

Multiplying Mixed Numbers by an Integer

To multiply mixed numbers by an integer.



- 1) Use repeated addition to calculate the answers. Draw models to help you if you need to.
An example has been provided.

a) $1\frac{1}{3} \times 4 = 5\frac{1}{3}$



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

$$4 \text{ wholes (4) and } 4 \text{ thirds } (1\frac{1}{3}) = 5\frac{1}{3}$$



b) $2\frac{1}{5} \times 6 =$

c) $2\frac{2}{7} \times 4 =$

2) Change each fraction to an improper fraction to calculate the answers.

An example has been provided.

a) $2\frac{2}{3} \times 4 = \frac{8}{3} \times 4 = \frac{32}{3} = 10\frac{2}{3}$

b) $3\frac{1}{5} \times 3 =$

c) $1\frac{1}{6} \times 5 =$

3) Partition the mixed number to calculate the answer. An example has been provided.

a) $2\frac{3}{4} \times 3 = 8\frac{1}{4}$

$2 \times 3 = 6$

$\frac{3}{4} \times 3 = \frac{9}{4} = 2\frac{1}{4}$

$6 + 2\frac{1}{4} = 8\frac{1}{4}$

b) $2\frac{2}{3} \times 5 =$

c) $4\frac{2}{5} \times 4 =$

Multiplying Mixed Numbers by an Integer **Answers**

1)

b) $2\frac{1}{5} \times 6 = 13\frac{1}{5}$

c) $2\frac{2}{7} \times 4 = 9\frac{1}{7}$

2)

b) $3\frac{1}{5} \times 3 = 9\frac{3}{5}$

c) $1\frac{1}{6} \times 5 = 5\frac{5}{6}$

3)

b) $2\frac{2}{3} \times 5 = 13\frac{1}{3}$

c) $4\frac{2}{5} \times 4 = 17\frac{3}{5}$

Multiplying Mixed Numbers by an Integer

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Repeated
addition

Change to an
improper fraction

Partitioning the
mixed number

1) For each calculation, choose one of the methods to calculate the answer and another to check your answer. Make sure you use each method at least once.

$3\frac{1}{5} \times 4 =$	
Method 1	Check using another method
$5\frac{3}{8} \times 3 =$	
Method 1	Check
$2\frac{7}{8} \times 8 =$	
Method 1	Check

- 2) Six friends took part in a sponsored swim. They each swam $1\frac{5}{8}$ km.
How many kilometres did they swim in total?

- 3) To answer a problem, this calculation needs to be completed: $2\frac{3}{4} \times 5$
Write a problem to match the calculation. Answer your problem.

Multiplying Mixed Numbers by an Integer **Answers**

1) Two different methods used to obtain the correct answer.

a) $3\frac{1}{5} \times 4 = 12\frac{1}{5}$

b) $5\frac{3}{8} \times 3 = 16\frac{1}{8}$

c) $2\frac{7}{8} \times 8 = 23$

2) $9\frac{6}{8}$ or $9\frac{3}{4}$

3) Multiple answers possible. The answer to the problem is $13\frac{3}{4}$

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1) For each calculation, use every method and then decide which method was best for that calculation and why.

$5\frac{1}{5} \times 4 =$		
Repeated addition	Change to improper fraction	Partition mixed number
Which method was best and why?		
$7\frac{6}{8} \times 3 =$		
Repeated addition	Change to improper fraction	Partition mixed number
Which method was best and why?		
$4\frac{5}{6} \times 8 =$		
Repeated addition	Change to improper fraction	Partition mixed number
Which method was best and why?		

- 2) Is one method always better for you. If so, which do you prefer and why?
If not, can you identify why some questions are most suited to a particular method?

If I calculate $4 \times 2\frac{2}{5}$ and $2 \times 4\frac{2}{5}$,
I will have the same answer

- 3) Do you agree? Explain how you know.

Hint: Partitioning the mixed numbers may help your explanation.



Multiplying Mixed Numbers by an Integer **Answers**

1) Each method is used to calculate the answers. Children will have a variety of answers to explain which method is best. Example of the possible reasons:

Repeated addition is efficient if the fraction multiplication doesn't go over one whole.

Changing to an improper fraction is efficient as you only have to deal with one fraction.

Changing to an improper fraction gives a large number to multiply which can be difficult and time consuming.

Partitioning the mixed number gives a smaller number to multiply which can make it more efficient.

a) $5\frac{1}{5} \times 4 = 20\frac{4}{5}$

b) $7\frac{6}{8} \times 3 = 23\frac{2}{8}$

c) $4\frac{5}{6} \times 8 = 38\frac{4}{6}$

2) Children may prefer to always use one method. Give them credit when children identify that repeated addition could be quicker for smaller numbers, partitioning will make it easier to calculate larger multiplications and changing to an improper fraction will need less steps. Some methods can be done mentally which could make them more efficient.

3) Disagree. If you partitioned the mixed numbers:

$$4 \times 2 \text{ and } 4 \times \frac{2}{5}$$

$$2 \times 4 \text{ and } 2 \times \frac{2}{5}$$

The whole number multiplication answers would be the same, but the fraction multiplication would not. $4 \times \frac{2}{5}$ is greater than $2 \times \frac{2}{5}$.

$$4 \times 2\frac{2}{5} = 9\frac{3}{5}$$

$$2 \times 4\frac{2}{5} = 8\frac{4}{5}$$