Stage 4 Mathematics student work sample – Grade C

Fraction Worksheet

Part 1

A student was asked to evaluate $\frac{2}{3} + \frac{5}{8}$.

Here is her working:

\[
\begin{align*}
\frac{2}{3} + \frac{5}{6} &= \frac{12}{18} + \frac{15}{18} \\
&= \frac{27}{18} \\
&= \frac{3}{2} \\
&= 1\frac{1}{2}
\end{align*}
\]

1. This student chose 18 as the common denominator. Is this the lowest common denominator? [ ]

Show how you can evaluate $\frac{2}{3} + \frac{5}{6}$ using the lowest common denominator.

\[
\begin{align*}
\frac{2}{3} + \frac{5}{6} &= \frac{4}{6} + \frac{5}{6} \\
&= \frac{9}{6} \\
&= 1\frac{1}{2}
\end{align*}
\]

2. Evaluate $\frac{7}{4} \times \frac{3}{5} 

\[
\begin{align*}
\frac{7}{4} \times \frac{3}{5} &= \frac{14}{20} + \frac{15}{20} \\
&= \frac{29}{20} \\
&= 1\frac{9}{20}
\end{align*}
\]

Identifies and uses the lowest common denominator to add proper fractions accurately and leaves answers as mixed numerals.
Part 2

A student in answering a word problem wrote \( \frac{1}{2} \times \frac{3}{4} \).

3. What might the word problem have been?

What is half of 3 quarters?

4. Draw a diagram to illustrate \( \frac{1}{2} \times \frac{3}{4} \).

5. Evaluate \( \frac{1}{2} \times \frac{3}{4} \).

\[
\begin{align*}
\frac{1}{2} \times \frac{3}{4} &= \frac{2 \times 3}{4} \\
&= \frac{6}{4} \\
&= \frac{3}{2} \\
&= \frac{1}{\frac{2}{3}}
\end{align*}
\]

6. Evaluate \( \frac{2}{6} \times \frac{7}{10} \), expressing your answer in simplest form.

\[
\begin{align*}
\frac{2}{6} \times \frac{7}{10} &= \frac{2 \times 7}{6 \times 10} \\
&= \frac{14}{60} \\
&= \frac{7}{30} \\
&= \frac{7}{12}
\end{align*}
\]

7. Evaluate \( \frac{3}{4} \times \frac{2}{5} \).

\[
\begin{align*}
\frac{3}{4} \times \frac{2}{5} &= \frac{3 \times 2}{4 \times 5} \\
&= \frac{6}{20} \\
&= \frac{3}{10} \\
&= \frac{3}{5}
\end{align*}
\]

Grade Commentary

Sascha demonstrates sound general understanding of the addition and multiplication of fractions. Most routine problems have been solved accurately but the diagram in Question 4 shows limited understanding of the meaning of a learnt process. The consistent application of an appropriate process for the multiplication of fractions, the construction of a more creative word problem for Question 3, and an appropriate diagram for Question 4 would enhance the response.

Sascha’s response demonstrates characteristics of work typically produced by a student performing at a grade C standard.