.