

Reasoning and Problem Solving

Step 10: 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 number of people be given an amount by multiplying proper fractions and mixed numbers by integers. Pictorial support given.

Expected Find how many items are needed for a number of people be given an amount. Written question using multiplication of mixed numbers by integers using times table knowledge. Answers allow for improper fractions and mixed numbers.

Greater Depth Find how many items are needed for a number of people to be given an amount. Mixed numbers are multiplied by integers. Answers must be a simplified mixed number.

Questions 2, 5 and 8 (Reasoning)

Developing Find and correct the mistake in the calculation based on a pictorial representation. Proper fractions and mixed numbers are multiplied by integers. Pictorial support is given.

Expected Find and correct the mistake in the pictorial representation based on a calculation. Multiplying proper fractions and mixed numbers by integers using times table knowledge. Answers allow for improper fractions and mixed numbers. Includes pictorial support.

Greater Depth Find and correct the mistake that has been made. Proper fractions and improper fractions are multiplied by integers. Children create their own pictorial representations and answers must be a simplified mixed number.

Questions 3, 6 and 9 (Problem Solving)

Developing Calculate how many weeks of practice are needed to reach a minimum target. Mixed numbers are multiplied by integers. Pictorial support is given.

Expected Calculate how many weeks of practice are needed to reach a minimum target. Written question using multiplication of mixed numbers by integers using times table knowledge. Answers allow for improper fractions and mixed numbers.

Greater Depth Calculate how many weeks of practice are needed to reach a minimum target. Improper fractions and mixed numbers are multiplied by integers. Children create their own pictorial representations and answers must be a simplified mixed number.

More [Year 6 Fractions](#) resources.

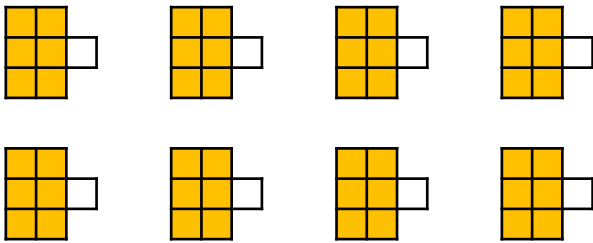
Did you like this resource? Don't forget to [review](#) it on our website.

Multiply Fractions by Integers

Multiply Fractions by Integers

1a. There are 8 children at a party.

Each child needs $\frac{6}{7}$ of a carton of juice.



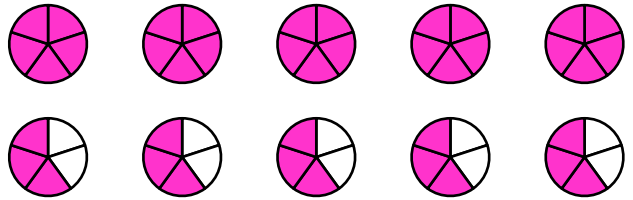
How many cartons of juice need to be ordered?
Prove it.



PS

1b. There are 5 children at a party.

Each child needs 1 bowl of fruit and another $\frac{3}{5}$ of a bowl of fruit.



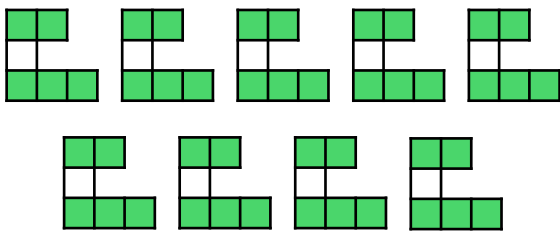
How many bowls of fruit need to be prepared?
Prove it.



PS

2a. Cassie has written the calculation to match the representation below.

$$\frac{5}{7} \times 9 = \frac{45}{7}$$



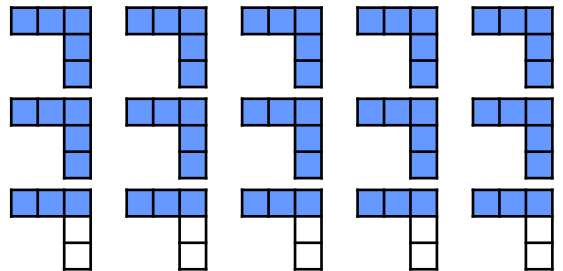
Find and correct Cassie's mistake.



R

2b. Robbie has written the calculation to match the representation below.

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



Find and correct Robbie's mistake.



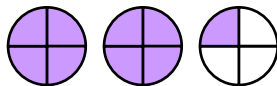
R

3a. Libby is practising for a school play.



Libby

I need to practise for more than 10 hours.
I can practise for $2\frac{1}{4}$ hours a week.



What is the minimum number of weeks Libby should practise for?
Explain your answer.



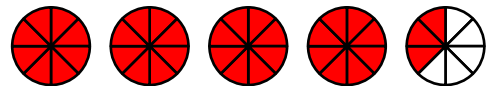
PS

3b. Jayden is practising for a school play.



Jayden

I need to practise for more than 15 hours.
I can practise for $4\frac{3}{8}$ hours a week.



What is the minimum number of weeks Jayden should practise for?
Explain your answer.



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 full cans need to be ordered?

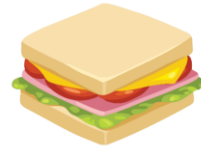
Prove it.



PS

4b. There are 5 children at a party.

Each child needs 3 sandwiches plus $\frac{3}{7}$ of another sandwich.



How many whole sandwiches need to be made?

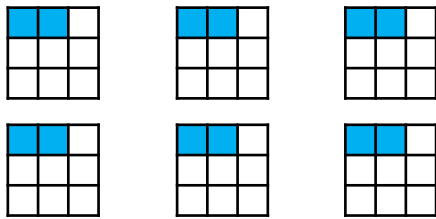
Prove it.



PS

5a. Nolan created an image to represent his calculation.

$$2 \frac{2}{9} \times 6 = 13 \frac{1}{3}$$



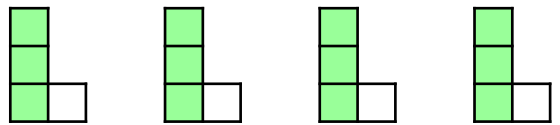
Find and correct Nolan's mistake.



R

5b. Tanni created an image to represent her calculation.

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



Find and correct Tanni's mistake.



R

6a. Rachel is practising for a school play.



Rachel

I need to practise for more than 15 hours.

I can practise for $4 \frac{3}{4}$ hours a week.

What is the minimum number of weeks Rachel should practise for?

Explain your answer.



PS

6b. Hamza is practising for a school play.



Hamza

I need to practise for more than 20 hours.

I can practise for $3 \frac{5}{6}$ hours a week.

What is the minimum number of weeks Hamza should practise for?

Explain your answer.



PS

Multiply Fractions by Integers

Multiply Fractions by Integers

7a. There are 9 children at a party.

Each child needs 3 pizzas plus an extra $\frac{4}{11}$ of another pizza.



How many whole pizzas need to be ordered?

Create an image to prove it.



PS

7b. There are 13 children at a party.

Each child needs 2 bread rolls plus $\frac{6}{7}$ of another bread roll.



How many whole bread rolls need to be bought?

Create an image to prove it.



PS

8a. Sheraz solved the calculation below.

$$\frac{27}{15} \times 6$$



Sheraz

The answer is $10 \frac{4}{15}$.

Find and correct Sheraz's mistake.



R

8b. Elaine solved the calculation below.

$$\frac{7}{8} \times 3$$



Elaine

The answer is $1 \frac{13}{8}$.

Find and correct Elaine's mistake.



R

9a. Olivia is practising for a school play.



Olivia

I need to practise for more than 12 hours.

I can practise for $2 \frac{5}{9}$ hours a week.

What is the minimum number of weeks Olivia should practise for?

Explain your answer.



PS

9b. Mason is practising for a school play.



Mason

I need to practise for more than 15 hours.

I can practise for $\frac{17}{6}$ hours a week.

What is the minimum number of weeks Mason should practise for?

Explain your answer.



PS

Reasoning and Problem Solving Multiply Fractions by Integers

Developing

1a. $\frac{6}{7} \times 8 = 6\frac{6}{7}$ or $\frac{48}{7}$ so 7 whole cartons need to be ordered.

2a. Cassie has used the incorrect denominator. The calculation should be $\frac{5}{6} \times 9 = 7\frac{3}{6}$ or $\frac{45}{6}$.

3a. $2\frac{1}{4}$ hours \times 4 weeks = 9 hours.
 $2\frac{1}{4}$ hours \times 5 weeks = $11\frac{1}{4}$ hours. Libby needs to practise for 5 weeks.

Expected

4a. $2\frac{2}{5} \times 7 = 16\frac{4}{5}$ or $\frac{84}{5}$ so 17 full cans need to be ordered.

5a. Nolan has created an incorrect image and has only shown the fraction. He needs to show 2 wholes for each fraction he created.

6a. $4\frac{3}{4}$ hours \times 3 weeks = $14\frac{1}{4}$ hours.
 $4\frac{3}{4}$ hours \times 4 weeks = 19 hours. Rachel needs to practise for 4 weeks.

Greater Depth

7a. $3\frac{4}{11} \times 9 = 30\frac{3}{11}$ so 31 whole pizzas need to be ordered.

8a. Sheraz has not simplified his answer correctly. The answer should be $10\frac{4}{5}$.

9a. $2\frac{5}{9}$ hours \times 4 weeks = $10\frac{2}{9}$ hours.
 $2\frac{5}{9}$ hours \times 5 weeks = $12\frac{7}{9}$ hours. Olivia needs to practise for 5 weeks.

Reasoning and Problem Solving Multiply Fractions by Integers

Developing

1b. $1\frac{3}{5} \times 5 = 8$ so 8 bowls of fruit need to be prepared.

2b. Robbie has used the incorrect numerator. The calculation should be $2\frac{3}{5} \times 5 = 13$.

3b. $4\frac{3}{8}$ hours \times 3 weeks = $13\frac{1}{8}$ hours.
 $4\frac{3}{8}$ hours \times 4 weeks = $17\frac{1}{2}$ hours. Jayden needs to practise for 4 weeks.

Expected

4b. $3\frac{3}{7} \times 5 = 17\frac{1}{7}$ or $\frac{120}{7}$ so 18 whole sandwiches need to be made.

5b. Tanni has created an incorrect image and has shown 4 lots of $\frac{3}{4}$ instead of 4 lots of $\frac{3}{8}$.

6b. $3\frac{5}{6}$ hours \times 5 weeks = $19\frac{1}{6}$ hours.
 $3\frac{5}{6}$ hours \times 6 weeks = 23 hours. Hamza needs to practise for 5 weeks.

Greater Depth

7b. $2\frac{6}{7} \times 13 = 37\frac{1}{7}$ so 38 whole bread rolls need to be ordered.

8b. Elaine has shown an improper fraction within a mixed number. The answer should be $2\frac{5}{8}$.

9b. $\frac{17}{6}$ hours \times 5 weeks = $14\frac{1}{6}$ hours.
 $\frac{17}{6}$ hours \times 6 weeks = 17 hours. Mason needs to practise for 6 weeks.