

Reasoning and Problem Solving

Step 16: Multiply Fractions by Integers

National Curriculum Objectives:

Mathematics Year 6: (6F2) [Use common factors to simplify fractions; use common multiples to express fractions in the same denomination](#)

Mathematics Year 6: (6F3) [Compare and order fractions, including fractions > 1](#)

Mathematics Year 6: (6F4) [Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions](#)

Mathematics Year 6: (6F5a) [Multiply simple pairs of proper fractions, writing the answer in its simplest form \[for example, \$1/4 \times 1/2 = 1/8\$ \]](#)

Differentiation:

Questions 1, 4 and 7 (Problem Solving)

Developing Find how many items are needed for a certain number of people to each be given a certain amount. Proper fractions are multiplied by integers.

Expected Find how many items are needed for a certain number of people to each be given a certain amount. Mixed numbers are multiplied by integers.

Greater Depth Find how many items are needed for a certain number of people to each be given a certain amount; then investigate the effect of adding an extra person and item. Improper fractions are multiplied by integers.

Questions 2, 5 and 8 (Reasoning)

Developing Explain whether or not a calculation is correct. Proper fractions are multiplied by integers, and answers are not simplified.

Expected Explain whether or not a calculation is correct. Mixed numbers are multiplied by integers, and answers are not simplified.

Greater Depth Explain whether or not a calculation is correct. Improper fractions are multiplied by integers, and answers are simplified.

Questions 3, 6 and 9 (Problem Solving)

Developing Given daily distances, calculate how many days it would take for one person to run further than another. Proper fractions are multiplied by integers.

Expected Given daily distances, calculate how many days it would take for one person to run further than another. Mixed numbers are multiplied by integers.

Greater Depth Given daily distances, calculate how many days it would take for one person to run further than another; then investigate the effect of increasing the daily distance. Improper fractions are multiplied by integers.

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

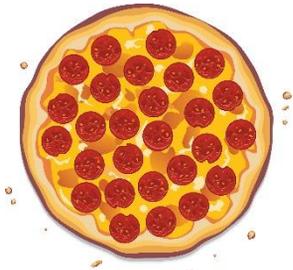
Did you like this resource? Don't forget to [review](#) it on our website.

Multiply Fractions by Integers

1a. There are 8 children at a party.

Each child needs $\frac{3}{8}$ of a pizza.

How many pizzas need to be ordered?



6 PS

Multiply Fractions by Integers

1b. There are 4 children at a party.

Each child needs $\frac{3}{4}$ of an apple.

How many apples need to be ordered?



6 PS

2a. Ella thinks she has solved her calculation.



Ella

$$\frac{1}{2} \times 5 = \frac{5}{10}$$

Is she correct? Explain how you know.



6 R

2b. Tim thinks he has solved his calculation.



Tim

$$3 \times \frac{5}{6} = 3\frac{5}{6}$$

Is he correct? Explain how you know.



6 R

3a. Kirsty and Nathan recorded their training for a running race.

	Distance per day	Number of days
Kirsty	$\frac{6}{8}$ km	7
Nathan	$\frac{6}{10}$ km	?

Nathan ran further than Kirsty. What is the smallest number of days he could have run for?



6 PS

3b. Victor and Cassie recorded their training for a running race.

	Distance per day	Number of days
Victor	$\frac{7}{9}$ km	3
Cassie	$\frac{1}{2}$ km	?

Cassie ran further than Victor. What is the smallest number of days she could have run for?



6 PS

Multiply Fractions by Integers

Multiply Fractions by Integers

4a. There are 7 children at a party.

Each child needs 2 cans plus an extra $\frac{2}{5}$ of another can.

How many cans need to be ordered?



6 PS

4b. There are 6 children at a party.

Each child needs 3 buns plus an extra $\frac{4}{7}$ of another bun.

How many buns need to be ordered?



6 PS

5a. Nolan thinks he has solved his calculation.



Jrue

$$4\frac{2}{9} \times 8 = 32\frac{2}{9}$$

Is he correct? Explain how you know.



6 R

5b. Tanni thinks she has solved her calculation.



Tanni

$$5 \times 4\frac{6}{11} = 5\frac{24}{11}$$

Is she correct? Explain how you know.



6 R

6a. Rachel and Stan recorded their training for a running race.

	Distance per day	Number of days
Rachel	$4\frac{7}{11}$ km	15
Stan	$5\frac{3}{8}$ km	?

Stan ran further than Rachel. What is the smallest number of days he could have run for?



6 PS

6b. Abel and Corinne recorded their training for a running race.

	Distance per day	Number of days
Abel	$9\frac{1}{12}$ km	13
Corinne	$7\frac{8}{10}$ km	?

Corinne ran further than Abel. What is the smallest number of days she could have run for?



6 PS

Multiply Fractions by Integers

Multiply Fractions by Integers

7a. There are 13 children at a party.

Each child needs $\frac{27}{15}$ of bread rolls.

How many rolls need to be ordered?



If another child came to the party, would one extra roll mean there would be enough for them?



6 PS

7b. There are 15 children at a party.

Each child needs $\frac{31}{14}$ of cakes.

How many cakes need to be ordered?



If another child came to the party, would one extra cake mean there would be enough for them?



6 PS

8a. Yan thinks he has solved his calculation.



Yan

$$\frac{31}{12} \times 9 = 23\frac{1}{4}$$

Is he correct? Explain how you know.



6 R

8b. Greta thinks she has solved her calculation.



Greta

$$10 \times \frac{27}{8} = 33\frac{2}{4}$$

Is she correct? Explain how you know.



6 R

9a. Sean and Nancy recorded their training for a running race.

Sean ran $\frac{10}{8}$ km every day for 11 days.

Nancy ran $\frac{14}{5}$ km every day.

In total, Nancy ran further than Sean. What is the smallest number of days she could have run for?

If she had run an extra four fifths of a kilometre per day, would she have run further than Sean in one day less?



6 PS

9b. Fatima and Claude recorded their training for a running race.

Fatima ran $\frac{16}{13}$ km every day for 9 days.

Claude ran $\frac{17}{12}$ km every day.

In total, Claude ran further than Nancy. What is the smallest number of days he could have run for?

If he had run an extra two twelfths of a kilometre per day, would he have run further than Fatima in one day less?



6 PS

Reasoning and Problem Solving Multiply Fractions by Integers

Developing

1a. 3

2a. No. She has multiplied the denominator as well as the numerator. The answer should be: $2 \frac{1}{2}$

3a. 9

Expected

4a. 17

5a. No. He has multiplied the whole numbers but not the fraction. The answer should be: $33 \frac{7}{9}$

6a. 13

Greater Depth

7a. 24. No.

8a. Yes.

$$\frac{31}{12} \times 9 = 23 \frac{3}{12} = 23 \frac{1}{4}$$

9a. 5 days.

Yes, if Nancy ran $\frac{18}{5}$ of a km per day, she would run $14 \frac{2}{5}$ km in 4 days, which is a greater distance in fewer days than Sean.

Reasoning and Problem Solving Multiply Fractions by Integers

Developing

1b. 3

2b. No. He has just put the two parts of the calculation together to make his answer. The answer should be: $2 \frac{1}{2}$

3b. 5

Expected

4b. 22

5b. No. She has multiplied the whole number and numerator of the mixed number. The answer should be: $22 \frac{8}{11}$

6b. 16

Greater Depth

7b. 34. No.

8b. No. She has simplified incorrectly.

$$10 \times \frac{27}{8} = 33 \frac{6}{8} = 33 \frac{3}{4}$$

9b. 8 days.

Yes, if Claude ran $\frac{19}{12}$ of a km per day, he would run $12 \frac{2}{3}$ km in 8 days, which is a greater distance in fewer days than Fatima.