

Reasoning and Problem Solving

Step 18: Multiply Mixed Numbers by Integers

National Curriculum Objectives:

Mathematics Year 5: (5F5) [Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Find the missing integer in the calculation. The product of the fractions is within 1.

Expected Find the missing integer in the calculation. The product of the fractions exceeds one.

Greater Depth Find the missing integer in the calculation. The product of the fractions exceeds one. Answers need to be simplified using knowledge of equivalent fractions.

Questions 2, 5 and 8 (Reasoning)

Developing Explain which calculation is the odd one out. The product of the fractions is within 1.

Expected Explain which calculation is the odd one out. The product of the fractions exceeds one.

Greater Depth Explain which calculation is the odd one out. The product of the fractions exceeds one. Answers need to be simplified using knowledge of equivalent fractions.

Questions 3, 6 and 9 (Reasoning)

Developing Explain if the calculation is correct. The product of the fractions is within 1.

Expected Explain if the calculation is correct. The product of the fractions exceeds one.

Greater Depth Explain if the calculation is correct. The product of the fractions exceeds one. Answers need to be simplified using knowledge of equivalent fractions.

More [Year 5 Fractions](#) resources.

Did you like this resource? Don't forget to [review](#) it on our website.

Multiply Mixed Numbers by Integers

1a. The mixed numbers below have been multiplied by the same integer.

$$3 \frac{2}{11} \times \square = 12 \frac{8}{11}$$

$$2 \frac{1}{5} \times \square = 8 \frac{4}{5}$$

What is the missing integer?



PS

Multiply Mixed Numbers by Integers

1b. The mixed numbers below have been multiplied by the same integer.

$$2 \frac{2}{7} \times \square = 6 \frac{6}{7}$$

$$4 \frac{3}{13} \times \square = 12 \frac{9}{13}$$

What is the missing integer?



PS

2a. Circle the odd one out.

A. $3 \frac{2}{13} \times 4$

B. $4 \frac{3}{13} \times 3$

C. $6 \frac{4}{13} \times 2$

Explain your reasoning.



R

2b. Circle the odd one out.

A. $6 \frac{3}{11} \times 3$

B. $9 \frac{3}{11} \times 2$

C. $3 \frac{1}{11} \times 6$

Explain your reasoning.



R

3a. Danny has completed the calculation below:



$$3 \frac{2}{5} \times 2 = 6 \frac{4}{10}$$

Is he correct?

Convince me.



R

3b. Sharla has completed the calculation below:



$$5 \frac{3}{11} \times 3 = 15 \frac{3}{11}$$

Is she correct?

Convince me.



R

Multiply Mixed Numbers by Integers

Multiply Mixed Numbers by Integers

4a. The mixed numbers below have been multiplied by the same integer.

$$2 \frac{3}{5} \times \square = 7 \frac{4}{5}$$

$$3 \frac{4}{7} \times \square = 10 \frac{5}{7}$$

What is the missing integer?



PS

4b. The mixed numbers below have been multiplied by the same integer.

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

$$2 \frac{5}{9} \times \square = 5 \frac{1}{9}$$

What is the missing integer?



PS

5a. Circle the odd one out.

A. $6 \frac{3}{5} \times 2$

B. $3 \frac{2}{5} \times 4$

C. $6 \frac{4}{5} \times 2$

Explain your reasoning.



R

5b. Circle the odd one out.

A. $8 \frac{6}{7} \times 2$

B. $4 \frac{3}{7} \times 4$

C. $2 \frac{2}{7} \times 8$

Explain your reasoning.



R

6a. Marco has completed the calculation below.



$$4 \frac{4}{5} \times 3 = 12 \frac{2}{5}$$

Is he correct?

Convince me.



R

6b. Lila has completed the calculation below:



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

Is she correct?

Convince me.



R

Multiply Mixed Numbers by Integers

Multiply Mixed Numbers by Integers

7a. The mixed numbers below have been multiplied by the same integer.

$$5 \frac{8}{12} \times \square = 11 \frac{1}{3}$$

$$4 \frac{9}{15} \times \square = 9 \frac{1}{5}$$

What is the missing integer?



PS

7b. The mixed numbers below have been multiplied by the same integer.

$$4 \frac{7}{10} \times \square = 23 \frac{1}{2}$$

$$3 \frac{6}{8} \times \square = 18 \frac{3}{4}$$

What is the missing integer?



PS

8a. Circle the odd one out.

A. $2 \frac{2}{12} \times 8$

B. $8 \frac{10}{15} \times 2$

C. $4 \frac{3}{10} \times 4$

Explain your reasoning.



R

8b. Circle the odd one out.

A. $6 \frac{12}{16} \times 2$

B. $2 \frac{3}{8} \times 6$

C. $4 \frac{3}{6} \times 3$

Explain your reasoning.



R

9a. Alfie has completed the calculation below:



$$5 \frac{6}{10} \times 3 = 15 \frac{18}{30}$$

Is he correct?

Convince me.



R

9b. Alina has completed the calculation below:



$$4 \frac{7}{12} \times 4 = 18 \frac{4}{12}$$

Is she correct?

Convince me.



R

Reasoning and Problem Solving Multiply Mixed Numbers by Integers

Developing

1a. 4

2a. B is the odd one out because A and C both equal $12\frac{8}{13}$, whereas B equals $12\frac{9}{13}$.

3a. Danny is not correct because he has multiplied the numerator and denominator by 2. The correct answer is $6\frac{4}{5}$.

Expected

4a. 3

5a. A is the odd one out because B and C both equal $13\frac{3}{5}$, whereas A equals $13\frac{1}{5}$.

6a. Marco is not correct because he has not added on the 2 wholes when converting the improper fraction. The correct answer is $14\frac{2}{5}$.

Greater Depth

7a. 2

8a. C is the odd one out because A and B both equal $17\frac{1}{3}$, whereas C equals $17\frac{1}{5}$.

9a. Alfie is not correct because he has multiplied the denominator by the integer. The correct answer is $16\frac{4}{5}$.

Reasoning and Problem Solving Multiply Mixed Numbers by Integers

Developing

1b. 3

2b. A is the odd one out because B and C both equal $18\frac{6}{11}$, whereas A equals $18\frac{9}{11}$.

3b. Sharla is not correct because she has only multiplied the whole numbers. The correct answer is $15\frac{9}{11}$.

Expected

4b. 2

5b. C is the odd one out because A and B both equal $17\frac{5}{7}$, whereas C equals $18\frac{2}{7}$.

6b. Lila is correct because $2 \times 5 = 10$ and $\frac{2}{3} \times 5 = 3\frac{1}{3}$ so altogether it equals $13\frac{1}{3}$.

Greater Depth

7b. 5

8b. B is the odd one out because A and C both equal $13\frac{1}{2}$, whereas B equals $14\frac{1}{4}$.

9b. Alina is correct however she has not simplified her answer. The simplified answer is $18\frac{1}{3}$.