Lesson 1 - Week 8 (Spring 2, Week 2)

Monday 1st March 2021

LO: To subtract mixed numbers breaking the whole

White Rose Maths video:
https://vimeo.com/509809639

Voice-over video:
https://youtu.be/IvcHopW20x0

Play Times Tables Rockstars every day to practise your tables
https://ttrockstars.com/

Key vocabulary:

- Fraction
- Subtract
- Total
- Improper fraction
- Mixed number
- Whole
- Equivalent
- Convert
- Numerator
- Denominator
- Common denominator
- Simplify

Arithmetic – Flashback Four

1) Work out $\frac{7}{30} + \frac{2}{15} + \frac{1}{3}$

2) What is $\frac{3}{10}$ less than $\frac{9}{10}$?

3) Change $7\frac{3}{10}$ to an improper fraction.

4) What is the value of the 2 in the number 6,328?

Lesson 1 LO: To subtract mixed numbers breaking the whole

Subtracting mixed numbers: breaking the whole

For some mixed number subtraction, you will need to 'break the whole'.

This means that the fraction you are taking away is greater than the fraction part of the mixed number. Therefore you will have to exchange with the whole number to complete these questions.

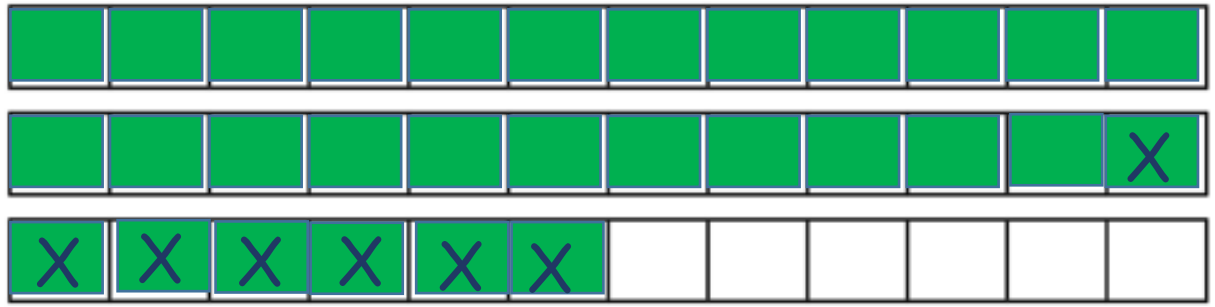
There is more than one way to do this. I will show you two methods.

Bar model method – my turn

Complete the subtractions.

Use the bar models to help you.

a)



$2\frac{1}{2} - \frac{7}{12} = \boxed{1\frac{11}{12}}$

Step 1: Make the denominators equivalent $2\frac{1}{2} = 2\frac{6}{12}$

Step 2: Shade in the greater number on the bar model

Step 3: Cross out the number you are subtracting

Step 4: Count your result and simplify if necessary

Lesson 1 LO: To subtract mixed numbers breaking the whole

Subtracting mixed numbers: breaking the whole

For some mixed number subtraction, you will need to 'break the whole'.

This means that the fraction you are taking away is greater than the fraction part of the mixed number. Therefore you will have to exchange with the whole number to complete these questions.

There is more than one way to do this. I will show you two methods.

Exchanging method – my turn

Strategy:

1. Find a common denominator for both fractions and convert
2. Exchange one whole in the mixed number to a full fraction and add it to the fraction part
3. Ignore the whole number and subtract the fractions
4. Simplify if necessary

1. Common denominator $2\frac{1}{2} - \frac{7}{12}$ -> both fractions over 12 -> $2\frac{6}{12} - \frac{7}{12}$

2. $2\frac{6}{12}$ -> I will take one whole, and exchange it for $\frac{12}{12}$

$$1\frac{6}{12} + \frac{12}{12} = 1\frac{18}{12}$$

3. $1\frac{18}{12} - \frac{7}{12} = 1\frac{11}{12}$

4. Nothing to simplify here.

Did I get the same answer with both methods?

The other way to do this is convert your mixed number into an improper fraction, subtract, and then convert back into a mixed number. This works too!

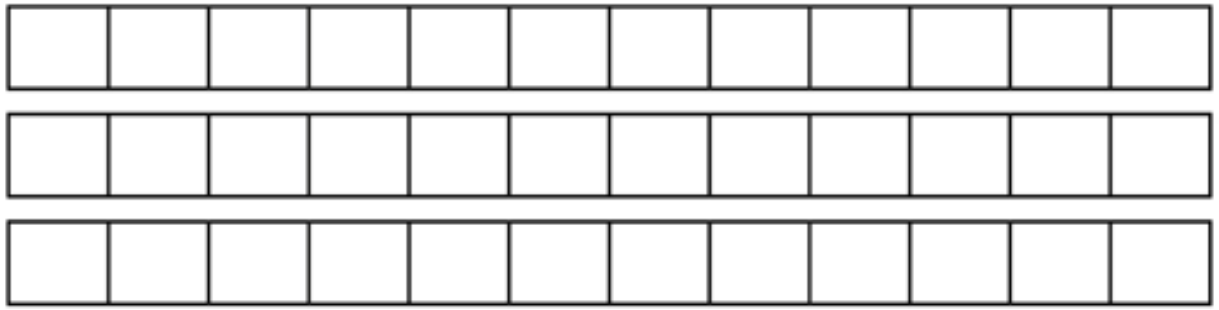
Lesson 1 LO: To subtract mixed numbers breaking the whole

Your turn – try both methods and see which you prefer!

Exchanging Method
Strategy:
1. Find a common denominator for both fractions and convert
2. Exchange one whole in the mixed number to a full fraction and add it to the fraction part
3. Ignore the whole number and subtract the fractions
4. Simplify if necessary

Bar Model Method
Strategy:
Step 1: Make the denominators equivalent
Step 2: Shade in the greater number on the bar model
Step 3: Cross out the number you are subtracting
Step 4: Count your result and simplify if necessary

$$2\frac{1}{3} - \frac{7}{12} = \square$$



Lesson 1 LO: To subtract mixed numbers breaking the whole

Your turn – try both methods and see which you prefer!

$2\frac{1}{3} - \frac{7}{12} = \square$

Exchanging Method Strategy:

1. Find a common denominator for both fractions and convert $2\frac{1}{3} = 2\frac{4}{12}$

1. Exchange one whole in the mixed number to a full fraction and add it to the fraction part

$1\frac{4}{3} + \frac{12}{12} = 1\frac{16}{12}$

1. Ignore the whole number and subtract the fractions

$1\frac{16}{12} - \frac{7}{12} = 1\frac{9}{12}$

1. Simplify if necessary

$1\frac{9}{12} = 1\frac{3}{4}$

$2\frac{1}{3} - \frac{7}{12} = \square$

Bar Model Method Strategy:

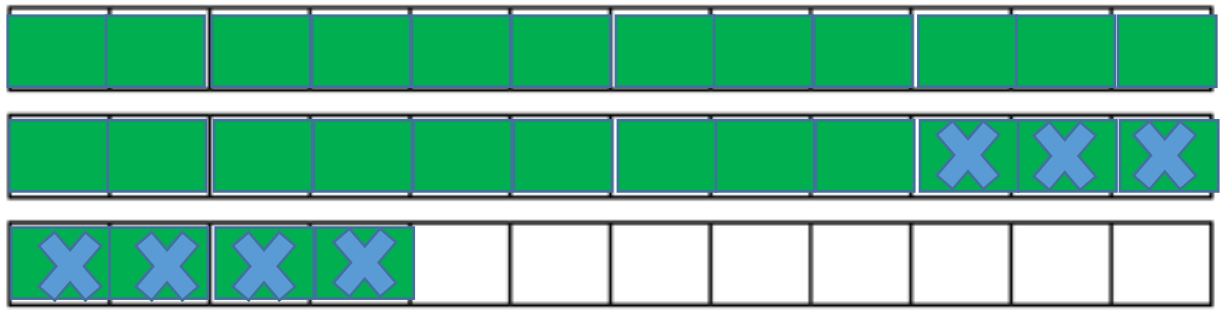
Step 1: Make the denominators equivalent $2\frac{1}{3} = 2\frac{4}{12}$

Step 2: Shade in the greater number on the bar model

Step 3: Cross out the number you are subtracting

Step 4: Count your result and simplify if necessary

$1\frac{9}{12} = 1\frac{3}{4}$



Lesson 1 LO: To subtract mixed numbers breaking the whole

Exchanging Method Strategy:

1. Find a common denominator for both fractions and convert
2. Exchange one whole in the mixed number to a full fraction and add it to the fraction part
3. Ignore the whole number and subtract the fractions
4. Simplify if necessary

Bar Model Method Strategy:

Step 1: Make the denominators equivalent
Step 2: Shade in the greater number on the bar model
Step 3: Cross out the number you are subtracting
Step 4: Count your result and simplify if necessary

Use whichever method you prefer!

Task 1: Fluency

1) Complete the subtractions.

a) $3\frac{1}{5} - \frac{7}{15} =$ ☐

b) $3\frac{1}{16} - \frac{5}{8} =$ ☐

c) $4\frac{5}{12} - \frac{5}{6} =$ ☐

d) $2\frac{1}{6} - \frac{5}{12} =$ ☐

e) $3\frac{2}{9} - \frac{13}{18} =$ ☐

f) $3\frac{4}{9} - \frac{13}{27} =$ ☐

2)

Eva is doing the long jump.

On her 1st attempt, she jumps $3\frac{2}{9}$ m.

Her 2nd attempt is $\frac{2}{3}$ m shorter than her first.

How far does Eva jump on her 2nd attempt?

Lesson 1 LO: To subtract mixed numbers breaking the whole

Use whichever method you prefer!

Task 2: Reasoning and Problem Solving

1)

a) Complete the subtractions.

$3\frac{1}{4} - \frac{1}{8} =$ ☐ $3\frac{1}{4} - \frac{3}{8} =$ ☐

$3\frac{1}{4} - \frac{2}{8} =$ ☐ $3\frac{1}{4} - \frac{4}{8} =$ ☐

b) At what point did the answer break the whole? Why?

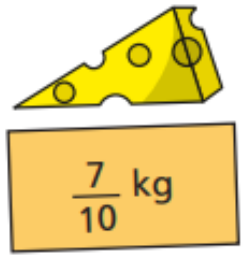
c) Which calculations will break the whole?

$3\frac{1}{2} - \frac{9}{10}$	$7\frac{3}{4} - \frac{1}{8}$	$6\frac{11}{12} - \frac{2}{3}$	$4\frac{2}{5} - \frac{7}{15}$

2)

Here are some ingredients.

Potatoes



Cheese

Carrots

a) How much more do the carrots weigh than the cheese?

b) Jack uses $\frac{17}{20}$ kg of carrots.

How many kilograms of carrots does he have left?

c) Jack uses all the cheese and the same amount of potatoes.

How much do the leftover potatoes weigh?

3)

The difference between a mixed number and a fraction is $\frac{7}{8}$

The fraction has a denominator of 16

What could the mixed number and the fraction be?

Give two possible answers.

Lesson 1 LO: To subtract mixed numbers breaking the whole

ANSWERS
Flashback Four

1) Work out $\frac{7}{30} + \frac{2}{15} + \frac{1}{3}$ $\frac{21}{30}$

2) What is $\frac{3}{10}$ less than $\frac{9}{10}$? $\frac{6}{10}$ or $\frac{3}{5}$

3) Change $7\frac{3}{10}$ to an improper fraction. $\frac{73}{10}$

4) What is the value of the 2 in the number 6,328?

twenty

Task 1 Answers

Complete the subtractions.

a) $3\frac{1}{5} - \frac{7}{15} =$ $2\frac{11}{15}$

b) $3\frac{1}{16} - \frac{5}{8} =$ $2\frac{7}{16}$

c) $4\frac{5}{12} - \frac{5}{6} =$ $3\frac{7}{12}$

d) $2\frac{1}{6} - \frac{5}{12} =$ $1\frac{3}{4}$

e) $3\frac{2}{9} - \frac{13}{18} =$ $2\frac{1}{2}$

f) $3\frac{4}{9} - \frac{13}{27} =$ $2\frac{26}{27}$

Eva jumps $2\frac{5}{9}$ m on her 2nd attempt.

Lesson 1 LO: To subtract mixed numbers breaking the whole

ANSWERS
Task 2

a) Complete the subtractions.

$3\frac{1}{4} - \frac{1}{8} = 3\frac{1}{8}$

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

$3\frac{1}{4} - \frac{3}{8} = 2\frac{7}{8}$

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

The carrots weigh $\frac{7}{10}$ kg more than the cheese.

Jack has $\frac{11}{20}$ kg of carrots left.

The leftover potatoes weigh $1\frac{4}{5}$ kg.

b) At what point did the answer break the whole? Why?

c) Tick the calculations that will break the whole.

- ✓ $3\frac{1}{2} - \frac{9}{10}$
- $7\frac{3}{4} - \frac{1}{8}$
- $6\frac{11}{12} - \frac{2}{3}$
- ✓ $4\frac{2}{5} - \frac{7}{15}$

What could the mixed number and the fraction be?

Give two possible answers.

e.g.

$1\frac{1}{16}$ and $\frac{3}{16}$

$1\frac{3}{16}$ and $\frac{5}{16}$

Once you have finished your work, **self-marked and corrected any mistakes**, please send your work to your teacher:

5L Miss Langoo at elangoo@kingsavenue.lambeth.sch.uk

4/5 W Mrs Williams at jduke@kingsavenue.lambeth.sch.uk

Lesson 2

Tuesday 2nd March 2021

LO: To subtract 2 mixed numbers

White Rose Maths video to support:
https://vimeo.com/510610537

Voice over video:
https://youtu.be/CpbOdPcKivs

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Arithmetic – Flashback Four

1) Add $\frac{3}{4}$ to $\frac{5}{8}$

2) Work out $\frac{17}{20} - \frac{7}{20}$

3) Fill in the missing number. $\frac{12}{16} = \frac{\square}{4}$

4) What is 273×0 ?

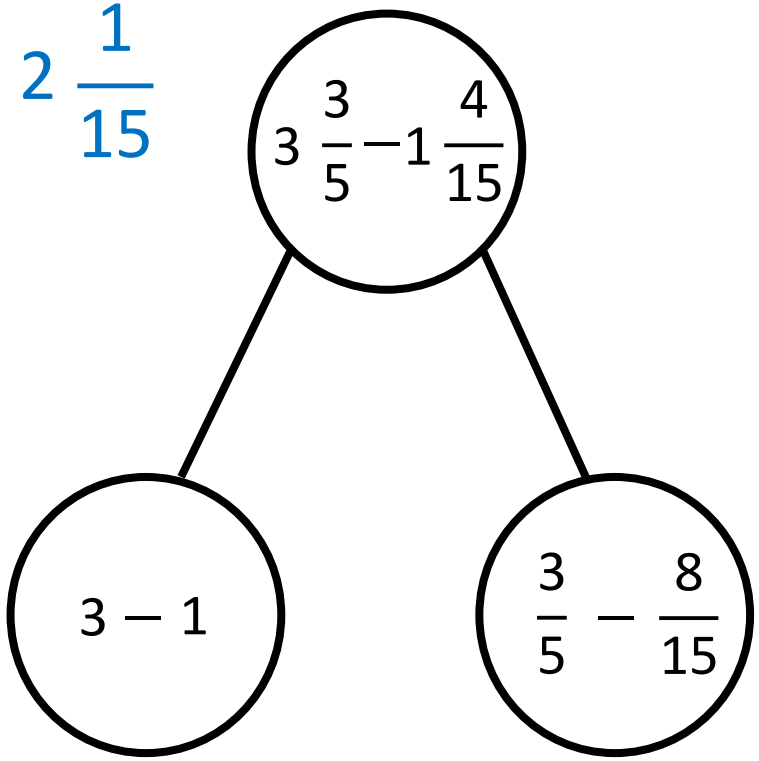
My Turn

$3\frac{3}{5} - 1\frac{8}{15} = 2\frac{1}{15}$

$3 - 1 = 2$

$\frac{3}{5} - \frac{8}{15} =$

$\frac{9}{15} - \frac{8}{15} = \frac{1}{15}$



Strategy:

1. Subtract the whole numbers
2. Convert the fractions so they have the same denominator
3. Subtract the fractions
4. Simplify if necessary and add the whole number part back

Lesson 2 LO: To subtract 2 mixed numbers

My Turn
Bar Model

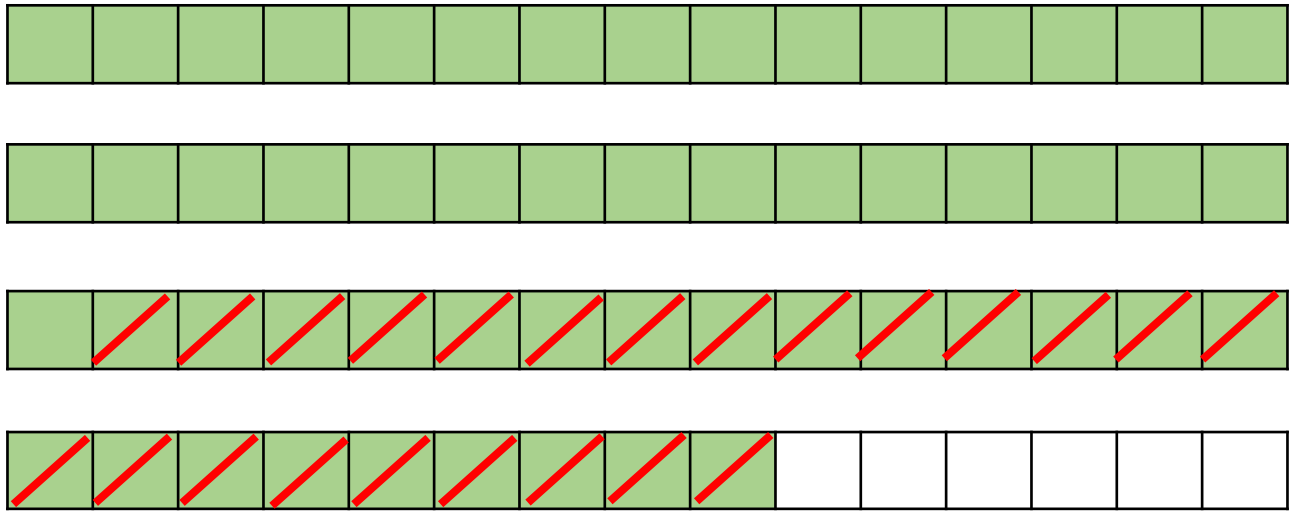
$$3\frac{3}{5} - 1\frac{8}{15} =$$

$$3\frac{9}{15} - 1\frac{8}{15}$$

$$\frac{54}{15} - \frac{23}{15} = \frac{31}{15} = 2\frac{1}{15}$$

Strategy:

1. Subtract the whole numbers
2. Convert the fractions so they have the same denominator
3. Subtract the fractions
4. Simplify if necessary and add the whole number part back



Lesson 2 LO: To subtract 2 mixed numbers

Your Turn

Strategy:

1. Subtract the whole numbers
2. Convert the fractions so they have the same denominator
3. Subtract the fractions
4. Simplify if necessary and add the whole number part back

1) $5\frac{9}{14} - 3\frac{2}{7} =$

2) $2\frac{1}{2} - 1\frac{1}{6} =$

Lesson 2 LO: To subtract 2 mixed numbers

Task 1 - Fluency

1 Amir and Alex are working out $3\frac{1}{2} - 2\frac{1}{4}$

First subtract 2 from 3, then subtract $\frac{1}{4}$ from $\frac{1}{2}$ That leaves $1\frac{1}{4}$

Amir

Convert to an improper fraction first, $\frac{7}{2} - \frac{9}{4}$, then $\frac{14}{4} - \frac{9}{4} = \frac{5}{4} = 1\frac{1}{4}$

Alex

Whose method do you prefer?

2 Use your preferred method to complete the subtractions.

a) $4\frac{4}{5} - 2\frac{3}{10} =$ ☐

c) $16\frac{1}{2} - 5\frac{1}{4} =$ ☐

b) $3\frac{5}{8} - 1\frac{1}{4} =$ ☐

d) $10\frac{5}{6} - 5\frac{5}{12} =$ ☐

What do you notice about your answer to part d)?

Strategy:

1. Subtract the whole numbers
2. Convert the fractions so they have the same denominator
3. Subtract the fractions
4. Simplify if necessary and add the whole number part back

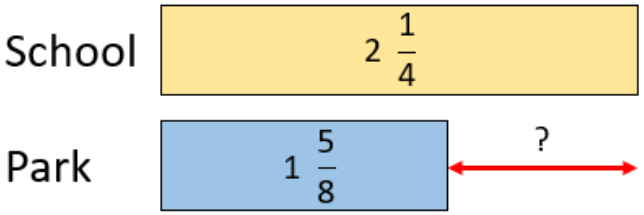
Lesson 2 LO: To subtract 2 mixed numbers

My Turn

From Jack's house to school is $2\frac{1}{4}$ km.

From Jack's house to the park is $1\frac{5}{8}$ km.

How much closer is the park to Jack's house?



$2\frac{1}{4} - 1\frac{5}{8} =$

Have a think

Your Turn

3 Car A travels for $15\frac{1}{4}$ miles.

Car B travels for $21\frac{5}{12}$ miles.

How much further does Car B travel than Car A?

Strategy:

1. Convert the fractions so they have the same denominator
2. Convert to improper fractions
3. Subtract the fractions
4. Simplify if necessary and convert back to mixed number

Lesson 2 LO: To subtract 2 mixed numbers

Task 1 - continued

Complete the subtractions.

a) $4\frac{4}{5} - 2\frac{9}{10} =$ ☐

c) $5\frac{2}{7} - 2\frac{11}{14} =$ ☐

b) $3\frac{5}{8} - 1\frac{3}{4} =$ ☐

d) $2\frac{1}{6} - 1\frac{7}{18} =$ ☐

Strategy:

1. Convert the fractions so they have the same denominator
2. Convert to improper fractions
3. Subtract the fractions
4. Simplify if necessary and convert back to mixed number

4 Amir and Dora are working out $4\frac{1}{5} - 1\frac{2}{5}$

You can't use my method because you can't do $\frac{1}{5} - \frac{2}{5}$

Amir

a) Do you agree with Amir?

b)

I know that $4\frac{1}{5} = 3\frac{6}{5}$

Dora

How does this help you to work out the subtraction?

_____

_____

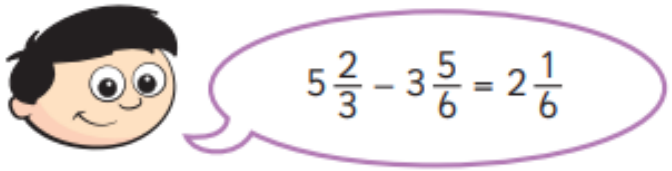
c) Complete the calculation.

$4\frac{1}{5} - 1\frac{2}{5} =$ ☐

Lesson 2 LO: To subtract 2 mixed numbers

Task 2 – R / PS

6 Dexter is subtracting fractions.



Explain the mistake that Dexter has made.

_____

_____

_____

Complete the magic square.

The total of each column is $5\frac{7}{20}$

The total of each row is $5\frac{7}{20}$

$1\frac{1}{2}$	$1\frac{3}{5}$	
	$1\frac{7}{20}$	$1\frac{7}{10}$

Strategy:

1. Convert the fractions so they have the same denominator
2. Convert to improper fractions
3. Subtract the fractions
4. Simplify if necessary and convert back to mixed number

Lesson 2 LO: To subtract 2 mixed numbers

ANSWERS

1) Add $\frac{3}{4}$ to $\frac{5}{8}$ $1\frac{3}{8}$

2) Work out $\frac{17}{20} - \frac{7}{20}$ $\frac{10}{20}$ or $\frac{1}{2}$

3) Fill in the missing number. $\frac{12}{16} = \frac{\square}{4}$ 3

4) What is 273×0 ? 0

2 Use your preferred method to complete the subtractions.

a) $4\frac{4}{5} - 2\frac{3}{10} =$ $2\frac{1}{2}$

b) $3\frac{5}{8} - 1\frac{1}{4} =$ $2\frac{3}{8}$

c) $16\frac{1}{2} - 5\frac{1}{4} =$ $11\frac{1}{4}$

d) $10\frac{5}{6} - 5\frac{5}{12} =$ $5\frac{5}{12}$

Car B travels $6\frac{1}{6}$ miles further than Car A.

How does this help you to work out the subtraction?

$\frac{6}{5} - \frac{2}{5} = \frac{4}{5}$

c) Complete the calculation.

$4\frac{1}{5} - 1\frac{2}{5} =$ $2\frac{4}{5}$

Lesson 2 LO: To subtract 2 mixed numbers

ANSWERS

5 Complete the subtractions.

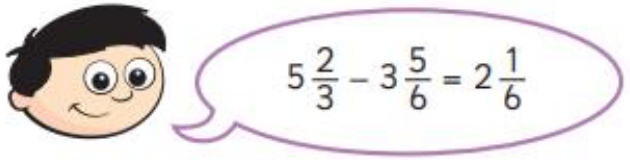
a) $4\frac{4}{5} - 2\frac{9}{10} =$ $1\frac{9}{10}$

c) $5\frac{2}{7} - 2\frac{11}{14} =$ $2\frac{1}{2}$

b) $3\frac{5}{8} - 1\frac{3}{4} =$ $1\frac{7}{8}$

d) $2\frac{1}{6} - 1\frac{7}{18} =$ $\frac{7}{9}$

6 Dexter is subtracting fractions.



Explain the mistake that Dexter has made.

He has found the difference between the wholes $(5-3=2)$ and the difference between the fractions $(\frac{5}{6} - \frac{2}{3} = \frac{1}{6})$ rather than doing $5\frac{2}{3} - 3\frac{5}{6} = 4\frac{5}{3} - 3\frac{5}{6} = 1\frac{5}{6}$

$1\frac{1}{2}$	$1\frac{3}{5}$	$2\frac{1}{4}$
$2\frac{3}{10}$	$1\frac{7}{20}$	$1\frac{7}{10}$
$1\frac{11}{20}$	$2\frac{3}{5}$	$1\frac{2}{5}$

Once you have finished your work, **self-marked and corrected any mistakes**, please send your work to your teacher:

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Lesson 3

Wednesday 3rd March 2021

LO: To multiply a unit fraction by an integer

White Rose Maths video:
https://vimeo.com/514249448

Voice over video:
https://youtu.be/bwvqmkOM6sA

Play Times Tables Rockstars every day to practise your tables
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Key vocabulary:

- Fraction
- Multiply
- Total
- Improper fraction
- Mixed number
- Whole
- Integer
- Equivalent
- Convert
- Numerator
- Denominator
- Common denominator
- Simplify

Arithmetic – Flashback Four

1) Work out $\frac{3}{5} + \frac{7}{20} + \frac{1}{10}$

2) Add $\frac{1}{5}$ and $\frac{1}{10}$

3) Write $\frac{29}{6}$ as a mixed number.

4) Add together 724 and 879

Key Vocabulary – explained

A unit fraction is a fraction with the numerator of 1.

Can you think of any examples?

An integer is a whole number, without any decimal part.

Can you think of any examples?

So, which of these are unit fractions multiplied by an integer?

$\frac{1}{3} \times 4$ $\frac{2}{3} \times 4$ $\frac{1}{6} \times 4$ $\frac{1}{3} \times 6.2$

Lesson 3 LO: To multiply a unit fraction by an integer

Multiplication as repeated addition

You can think of multiplication in this way.

E.g.

3 x 6 is the same as
3 + 3 + 3 + 3 + 3 + 3

It's the same for fractions. Then you can just add up the numerators.

Or – you can multiply the numerator by the integer! It's the same!

Alex has 4 pieces of wood.

Each piece of wood is $\frac{1}{7}$ m long.

How long is all of Alex's wood? $\frac{4}{7}$ m

$\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$ $\frac{1}{7}$

$$\frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \frac{4}{7}$$

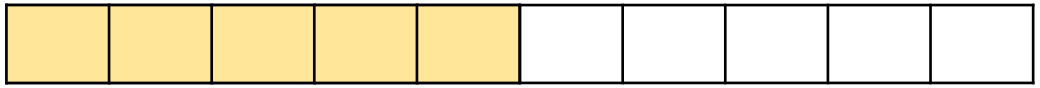
Lesson 3 LO: To multiply a unit fraction by an integer

My turn

$$\frac{1}{3} + \frac{1}{3} = 2 \times \frac{1}{3} = \frac{2}{3}$$

Your turn

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



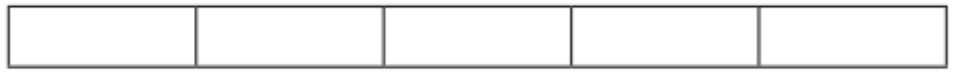
Lesson 3 LO: To multiply a unit fraction by an integer

Task 1 – Fluency Multiply the numerator by the integer. Denominator doesn't change.

1 Complete the calculations.

Use the bar models to help you.

a)



$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \square$ $\quad 3 \times \frac{1}{5} = \square$

b)

$\frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \square$ $\quad 4 \times \frac{1}{7} = \square$

2 Complete the multiplications.

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

b) $3 \times \frac{1}{10} = \square$

c) $\frac{1}{8} \times 5 = \square$

d) $9 \times \frac{1}{10} = \square$

3 Match the addition to the equivalent multiplication.

$\frac{1}{3} + \frac{1}{3}$	$2 \times \frac{1}{5}$
$\frac{1}{5} + \frac{1}{5} + \frac{1}{5}$	$\frac{1}{4} \times 3$
$\frac{1}{5} + \frac{1}{5}$	$3 \times \frac{1}{5}$
$\frac{1}{4} + \frac{1}{4} + \frac{1}{4}$	$2 \times \frac{1}{3}$

4 A pizza is cut into sixths.

Jack eats five of the slices.

Write a multiplication to represent this.

$\square \times \square = \square$

Lesson 3 LO: To multiply a unit fraction by an integer

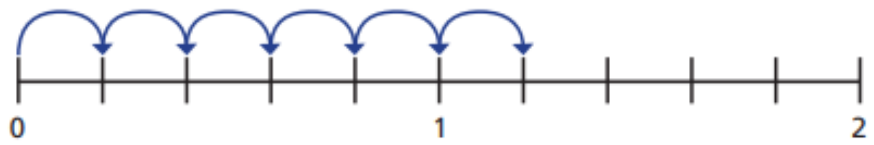
Task 2 Multiply the numerator by the integer. Denominator doesn't change.

5 Complete the multiplications.

Use the number lines to help you.

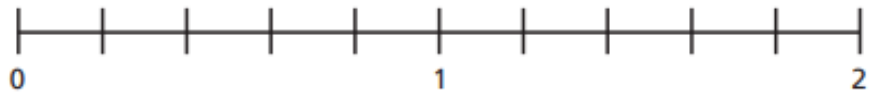
Give each answer as an improper fraction and as a mixed number.

a)



$6 \times \frac{1}{5} = \square = \square$

b)



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

6 Complete the multiplications.

a) $11 \times \frac{1}{10} = \square = \square$

b) $11 \times \frac{1}{9} = \square = \square$

c) $\frac{1}{8} \times 11 = \square = \square$

d) $11 \times \frac{1}{7} = \square = \square$

e) $11 \times \frac{1}{6} = \square = \square$

What do you notice?

Does this pattern continue?

7 Complete the calculations.

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

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

c) $\square \times \frac{1}{7} = 1$

d) $\frac{1}{7} \times \square = 1\frac{3}{7}$

e) $\frac{1}{8} \times \square = 1\frac{3}{8}$

f) $\square \times \frac{1}{2} = 3\frac{1}{2}$

g) $\square \times \frac{1}{3} = 3\frac{1}{3}$

h) $\frac{1}{4} \times \square = 3\frac{1}{4}$

Lesson 3 LO: To multiply a unit fraction by an integer

Multiply unit fractions by an integer

White Rose Maths

1 Complete the calculations.

Use the bar models to help you.

a)

$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \boxed{\frac{3}{5}}$ $3 \times \frac{1}{5} = \boxed{\frac{3}{5}}$

b)

$\frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \boxed{\frac{4}{7}}$ $4 \times \frac{1}{7} = \boxed{\frac{4}{7}}$

ANSWERS

1) Work out $3\frac{1}{2} + 2\frac{1}{4}$ $5\frac{3}{4}$

2) Add $\frac{3}{7}$ and $\frac{5}{14}$ $\frac{11}{14}$

3) Change $5\frac{3}{7}$ to an improper fraction. $\frac{38}{7}$

4) What number is 600 less than 4,371? 3,771

2 Complete the multiplications.

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

b) $3 \times \frac{1}{10} = \boxed{\frac{3}{10}}$

c) $\frac{1}{8} \times 5 = \boxed{\frac{5}{8}}$

d) $9 \times \frac{1}{10} = \boxed{\frac{9}{10}}$

3 Match the addition to the equivalent multiplication.

$\frac{1}{3} + \frac{1}{3}$	$2 \times \frac{1}{5}$
$\frac{1}{5} + \frac{1}{5} + \frac{1}{5}$	$\frac{1}{4} \times 3$
$\frac{1}{5} + \frac{1}{5}$	$3 \times \frac{1}{5}$
$\frac{1}{4} + \frac{1}{4} + \frac{1}{4}$	$2 \times \frac{1}{3}$

Lesson 3 LO: To multiply a unit fraction by an integer

ANSWERS

4 A pizza is cut into sixths.

Jack eats five of the slices.

Write a multiplication to represent this.

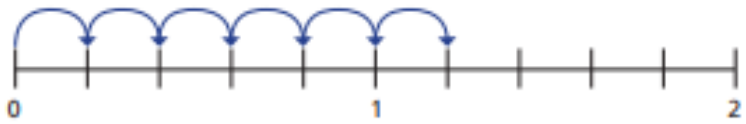
$5 \times \frac{1}{6} = \frac{5}{6}$

5 Complete the multiplications.

Use the number lines to help you.

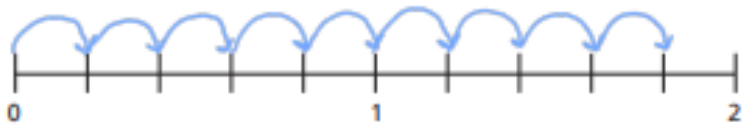
Give each answer as an improper fraction and as a mixed number.

a)



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

b)



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

6 Complete the multiplications.

a) $11 \times \frac{1}{10} = \frac{11}{10} = 1\frac{1}{10}$

b) $11 \times \frac{1}{9} = \frac{11}{9} = 1\frac{2}{9}$

c) $\frac{1}{8} \times 11 = \frac{11}{8} = 1\frac{3}{8}$

d) $11 \times \frac{1}{7} = \frac{11}{7} = 1\frac{4}{7}$

e) $11 \times \frac{1}{6} = \frac{11}{6} = 1\frac{5}{6}$

What do you notice?

Does this pattern continue?

7 Complete the calculations.

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

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

c) $7 \times \frac{1}{7} = 1$

d) $\frac{1}{7} \times 10 = 1\frac{3}{7}$

e) $\frac{1}{8} \times 11 = 1\frac{3}{8}$

f) $7 \times \frac{1}{2} = 3\frac{1}{2}$

g) $10 \times \frac{1}{3} = 3\frac{1}{3}$

h) $\frac{1}{4} \times 13 = 3\frac{1}{4}$

Once you have finished your work, **self-marked and corrected any mistakes**, please send your work to your teacher:

5L Miss Langoo at elangoo@kingsavenue.lambeth.sch.uk

4/5 W Mrs Williams at jduke@kingsavenue.lambeth.sch.uk

Lesson 4

Thursday 4th March 2021

LO: To multiply non-unit fractions by an integer

White Rose Maths video to support:
https://vimeo.com/514249638

Voice over video:
https://youtu.be/GOjtHVWGJy8

Play Times Tables Rockstars every day to practise your tables
https://ttrockstars.com/

Key vocabulary:

- Fraction
- Multiply
- Total
- Improper fraction
- Mixed number
- Whole
- Integer
- Equivalent
- Convert
- Numerator
- Denominator
- Common denominator
- Simplify

Lesson 4 LO: To multiply non-unit fractions by an integer

Arithmetic – Flashback Four

1) Work out $4\frac{1}{5} + 2\frac{3}{20}$

2) Find the sum of $\frac{5}{8}$ and $\frac{1}{4}$

3) Fill in the missing number $\frac{\square}{20} = \frac{4}{5}$

4) Round 474 to the nearest ten.

Key Vocabulary – explained

A <u>non-unit fraction</u> is a fraction with the <u>numerator that is more than 1</u>

Can you think of any examples?

So, which of these are non-unit fractions?

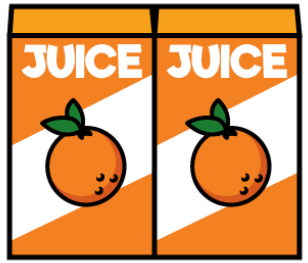
$\frac{1}{3}$ $\frac{2}{3}$ $\frac{1}{6}$ $\frac{10}{3}$

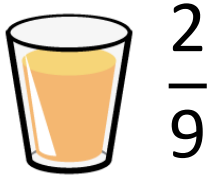
Lesson 4 LO: To multiply non-unit fractions by an integer

Yesterday we multiplied unit fractions by integers. For today, the method is exactly the same: multiply the numerator by the integer. Let's see:

Ron drinks $\frac{2}{9}$ l of orange juice each day for 3 days.

How much orange juice does Ron drink during the 3 days altogether?



 $\frac{2}{9}$  $\frac{2}{9}$  $\frac{2}{9}$

$\frac{2}{9} + \frac{2}{9} + \frac{2}{9} = \frac{6}{9}$ l

$\frac{2}{9} \times 3 = \frac{6}{9} = \frac{2}{3}$ l

Lesson 4 LO: To multiply non-unit fractions by an integer

My turn

$$\frac{2}{11}+\frac{2}{11}=2\times\frac{2}{11}=$$

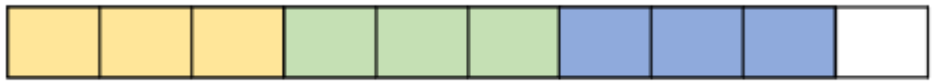
Yesterday we multiplied unit fractions by integers.

For today, the method is exactly the same:

Multiply the numerator by the integer.

Your turn

$$\frac{3}{10}\times 3$$



Lesson 4 LO: To multiply non-unit fractions by an integer

Task 1

Complete the multiplications.

a) $2 \times \frac{3}{7} =$ ☐

b) $3 \times \frac{3}{11} =$ ☐

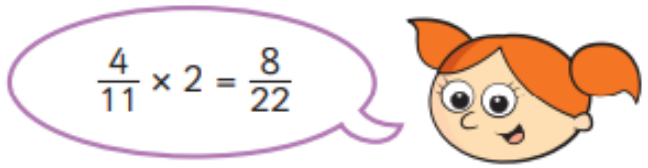
c) $\frac{2}{11} \times 4 =$ ☐

d) $5 \times \frac{2}{11} =$ ☐

e) $\frac{2}{15} \times 7 =$ ☐

f) $\frac{7}{15} \times 2 =$ ☐

3



Explain the mistake that Alex has made.

4 A cat eats $\frac{2}{15}$ of a bag of biscuits a day.

What fraction of the bag does the cat eat in 4 days?

Strategy:

1. Multiply the numerator by the integer
2. Simplify if necessary

Lesson 4 LO: To multiply non-unit fractions by an integer

What happens if the answer is an improper fraction?

Sometimes the multiplication will leave you with an improper fraction.

When this happens, simply complete the multiplication as normal, then convert your answer into a mixed number! ☺

$$13 \times \frac{3}{8} = \frac{39}{8} = 4\frac{7}{8}$$

Strategy:

1. Multiply the numerator by the integer
2. Convert the fraction to a mixed number
3. Simplify if necessary

Lesson 4 LO: To multiply non-unit fractions by an integer

Task 2

6 Complete the multiplications.

a) $5 \times \frac{2}{3} = \square = \square$

b) $4 \times \frac{4}{5} = \square = \square$

c) $\frac{2}{7} \times 11 = \square = \square$

d) $4 \times \frac{7}{9} = \square = \square$

e) $17 \times \frac{2}{11} = \square = \square$

7 Here are some digit cards.

1	3	5	7

Use the digit cards to complete the multiplication.

$$\square \times \frac{\square}{8} = \frac{15}{8} = \square\frac{\square}{8}$$

Strategy:

1. Multiply the numerator by the integer
2. Convert the fraction to a mixed number
3. Simplify if necessary

Lesson 4 LO: To multiply non-unit fractions by an integer

ANSWERS

1) Work out $4\frac{1}{5} + 2\frac{3}{20}$ $6\frac{7}{20}$

2) Find the sum of $\frac{5}{8}$ and $\frac{1}{4}$ $\frac{7}{8}$

3) Fill in the missing number $\frac{\square}{20} = \frac{4}{5}$ 16

4) Round 474 to the nearest ten. 480

Complete the multiplications.

a) $2 \times \frac{3}{7} = \frac{6}{7}$

b) $3 \times \frac{3}{11} = \frac{9}{11}$

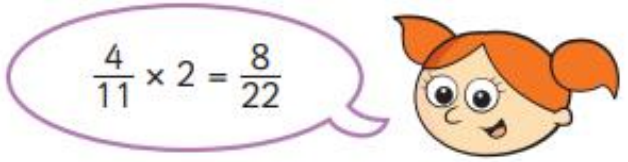
c) $\frac{2}{11} \times 4 = \frac{8}{11}$

d) $5 \times \frac{2}{11} = \frac{10}{11}$

e) $\frac{2}{15} \times 7 = \frac{14}{15}$

f) $\frac{7}{15} \times 2 = \frac{14}{15}$

3



Explain the mistake that Alex has made.

She has multiplied both the numerator and the denominator.

$\frac{4}{11} \times 2 = \frac{8}{11}$

4

A cat eats $\frac{2}{15}$ of a bag of biscuits a day.

What fraction of the bag does the cat eat in 4 days?

The cat eats $\frac{8}{15}$ of the bag in 4 days.

Lesson 4 LO: To multiply non-unit fractions by an integer

ANSWERS

Complete the multiplications.

a) $5 \times \frac{2}{3} = \boxed{\frac{10}{3}} = \boxed{3\frac{1}{3}}$

b) $4 \times \frac{4}{5} = \boxed{\frac{16}{5}} = \boxed{3\frac{1}{5}}$

c) $\frac{2}{7} \times 11 = \boxed{\frac{22}{7}} = \boxed{3\frac{1}{7}}$

d) $4 \times \frac{7}{9} = \boxed{\frac{28}{9}} = \boxed{3\frac{1}{9}}$

e) $17 \times \frac{2}{11} = \boxed{\frac{34}{11}} = \boxed{3\frac{1}{11}}$

7 Here are some digit cards.

1	3	5	7

Use the digit cards to complete the multiplication.

$$\boxed{5} \times \frac{\boxed{3}}{8} = \frac{15}{8} = \boxed{1}\frac{\boxed{7}}{8}$$

Once you have finished your work, **self-marked and corrected any mistakes**, please send your work to your teacher:

5L Miss Langoo at elangoo@kingsavenue.lambeth.sch.uk

4/5 W Mrs Williams at jduke@kingsavenue.lambeth.sch.uk

Lesson 5

Friday 5th March 2021

LO: To multiply mixed numbers by an integer

White Rose Maths video to support:
https://vimeo.com/514249890

Voice over video:
https://youtu.be/bFSgocLMZkA

Play Times Tables Rockstars every day to practise your tables
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Key vocabulary:

- Fraction
- Multiply
- Total
- Improper fraction
- Mixed number
- Whole
- Integer
- Equivalent
- Convert
- Numerator
- Denominator
- Common denominator
- Simplify

Arithmetic – Flashback Four

1) $2 \times \frac{3}{11} =$

2) $2 \times 5 =$

3) $2 \times 5\ \frac{3}{11} =$

4) $5\ \frac{1}{10} \times \square = 35\ \frac{7}{10}$

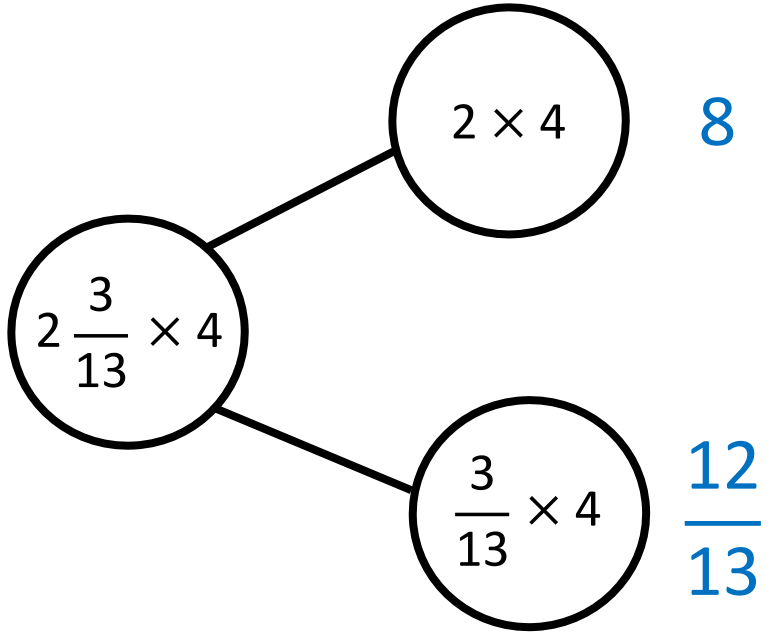
Lesson 5 LO: To multiply mixed numbers by an integer

Just like before, we can partition our mixed number, and then deal with the parts separately.

One bottle of milk contains $2\frac{3}{13}$ litres.

How much milk is in 4 bottles? $8\frac{12}{13}$ litres

$$2\frac{3}{13} \times 4 =$$



Strategy:

1. Partition the mixed number
2. Multiply the whole number part by the integer
3. Multiply the fraction by the integer
4. Add them back together

Lesson 5 LO: To multiply mixed numbers by an integer

My turn

$$3 \times 5\frac{2}{7}$$

Your turn

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

Strategy:

1. Partition the mixed number
2. Multiply the whole number part by the integer
3. Multiply the fraction by the integer
4. Add them back together

Lesson 5 LO: To multiply mixed numbers by an integer

Task 1

Strategy:

1. Partition the mixed number
2. Multiply the whole number part by the integer
3. Multiply the fraction by the integer
4. Add them back together

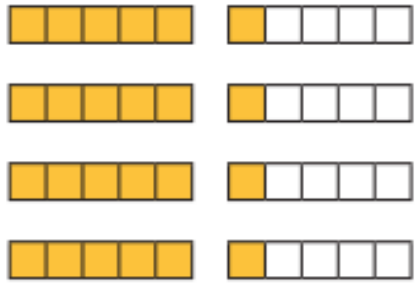
1 Complete the calculations.

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

$4 \times 1 = \square$

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

$\square + \square = \square$

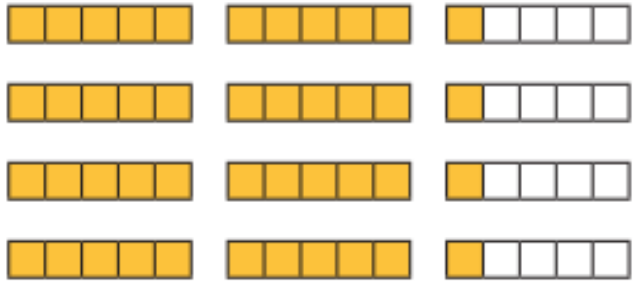


b) $4 \times 2\frac{1}{5}$

$\square \times 2 = \square$

$4 \times \square = \square$

$\square + \square = \square$



2 Complete the multiplications.

a) $3 \times 8\frac{2}{7} = \square$

b) $2 \times 12\frac{2}{11} = \square$

c) $6\frac{2}{11} \times 4 = \square$

d) $4 \times 6\frac{3}{19} = \square$

e) $2\frac{2}{25} \times 12 = \square$

f) $3\frac{1}{15} \times 8 = \square$

What is the same and what is different about your answers?

3 One bag of potatoes weighs $1\frac{3}{4}$ kg.

How much do 5 bags of potatoes weigh?

Lesson 5 LO: To multiply mixed numbers by an integer

Strategy:

1. Partition the mixed number
2. Multiply the whole number part by the integer
3. Multiply the fraction by the integer
4. Add them back together

4 Complete the calculations.

a) $5 \times 2\frac{2}{3} = 10 + \frac{10}{3} = \square$

b) $4\frac{3}{7} \times 5 = 20 + \square = \square$

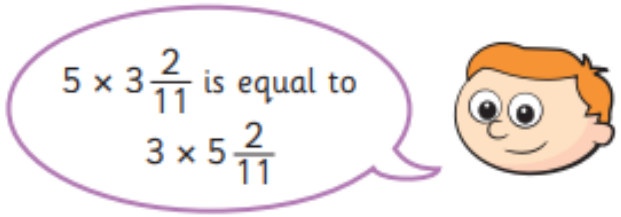
c) $8 \times 2\frac{5}{12} = \square + \square = \square$

d) $7 \times 3\frac{1}{5} = \square + \square = \square$

e) $4\frac{2}{9} \times 8 = \square + \square = \square$

f) $11 \times 4\frac{3}{10} = \square + \square = \square$

5



Do you agree with Ron? _____

Explain why.

_____

_____

7 Here is a recipe for a birthday cake.

Butter $1\frac{3}{8}$ kg

Sugar $1\frac{5}{16}$ kg

Self-raising flour $2\frac{1}{4}$ kg

6 eggs

a) How much flour is needed for 3 birthday cakes?

□ kg

b) Dora makes 4 birthday cakes.

How much more butter does she use than sugar?

Lesson 5 LO: To multiply mixed numbers by an integer

ANSWERS

1) $2 \times \frac{3}{11} = \frac{6}{11}$

2) $2 \times 5 = 10$

3) $2 \times 5\frac{3}{11} = 10\frac{6}{11}$

4) $5\frac{1}{10} \times \boxed{7} = 35\frac{7}{10}$

1 Complete the calculations.

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

$4 \times 1 =$ 4

$4 \times \frac{1}{5} =$ $\frac{4}{5}$

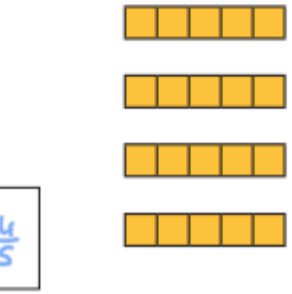
4 + $\frac{4}{5}$ = $4\frac{4}{5}$

b) $4 \times 2\frac{1}{5}$

4 × 2 = 8

$4 \times \frac{1}{5} = \frac{4}{5}$

8 + $\frac{4}{5}$ = $8\frac{4}{5}$



2 Complete the multiplications.

a) $3 \times 8\frac{2}{7} =$ $24\frac{6}{7}$

b) $2 \times 12\frac{2}{11} =$ $24\frac{4}{11}$

c) $6\frac{2}{11} \times 4 =$ $24\frac{8}{11}$

d) $4 \times 6\frac{3}{19} =$ $24\frac{12}{19}$

e) $2\frac{2}{25} \times 12 =$ $24\frac{24}{25}$

f) $3\frac{1}{15} \times 8 =$ $24\frac{8}{15}$

What is the same and what is different about your answers?

They all contain 24 wholes but the fraction is different

3 One bag of potatoes weighs $1\frac{3}{4}$ kg.

How much do 5 bags of potatoes weigh?

$8\frac{3}{4}$ kg

Lesson 5 LO: To multiply mixed numbers by an integer

ANSWERS

4 Complete the calculations.

a) $5 \times 2\frac{2}{3} = 10 + \frac{10}{3} = \boxed{13\frac{1}{3}}$

b) $4\frac{3}{7} \times 5 = 20 + \boxed{\frac{15}{7}} = \boxed{22\frac{1}{7}}$

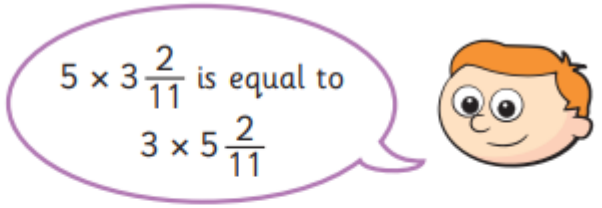
c) $8 \times 2\frac{5}{12} = \boxed{16} + \boxed{\frac{40}{12}} = \boxed{19\frac{1}{3}}$

d) $7 \times 3\frac{1}{5} = \boxed{21} + \boxed{\frac{7}{5}} = \boxed{22\frac{2}{5}}$

e) $4\frac{2}{9} \times 8 = \boxed{32} + \boxed{\frac{16}{9}} = \boxed{33\frac{7}{9}}$

f) $11 \times 4\frac{3}{10} = \boxed{44} + \boxed{\frac{33}{10}} = \boxed{47\frac{3}{10}}$

5



o you agree with Ron? No

xplain why.

$5 \times 3\frac{2}{11} = 15\frac{10}{11}$

$3 \times 5\frac{2}{11} = 15\frac{6}{11}$

a) How much flour is needed for 3 birthday cakes?

$\boxed{6\frac{3}{4}}$ kg

b) Dora makes 4 birthday cakes.

How much more butter does she use than sugar?

$\boxed{\frac{1}{4}}$ kg

Once you have finished your work, **self-marked and corrected any mistakes**, please send your work to your teacher:

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4/5 W Mrs Williams at jduke@kingsavenue.lambeth.sch.uk