



Math
Released Item 2016

Grade 4

Mixed Number to Fraction
M01243

Prompt

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$4\frac{1}{3} = 4 + \frac{1}{3}$$

$$= \frac{4}{3} + \frac{1}{3}$$

$$= \frac{5}{3}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction. Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

Enter your explanation, your answer, and your description in the space provided.

Rubric

Task is worth a total of 3 points.

Mixed Number to Fraction	
Score	Description
3	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none">• Reasoning component = 1 point<ul style="list-style-type: none">○ The student explains the error in Simone's reasoning.• Computation component = 1 point<ul style="list-style-type: none">○ A correct equivalent fraction.• Reasoning component = 1 point<ul style="list-style-type: none">○ The student describes another way to convert a mixed number to a fraction. <p>Sample Student Response:</p> <p>"Simone made an error when she converted 4 to a fraction. She should have multiplied 4×3 before she put that over a denominator of 3."</p> $\begin{aligned}4 \frac{1}{3} &= \frac{4 \times 3}{3} + \frac{1}{3} \\ &= \frac{12}{3} + \frac{1}{3} \\ &= \frac{13}{3}\end{aligned}$ <p>Another way I can write the equivalent fraction is to write 4 as the sum of $1 + 1 + 1 + 1$ and then write each 1 as the sum of $\frac{1}{3} + \frac{1}{3} + \frac{1}{3}$.</p> $\begin{aligned}4 \frac{1}{3} &= 1 + 1 + 1 + 1 + \frac{1}{3} \\ &= \left(\frac{1}{3} + \frac{1}{3} + \frac{1}{3}\right) + \left(\frac{1}{3} + \frac{1}{3} + \frac{1}{3}\right) + \left(\frac{1}{3} + \frac{1}{3} + \frac{1}{3}\right) + \left(\frac{1}{3} + \frac{1}{3} + \frac{1}{3}\right) + \frac{1}{3} \\ &= \frac{13}{3}\end{aligned}$ <p>or other valid equivalent explanations.</p>

2	Student response includes 2 of the above elements.
1	Student response includes 1 of the above elements.
0	Student response is incorrect or irrelevant.

Anchor Set

A1 – A8

With Annotations

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.

Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

The error is that 4 should have changed to 12 thirds not 4 thirds, so 12 thirds plus 1 third equals 13 thirds which is the correct fraction, another method to do this is doing 4, the whole number times 3 the denominator to get the numerator which is 12 because $4 \times 3 = 12$ and 12 thirds plus 1 third equals 13 thirds.

Annotation

Anchor Paper 1

Score Point 3

This response receives full credit. The response includes each of the three required elements.

- The error in reasoning is correctly explained (4 should have changed to 12 thirds not 4 thirds).
- The correct equivalent fraction of $\frac{13}{3}$ is found (13 thirds).
- A valid description of another way to convert a mixed number to a fraction is provided (4, the whole number times 3 the denominator to get the numerator which is 12 because $4 \times 3 = 12$ and 12 thirds plus 1 third equals 13 thirds).

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned} 4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3} \end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction. Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

The mistake he did in his work was simple. In the second step he took the 4 as an numerator not as an hole number. The corect steps were $4\frac{1}{3} \square = \frac{3}{3} + \frac{3}{3} + \frac{3}{3} + \frac{1}{3} \square = \frac{13}{3}$. $\frac{13}{3}$ would be the corect fraction of $4\frac{1}{3}$.

Annotation

Anchor Paper 2

Score Point 3

This response receives full credit. The response includes each of the three required elements.

- The error in reasoning is correctly explained (took the 4 as a numerator not as an [whole] number).
- The correct equivalent fraction of $\frac{13}{3}$ is found ($\frac{13}{3}$ would be the correct fraction of $4\frac{1}{3}$).
- A valid description of another way to convert a mixed number to a fraction is provided ($4\frac{1}{3} = \frac{3}{3} + \frac{3}{3} + \frac{3}{3} + \frac{3}{3} + \frac{1}{3} = \frac{13}{3}$). Compare this method to the Sample Student Response in the rubric. The sample rubric includes ($\frac{1}{3} + \frac{1}{3} + \frac{1}{3}$), which is equivalent to $\frac{3}{3}$ in this response.

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.

Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

Her answer is incorrect because she did $4 + \frac{1}{3}$ and all you have to do is multiply the number of wholes and denominator and add the numerator. Using that method you will get the correct answer of $\frac{13}{3}$.

Annotation

Anchor Paper 3

Score Point 2

This response receives partial credit. The response includes two of the three required elements.

- The correct equivalent fraction is found ($\frac{13}{3}$).
- A valid description of another way to convert a mixed number to a fraction is provided (multiply the number of wholes and denominator and add the numerator).

The response does not correctly explain the error in reasoning. The explanation provided (she did $4 + \frac{1}{3}$) is not an error, it is one of the correct steps in Simone's process.

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.

Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

$$4\frac{1}{3} \square = 4 + \frac{1}{3} \quad 4 = \frac{12}{3} \neq \frac{4}{3} \quad \frac{12}{3} + \frac{1}{3} = \frac{13}{3}$$

Annotation

Anchor Paper 4

Score Point 2

This response receives partial credit. The response includes two of the three required elements.

- The error in reasoning is correctly explained ($4 = \frac{12}{3} \neq \frac{4}{3}$). This mathematical statement means that 4 equals $\frac{12}{3}$ but is not equal to $\frac{4}{3}$.
- The correct equivalent fraction is found ($\frac{13}{3}$).

The response does not clearly describe another way to convert a mixed number to a fraction. Although some work is present ($4 = \frac{12}{3}$, $\frac{12}{3} + \frac{1}{3} = \frac{13}{3}$), the student does not explain how 4 is converted to $\frac{12}{3}$.

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.

Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

simones error is that she thought $\frac{4}{3}$ was equivalent to 4. One way you could change $4\frac{1}{3}$ into a fraction is keeping the denominator 3 the same and multiplieing $3 \times 4 = 12$ so the fraction is $\frac{12}{3}$

Annotation

Anchor Paper 5

Score Point 1

This response receives partial credit. The response includes one of the three required elements.

- The error in reasoning is correctly explained (she thought $\frac{4}{3}$ was equivalent to 4).

The equivalent fraction provided is incorrect ($\frac{12}{3}$).

The response provides an incorrect description of another way to convert a mixed number to a fraction. The method presented describes multiplying the whole number and the denominator ($3 \times 4 = 12$); however, there is no mention of adding 1, the numerator of $\frac{1}{3}$. This is an important step in the method and must be present to receive credit for this element.

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction. Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

Calculator interface showing a row of buttons: \leftarrow , \rightarrow , \leftarrow , \leftarrow , $+$, $-$, \times , \div , $\frac{\square}{\square}$, $\frac{\square}{\square}$, $=$, $<$, $>$. Below this row are buttons for $(-)$ and $?$.

You have to multiply the denominator with the whole number first, then you have to add the numerator.

Calculator interface showing a numeric keypad and arithmetic buttons.

Numbers

0	1	2	3
4	5	6	7
8	9	,	.

Arithmetic and Units

\neq	[.]	\$	°
--------	-----	----	---

Annotation

Anchor Paper 6

Score Point 1

This response receives partial credit. The response includes one of the three required elements.

- A valid description of another way to convert a mixed number to a fraction is provided (multiply the denominator with the whole number first, then you have to add the numerator). Compare this description to Anchor 4.

The response does not attempt to explain the error in reasoning.

The correct equivalent fraction is not provided.

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.
Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction

Simone change the whole number 4 into a fraction, and that can not be done. An quivalent fraction is $\frac{13}{4}$

Annotation

Anchor Paper 7

Score Point 0

This response receives no credit. The response includes none of the three required elements.

The attempt to explain the error in reasoning is incorrect (change the whole number 4 into a fraction, and that can not be done). Changing the whole number into a fraction is a correct step in the reasoning. The error is in the value of the fraction the whole number is changed to because $4 \neq \frac{4}{3}$. This response does not make that identification and therefore may not receive credit for this element.

The correct equivalent fraction is not provided.

There is no attempt to describe another way to convert a mixed number to a fraction.

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.

Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

SHE WAS'NT SUPPOST TO ADD THE TWO FRACTIONS TOGETHER

Annotation

Anchor Paper 8

Score Point 0

This response receives no credit. The response includes none of the three required elements.

The attempt to explain the error in reasoning is incorrect (*SHE WAS'NT SUPPOST TO ADD THE TWO FRACTIONS TOGETHER*). Adding the fractions together is a correct step in Simone's work to convert the mixed number to a fraction.

The correct equivalent fraction is not provided.

There is no attempt to describe another way to convert a mixed number to a fraction.

Practice Set
P101 - P105

No Annotations Included

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.

Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

the error in simones reasoning is she turned 4 into 4 thirds. the equvlent fraction is 13 thirds. Another method is

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.

Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

$4\frac{1}{3}$ is not equal to $\frac{5}{3}$ it's $\frac{13}{3}$

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.

Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

The error he made was that he took the whole number and used it as the numerator. the equivalent fraction is $\frac{13}{3}$. The way ifound it was by timesing the whole number by the denominator thaen ading the numerator to the number i timesed then iput the denominator on the bottom to get the anser.

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.

Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

The error in Simmons work is $4 + \frac{1}{3}$ does not equal $\frac{4}{3}$. I got that by just knowing that $4 + \frac{1}{3}$ doesnt equal $\frac{4}{3}$.

Simone changed the mixed number $4\frac{1}{3}$ to a fraction. First, Simone changed the whole number 4 to the fraction $\frac{4}{3}$. Then she added the two fractions together. Her work is shown.

$$\begin{aligned}4\frac{1}{3} &= 4 + \frac{1}{3} \\ &= \frac{4}{3} + \frac{1}{3} \\ &= \frac{5}{3}\end{aligned}$$

Explain the error in Simone's reasoning. Find the correct equivalent fraction.

Describe another method you can use to change the mixed number $4\frac{1}{3}$ to a fraction.

Her error is $4\frac{1}{3} = 4 + \frac{1}{3}$ you can not do that because, your whole number hast to be where $\frac{1}{3}$ is. $4\frac{1}{3}$ to a mixed number *is* $\frac{13}{3}$

Practice Set

Paper	Score
P101	2
P102	1
P103	3
P104	0
P105	1