

Reasoning and Problem Solving

Step 17: Multiply Non-Unit Fractions by an Integer

National Curriculum Objectives:

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

Mathematics Year 5: (5F3) [Compare and order fractions whose denominators are all multiples of the same number](#)

Mathematics Year 5: (5F2a) [Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements \$> 1\$ as a mixed number \[for example, \$2/5 + 4/5 = 6/5 = 1 \frac{1}{5}\$ \]](#)

Mathematics Year 5: (5F2b) [Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths](#)

Differentiation:

Questions 1, 4 and 7 (Reasoning)

Developing Explain the odd one out when multiplying non-unit fractions by integers, where the denominators are the same.

Expected Explain the odd one out when multiplying non-unit fractions by integers. Fractions need to be converted to a mixed number or simplified using knowledge of equivalent fractions.

Greater Depth Explain the odd one out when multiplying unit fractions by integers. Fractions need to be converted to a mixed number and simplified using knowledge of equivalent fractions.

Questions 2, 5 and 8 (Reasoning)

Developing Prove who is correct when non-unit fractions by integers.

Expected Prove who is correct when non-unit fractions by integers. Fractions need to be converted to a mixed number or simplified using knowledge of equivalent fractions.

Greater Depth Prove who is correct when non-unit fractions by integers. Fractions need to be converted to a mixed number and simplified using knowledge of equivalent fractions.

Questions 3, 6 and 9 (Problem Solving)

Developing Multiply non-unit fractions by integers in order to compare, where denominators are the same.

Expected Multiply non-unit fractions by integers in order to compare, where denominators are the same and fractions are improper.

Greater Depth Multiply non-unit fractions by integers in order to compare where denominators are different and fractions are improper.

More [Year 5 and Year 6 Fractions](#) resources.

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

Multiply Non-Unit Fractions by an Integer

Multiply Non-Unit Fractions by an Integer

1a. Which is the odd one out?

A. $\frac{3}{15} \times 4$

B. $\frac{2}{15} \times 7$

C. $\frac{2}{15} \times 6$

D. $\frac{4}{15} \times 3$

Explain why.



5 R

1b. Which is the odd one out?

A. $\frac{5}{20} \times 3$

B. $\frac{3}{20} \times 6$

C. $\frac{3}{20} \times 7$

D. $\frac{4}{20} \times 3$

Explain why.



5 R

2a. Class 5B have been solving the calculation below.

$$\frac{5}{17} \times 3$$

Rosie says,



I think the answer is $\frac{15}{51}$.

Todd says,

I think the answer is $\frac{15}{17}$.



Who is correct? Prove it.



5 R

2b. Class 5S have been solving the calculation below.

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

Stuey says,



I think the answer is $\frac{12}{13}$.

Meg says,

I think the answer is $\frac{13}{12}$.



Who is correct? Prove it.



5 R

3a. Fill in the missing number or symbol to make the comparison statements correct.

A. $\frac{4}{13} \times \square < \frac{5}{13} \times 2$

B. $\frac{3}{17} \times 5 \square \frac{4}{17} \times 4$



5 PS

3b. Fill in the missing number or symbol to make the comparison statements correct.

A. $\frac{3}{19} \times 4 > \frac{5}{19} \times \square$

B. $\frac{5}{21} \times 4 \square \frac{8}{21} \times 2$



5 PS

Multiply Non-Unit Fractions by an Integer

Multiply Non-Unit Fractions by an Integer

4a. Which is the odd one out?

A. $\frac{2}{20} \times 5$

B. $\frac{3}{18} \times 3$

C. $\frac{3}{12} \times 2$

D. $\frac{2}{16} \times 2$

Explain why.



5 R

4b. Which is the odd one out?

A. $\frac{6}{19} \times 4$

B. $\frac{3}{19} \times 8$

C. $\frac{5}{19} \times 4$

D. $\frac{2}{19} \times 12$

Explain why.



5 R

5a. Class 5A have been solving the calculation below.

$$\frac{6}{19} \times 4$$

Jorelle says,



I think the answer is $1\frac{5}{19}$.

Oscar says,

I think the answer is $\frac{24}{19}$.



Who is correct? Prove it.



5 R

5b. Class 5F have been solving the calculation below.

$$\frac{3}{18} \times 2$$

Stan says,



I think the answer is $\frac{6}{18}$.

Holly says,

I think the answer is $\frac{1}{3}$.



Who is correct? Prove it.



5 R

6a. Fill in the missing numbers to make the comparison statements correct.

A. $\frac{3}{11} \times \square < \frac{7}{11} \times 3$

B. $\frac{9}{19} \times 3 > \frac{6}{19} \times \square$

Is there more than one solution?



5 PS

6b. Fill in the missing numbers to make the comparison statements correct.

A. $\frac{10}{13} \times 2 > \frac{4}{13} \times \square$

B. $\frac{6}{17} \times \square < \frac{8}{17} \times 3$

Is there more than one solution?



5 PS

Multiply Non-Unit Fractions by an Integer

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7a. Which is the odd one out?

A. $\frac{6}{18} \times 4$

B. $\frac{3}{12} \times 5$

C. $\frac{5}{16} \times 4$

D. $\frac{5}{20} \times 5$

Explain why.



5 R

7b. Which is the odd one out?

A. $\frac{4}{12} \times 4$

B. $\frac{8}{14} \times 2$

C. $\frac{4}{27} \times 9$

D. $\frac{4}{15} \times 5$

Explain why.



5 R

8a. Class 5D have been solving the calculation below.

$$\frac{5}{14} \times 7$$

Lindsay says,



I think the answer is $2\frac{1}{2}$.

Kyle says,



I think the answer is $1\frac{1}{2}$.

Who is correct? Prove it.



5 R

8b. Class 5H have been solving the calculation below.

$$\frac{9}{20} \times 5$$

Lee says,



I think the answer is $2\frac{1}{3}$.

Amy says,



I think the answer is $2\frac{1}{4}$.

Who is correct? Prove it.



5 R

9a. Fill in the missing numbers to make the comparison statements correct.

A. $\frac{7}{12} \times \square < \frac{5}{6} \times 3$

B. $\frac{3}{8} \times 7 > \frac{9}{16} \times \square$

Is there more than one solution?



5 PS

9b. Fill in the missing numbers to make the comparison statements correct.

A. $\frac{5}{14} \times 7 > \frac{9}{28} \times \square$

B. $\frac{8}{18} \times \square < \frac{7}{9} \times 3$

Is there more than one solution?



5 PS

Reasoning and Problem Solving Multiply Non-Unit Fractions by an Integer

Developing

1a. B is the odd one out as it equals $\frac{14}{15}$.

All the rest equal $\frac{12}{15}$.

2a. Todd is correct. $\frac{5}{17} \times 3 = \frac{15}{17}$.

3a. A. 1 or 2 B. <

Expected

4a. D is the odd one out as the others are equivalent to $\frac{1}{2}$.

5a. They are both correct but Oscar hasn't converted his answer to a mixed number.

6a. A. 1, 2, 3, 4, 5 or 6 B. 1, 2, 3 or 4

Greater Depth

7a. A is the odd one out as it's equivalent to $1\frac{1}{3}$. The others are equivalent to $1\frac{1}{4}$.

8a. Lindsay is correct. $\frac{5}{14} \times 7 = 2\frac{1}{2}$.

9a. A. 1, 2, 3 or 4 B. 1, 2, 3 or 4

Reasoning and Problem Solving Multiply Non-Unit Fractions by an Integer

Developing

1b. C is the odd one out as it makes an improper fraction.

2b. Stuey is correct. $\frac{3}{13} \times 4 = \frac{12}{13}$.

3b. A. 1 or 2 B. >

Expected

4b. C is the odd one out as it equals $1\frac{1}{19}$.
All the rest equal $1\frac{5}{19}$.

5b. They are both correct as $\frac{1}{3}$ is the simplest form of $\frac{6}{18}$.

6b. A. 1, 2, 3 or 4 B. 1, 2 or 3

Greater Depth

7b. B is the odd one out as it's equivalent to $1\frac{1}{7}$. The others are equivalent to $1\frac{1}{3}$.

8b. Amy is correct. $\frac{9}{20} \times 5 = 2\frac{1}{4}$.

9b. A. 1, 2, 3, 4, 5, 6 or 7 B. 1, 2, 3, 4 or 5