Week beginning June 15th

Work is now going to focus on topics that we have already covered in school this year, giving you an opportunity to make sure that you are confident with these important areas of maths, ready for the next school year.

This week you will continue to focus on fractions.

PLEASE COMPLETE FRIDAY'S QUIZ (All other work can be self-marked).

MONDAY 15th JUNE

Today is all about practising adding and subtracting mixed numbers.

L.O. add and subtract mixed numbers **15/06/20**

REMEMBER that to add or subtract fractions the denominators must be the same. Use equivalent fractions to make the denominators equal before adding or subtracting.	
EXAMPLE What is $2\frac{1}{4} + 5\frac{5}{8}$?	Step 1: Add the wholes: **2 + 5 = 7** Step 2: Add fractional parts: $\frac{1}{4} + \frac{5}{8} =$ Step 3: Make denominators the same: $\frac{1}{4} = \frac{2}{8}$ (x 2) so $\frac{1}{4} + \frac{5}{8} = \frac{2}{8} + \frac{5}{8} = \frac{7}{8}$ Step 4: Recombine wholes and parts: $7 + \frac{7}{8} = 7\frac{7}{8}$ $2\frac{1}{4} + 5\frac{5}{8} = 7\frac{7}{8}$

Use these links if you need to revisit addition and subtraction of mixed numbers

Ready for 7 adding mixed numbers: https://www.youtube.com/watch?v=C-oJXvPHUug&list=PLKMWasbkgyTu2G-WEZfZ9iPIFunBuKT0u&index=13

Ready for 7 subtracting mixed numbers: https://www.youtube.com/watch?v=edBa1UcUq4k&list=PLKMWasbkgyTu2G-WEZfZ9iPIFunBuKT0u&index=14

Online lessons for finding adding and subtracting if you need a bit more help or would like some more practice. (The same as Friday's links).

White Rose Home learning (week 5, lessons 3 and 4): https://whiterosemaths.com/homelearning/year-5/

Adding fractions : https://www.thenational.academy/year-6/maths/add-fractions-year-6-wk2-3

Subtracting fractions: https://www.thenational.academy/year-6/maths/subtract-fractions-year-6-wk2-4

ADDING AND SUBTRACTING MIXED NUMBERS LESSON

Consider the question:

a) On Friday Amelia cycled $3\frac{2}{5}$ km with her dad.
On Saturday she cycled $1\frac{1}{3}$ km.
How many kilometres does Amelia cycle in total?

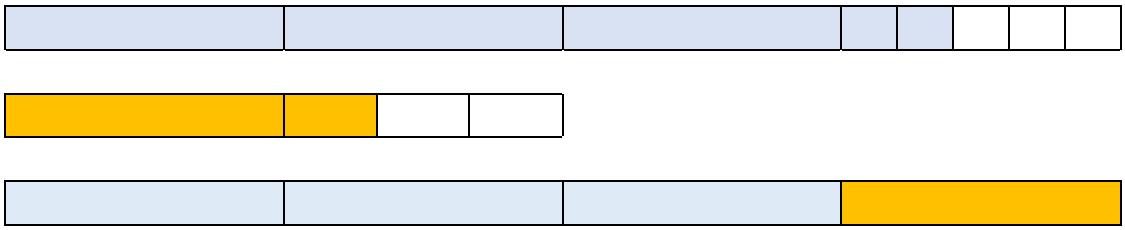
b) How many more kilometres does Amelia cycle on Friday than on Saturday?

a) Represent the distances as bar models:

Friday

Saturday

Add the wholes:



3 + 1 = 4 whole kilometres.

Add the parts:

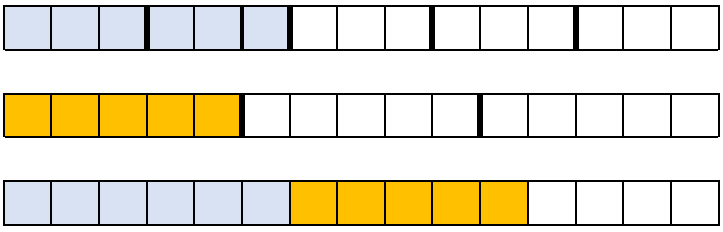
$\frac{2}{5} + \frac{1}{3} =$

Find the lowest common multiple: Multiples of 5 are: 5, 10, 15

Multiples of 3 are: 3, 6, 9, 12, 15

The lowest common multiple is 15.

So $\frac{2}{5} + \frac{1}{3} = \frac{6}{15} + \frac{5}{15} = \frac{11}{15}$



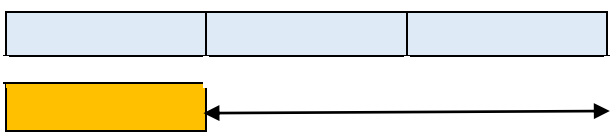
Recombine the parts and the wholes:

Amelia cycled $4 + \frac{11}{15} = 4\frac{11}{15}$ kilometres in total.

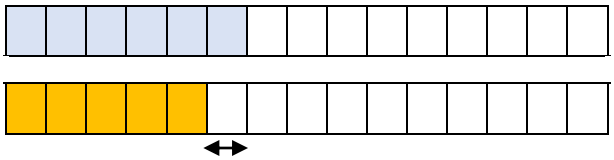
b) To find the difference between the two days subtraction is needed.

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

First subtract the wholes: 3 – 1 = 2



Then subtract the parts: $\frac{2}{5} - \frac{1}{3} = \frac{6}{15} - \frac{5}{15} = \frac{1}{15}$

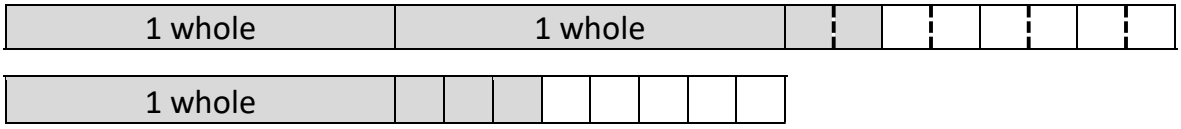


Already calculated equivalences in (a).

So Amelia cycled $2\frac{1}{15}$ km more on Friday than on Saturday.

RED QUESTIONS

1. Olivia walks $2\frac{1}{4}$ km on Monday. On Tuesday she walks $1\frac{3}{8}$ km. How far does she walk in total?



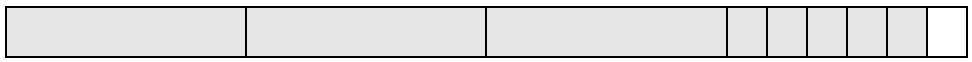
Add the wholes: ____ + ____ = ____

Find a common denominator: $\frac{1}{4} = \frac{\quad}{8}$

Add the parts: $\frac{1}{4} + \frac{3}{8} = \frac{\quad}{8} + \frac{3}{8} = \frac{\quad}{8}$

Recombine parts and wholes: Olivia walks _____ + $\frac{\quad}{8}$ = _____ km in total.

2. Calculate $3\frac{5}{6} - 1\frac{1}{3} =$



$1\frac{1}{3} = 1\frac{\quad}{6}$

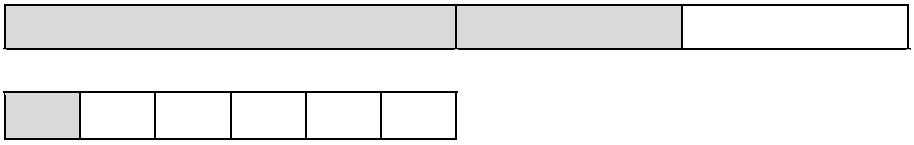
Subtract the wholes: _____ - _____ =

Subtract the parts: $\frac{5}{6} - \frac{\quad}{6} = \frac{\quad}{6}$

Recombine parts and wholes : $3\frac{5}{6} - 1\frac{1}{3} =$

BLUE QUESTIONS

1a) Calculate $1\frac{1}{2} + \frac{1}{6} =$

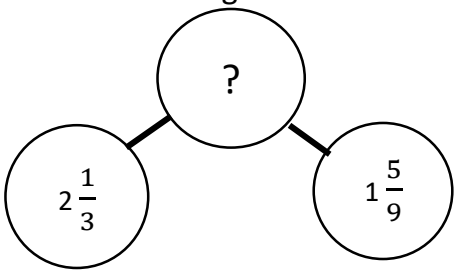


b) Work out $\frac{7}{12} + 3\frac{2}{3} =$

c) Explain why $2\frac{7}{12} + 1\frac{2}{3}$ gives the same answer as (b).

2. Work out the missing value.

a)



b)

?	
$2\frac{1}{3}$	$4\frac{5}{9}$

c) What do you notice about the answer to b). Explain.

3. Calculate the following. Draw a model if it will help.

a) $4\frac{3}{4} - 2\frac{5}{8} =$ b) $4\frac{3}{4} - 2\frac{7}{12} =$

4. A bakery sells cherry pies. Each pie is cut into 12 slices.

The bakery has $2\frac{7}{12}$ pies left.

A customer buys $\frac{1}{3}$ of a pie. How many pies are left?

5. Two TV shows last $2\frac{7}{8}$ hours in total.

Adverts in the two shows last $\frac{1}{4}$ of an hour in total.

The first show lasts $\frac{1}{2}$ of an hour. How long does the second show last?

YELLOW QUESTIONS

1. 3 sandwiches are each cut into 8 pieces.

Lexi eats $\frac{5}{8}$ of one of the sandwiches.

Danny eats one more piece than Lexi. How many sandwiches are left?

2. A bucket contains $12\frac{1}{2}$ litres of water. There is a hole in the bucket.

Each minute $1\frac{1}{5}$ litres of water leak out of the bucket.

How much water will be left in the bucket after 2 minutes?

3. Work out what numbers the symbols represent.

$2\frac{1}{2}$ - ▲ = $1\frac{11}{12}$

$3\frac{5}{6}$ - ▲ = $4\frac{1}{3}$ - ●

4. How do you know, without calculating the answer, that $2\frac{2}{5} - \frac{9}{20}$ is less than 2?

Prove that this is true.

TUESDAY 16th JUNE

Today you will be subtracting mixed numbers using improper fractions.

L.O. subtract mixed numbers using improper fractions **16/06/20**

EXAMPLE

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

The wholes and parts cannot be subtracted separately because that would involve $\frac{1}{2} - \frac{5}{8}$, which is not possible.

1. Convert the mixed number to an improper fraction: $1\frac{1}{2} = \frac{3}{2}$ *(three halves)*

2. Find equivalent fraction so that denominators are the same: $\frac{3}{2} \overset{\times 4}{=} \frac{12}{8}$ (×4)

3. Complete the subtraction: $\mathbf{1\frac{1}{2} - \frac{5}{8} =}$ $\frac{3}{2} - \frac{5}{8} = \frac{12}{8} - \frac{5}{8} = \frac{7}{8}$

SUBTRACTING MIXED NUMBERS USING IMPROPER FRACTIONS LESSON

Consider the question:

a) Lexi uses $2\frac{1}{6}$ packs of stickers on her card. How many packets of stickers does she have left?

b) Alex cuts off a piece of straw that is $2\frac{3}{5}$ cm long.
How long is the straw she has left?

a) Lexi started with $4\frac{1}{2}$ packs of stickers and used $2\frac{1}{6}$, so the calculation is $4\frac{1}{2} - 2\frac{1}{6}$.

Convert mixed numbers to improper fractions:

Convert each number into an improper fraction and then subtract.
Make sure the denominators are equal before subtracting.

$4\frac{1}{2}$ = nine halves = $\frac{9}{2}$ $2\frac{1}{6}$ = thirteen sixths = $\frac{13}{6}$

Make the denominators equal:

$$\frac{9}{2} \overset{\times 3}{=} \frac{27}{6}$$

$\frac{27}{6} - \frac{13}{6} = \frac{14}{6}$

Convert back to a mixed number: $\frac{14}{6} = 2\frac{2}{6} = 2\frac{1}{3}$

and simplify if necessary.

Lexi has $2\frac{1}{3}$ packets left.

b) $12\frac{3}{10} - 2\frac{3}{5} =$

W*hat is different about this calculation? Why can't the parts and wholes method be used?*

Because the fractional part of the subtrahend is larger than the fractional part of the minuend; $\frac{3}{10} < \frac{3}{5}$.

Change to improper fraction: $12\frac{3}{10} = \frac{123}{10}$ $2\frac{3}{5} = \frac{13}{5}$ $\frac{123}{10} - \frac{13}{5} =$

Make the denominators equal:

$$\frac{13}{5} \overset{\times 2}{=} \frac{26}{10}$$

$\frac{123}{10} - \frac{26}{10} =$

Subtract:

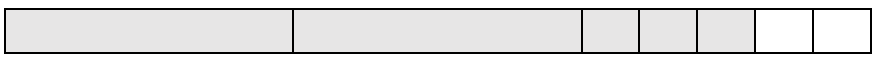
$\frac{123}{10} - \frac{26}{10} = \frac{97}{10}$

Convert back to a mixed number: $\frac{97}{10} = 9\frac{7}{10}$ cm.

RED QUESTIONS

By converting the mixed numbers to improper fractions first, work out:

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



$2\frac{3}{5} = \frac{\quad}{5}$ $1\frac{4}{5} = \frac{\quad}{5}$

$2\frac{3}{5} - 1\frac{4}{5} = \frac{\quad}{5} - \frac{\quad}{5} = \frac{\quad}{5}$

b) $\mathbf{3\frac{1}{6} - 1\frac{1}{2} =}$

$3\frac{1}{6} = \frac{\quad}{6}$ $1\frac{1}{2} = 1\frac{\quad}{6} = \frac{\quad}{6}$

$3\frac{1}{6} - 1\frac{1}{2} = \frac{\quad}{6} - \frac{\quad}{6} = \frac{\quad}{6} = \frac{\square}{6} = \frac{\square}{3}$

c) $\mathbf{4\frac{5}{9} - 1\frac{2}{3} =}$

BLUE QUESTIONS

1. Calculate the following:

a) $5\frac{3}{11} - 1\frac{7}{11} =$ b) $5\frac{5}{12} - 1\frac{7}{12} =$ c) $5\frac{4}{5} - 3\frac{13}{15} =$ d) $2\frac{7}{18} - 1\frac{2}{3} =$

2. Work out the missing values from the bar models.

a)

$4\frac{2}{3}$	
$1\frac{5}{9}$	?

b)

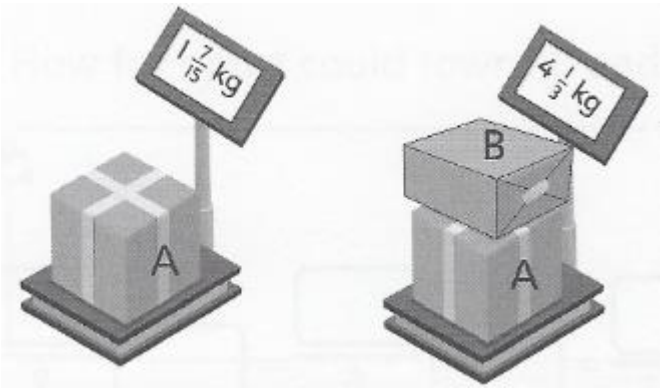
$4\frac{2}{3}$	
$2\frac{5}{9}$	?

How could you use a) to answer b)?

3. Max is sending two parcels.

a) How much does parcel B weigh?

b) How much more does parcel B weigh than parcel A?



YELLOW QUESTIONS

1. Rob and Aisha are discussing the calculation below.

$\frac{58}{7} - \frac{28}{12} = 5\frac{20}{21}$

If I change the calculation to $8\frac{2}{7} - 2\frac{2}{6}$ the answer will be the same.

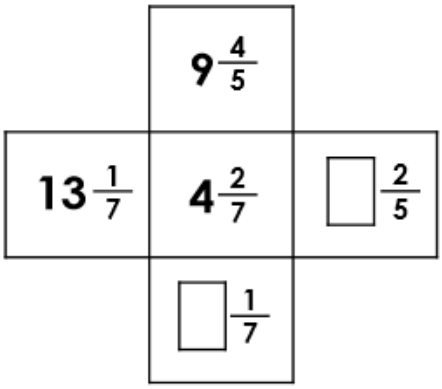
Rob

If I change the calculation to $\frac{71}{7} - \frac{17}{3}$ the answer will be the same.

Aisha

Who is correct? Prove it.

2. Find the missing values.



$= 25\frac{29}{35}$

$= 1\frac{13}{35}$

3. Paddy completed this calculation.
Is he correct? Prove it.

$$7\frac{6}{7} - \frac{1}{4} - 3\frac{1}{2} = 4\frac{3}{28}$$

WEDNESDAY 17th JUNE

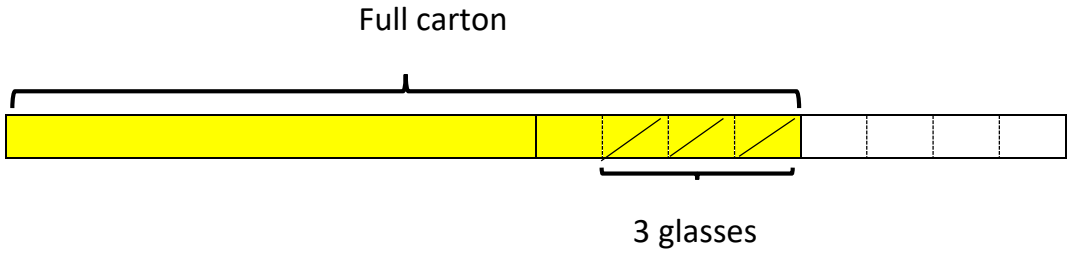
Today's focus will be solving problems that involve fractions and mixed numbers.

L.O. solve problems involving fractions **17/06/20**

WAGOLL

Jenny pours 3 glasses of milk from a $1\frac{1}{2}$ *litre carton. Each glass holds* $\frac{1}{8}$ *litre.*

How much milk is left in the carton?

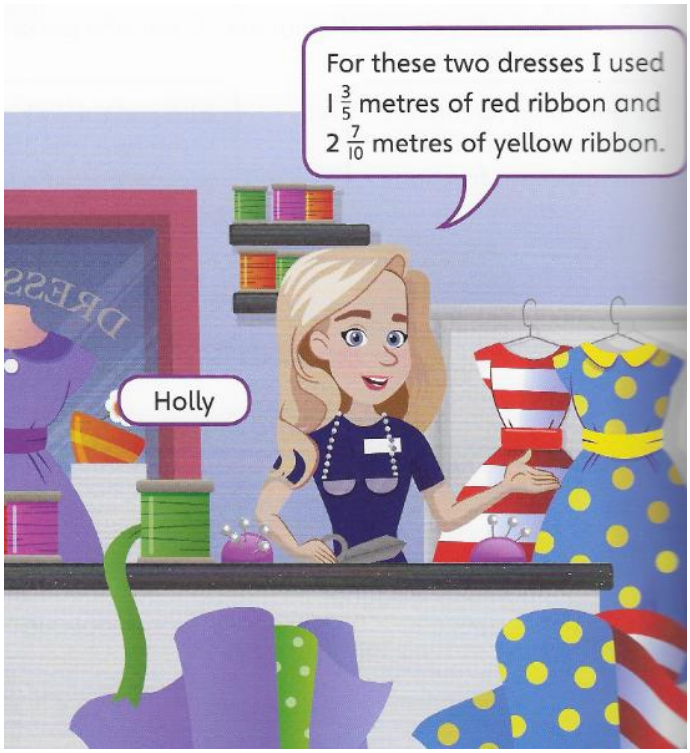


Making denominators the same to subtract: $1\frac{1}{2} = 1\frac{4}{8}$

Subtracting: $1\frac{4}{8} - \frac{3}{8} = 1\frac{1}{8}$ litres milk left in the carton.

SOLVING FRACTION PROBLEMS LESSON

Consider the question:



a) How much ribbon did Holly use in total to make the two dresses?

b) Holly used $4\frac{3}{4}$ metres of fabric for the spotty dress. She used $2\frac{7}{20}$ metres of fabric for the stripy dress.
How much more spotty fabric did Holly use?

a) Holly used $1\frac{3}{5}$ metres of red ribbon and $2\frac{7}{10}$ metres of yellow ribbon.

Add the wholes: 1 + 2 = 3

Add the parts: $\frac{3}{5} + \frac{7}{10}$

Making denominators the same $\frac{3}{5} = \frac{6}{10}$

$= \frac{6}{10} + \frac{7}{10} = \frac{13}{10} = 1\frac{3}{10}$

Recombining parts and wholes: Holly used $3 + 1\frac{3}{10} = 4\frac{3}{10}$ metres of ribbon in total.

b) $4\frac{3}{4} - 2\frac{7}{20}$ $\frac{3}{4} = \frac{15}{20}$

$= 4\frac{15}{20} - 2\frac{7}{20}$

$= 2\frac{8}{20}$

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

Holly used $2\frac{2}{5}$ metres more of the spotty fabric.

- Find the difference means subtraction.
- First make the denominators the same, then subtract the wholes and parts.

RED QUESTIONS

1. Alex is reading a book.

He reads $\frac{1}{3}$ of the book on Monday.

He reads $\frac{1}{6}$ of the book on Tuesday.

What fraction of the book has he read in total?

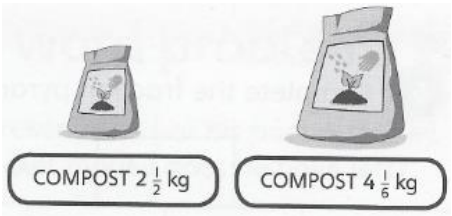
2. Carl spends $\frac{4}{9}$ of his pocket money on a present and $\frac{1}{3}$ of his pocket money on a comic book.
What fraction of his pocket money does he have left?

BLUE QUESTIONS

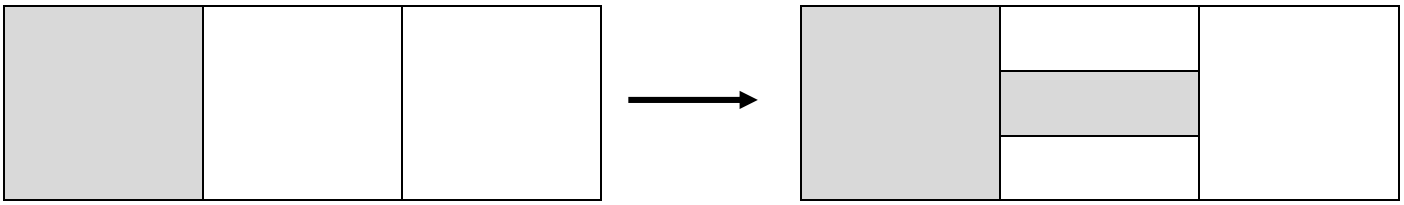
1. Holly has $4\frac{11}{25}$ metres of ribbon.
She cuts the ribbon into two pieces.
One piece is $2\frac{4}{5}$ m long. How long is the other piece?

2. A rabbit eats $\frac{2}{5}$ of a bag of carrots in the morning. In the afternoon he eats $\frac{3}{10}$ of the bag.
What fraction of the bag does the rabbit have left?

3. Kate uses these two bags of compost on her vegetable garden.
How much compost does Kate use altogether?



4. Leo divides a rectangle into 3 equal parts and shades one of the parts. He then divides one of the parts into three more equal parts and shades one of them.



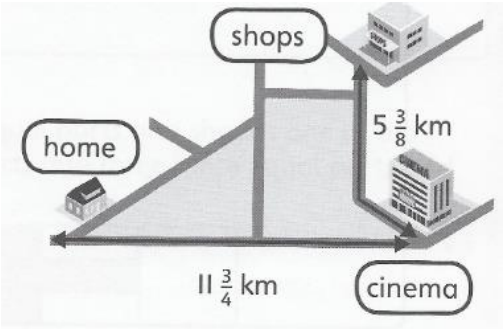
a) What fraction of the shape is now shaded?
b) Explain your method.

5. Work out the missing numbers:

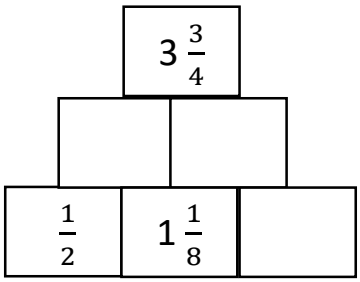
a) $\frac{1}{5} + \frac{\quad}{15} = \frac{7}{15}$ b) $\frac{1}{5} + \frac{\quad}{15} = \frac{4}{15}$ c) $\frac{1}{5} + \frac{\quad}{15} = \frac{1}{3}$ d) $\frac{1}{5} + \frac{\quad}{15} = 1$

YELLOW QUESTIONS

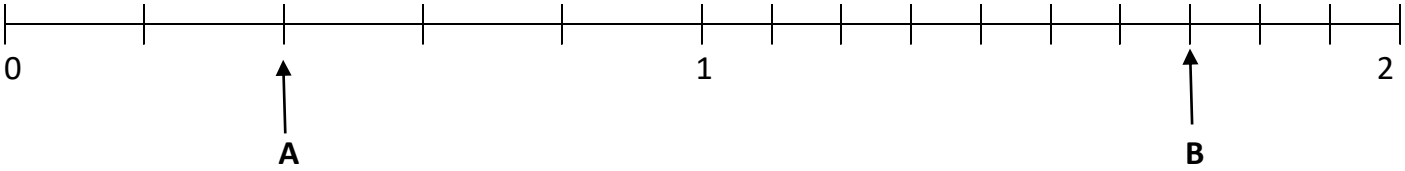
1. Jenny drives from home to the cinema. Then she drives to the shops.
a) How far does she travel in total?
b) How much greater is the distance from the home to the cinema than the distance from the cinema to the shops?



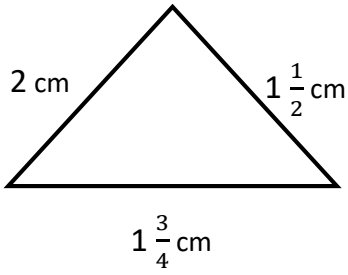
2. Complete the fraction pyramid.

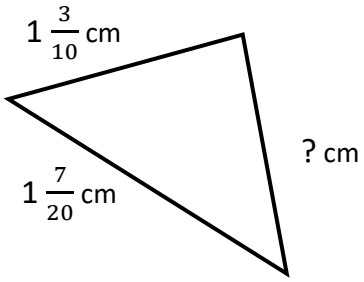


3. What is the difference between A and B? Show how you worked it out.



3. The perimeters of these two triangles are equal. What is the length of the missing side?
(They are not drawn to scale).





4. Three books are in a pile.

The first book has a thickness of $1\frac{1}{2}$ cm.

The second book has a thickness of $2\frac{1}{6}$ cm.

The total thickness of the books is 5 cm.

What is the thickness of the third book?

THURSDAY 18th JUNE

Today's revision is about multiplying proper fractions by a whole number.

<table>
<tr><th colspan="2">L.O. multiply proper fractions by a whole number 18/06/20</th></tr>
<tr><td colspan="2">REMEMBER: A proper fraction has a numerator which is smaller than its denominator; e.g. $\frac{2}{7}$</td></tr>
<tr><td>EXAMPLE 1: What is 2 x $\frac{2}{5}$?</td><td> 
The models show two lots of $\frac{2}{5}$ = four fifths.
2 x $\frac{2}{5}$ = $\frac{4}{5}$ Remember to just multiply the numerator by the whole number.</td></tr>
<tr><td>EXAMPLE 2: What is $\frac{3}{8}$ of 16?</td><td>You can find the fraction of a number by multiplying the fraction and the whole number together.
$\frac{3}{8}$ of 16 = $\frac{3}{8}$ x 16 = $\frac{48}{8}$ = 6
3 x 16 = 48</td></tr>
</table>

Use these links if you need to recap multiplying proper fractions by integers:

BBC Bitesize https://www.bbc.co.uk/bitesize/articles/zbh6hbk

Online lessons for finding multiplying proper fractions if you need a bit more help or would like some more practice.

White Rose Home learning (week 4 lesson 1): https://whiterosemaths.com/homelearning/year-6/

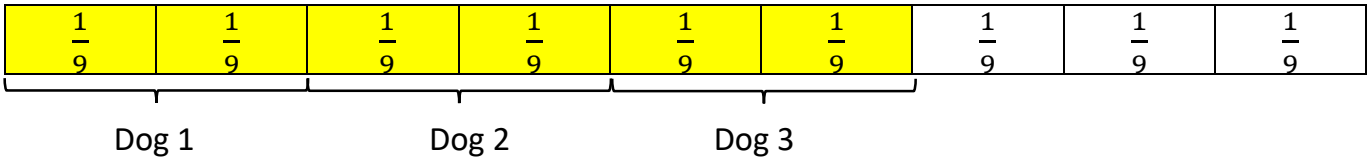
MULTIPLYING PROPER FRACTIONS LESSON

Consider the question:

a) What fraction of the box is needed each day for the three dogs?

b) How many boxes of dog food will Lexi and her mum need to buy to feed the dogs for 5 days?

a) Each dog needs $\frac{2}{9}$ of the box. There are 3 dogs.



Dog 1 Dog 2 Dog 3

Using addition: $\frac{2}{9} + \frac{2}{9} + \frac{2}{9} = \frac{6}{9} = \frac{2}{3}$ (in its simplest form).

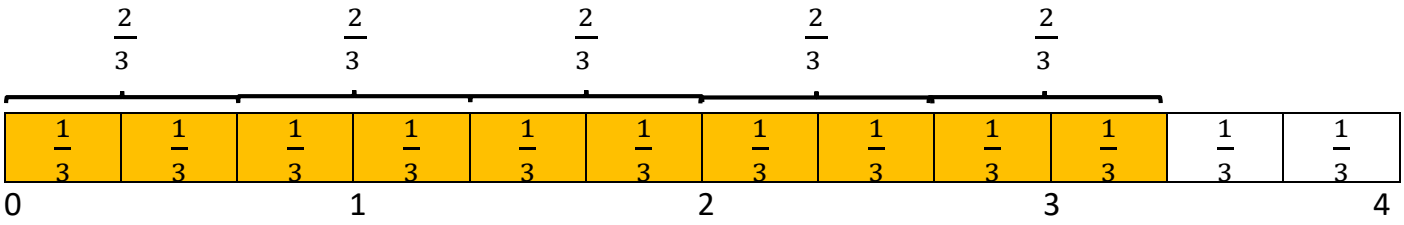
Using multiplication: $\frac{2}{9} \times 3 = \frac{6}{9} = \frac{2}{3}$

$\frac{2}{3}$ of the box is needed each day.

b) Each day the dogs need $\frac{2}{3}$ of a box. There are 5 days.

It is easier to multiply and work out how many thirds by multiplying 2 x 5 = 10.

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

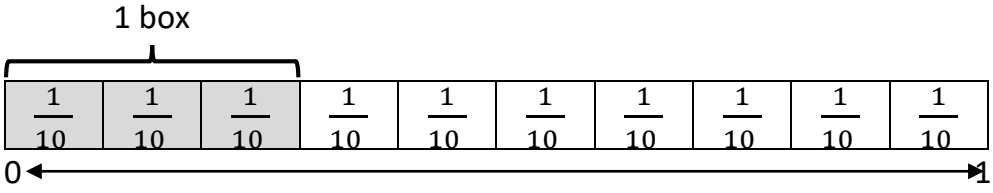


The dogs need $3\frac{1}{3}$ boxes for 5 days, and so mum will need to buy 4 boxes to feed the dogs for 5 days.

RED QUESTIONS

1. Each box contains $\frac{3}{10}$ of a pizza.

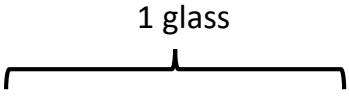
How much pizza is there in total?

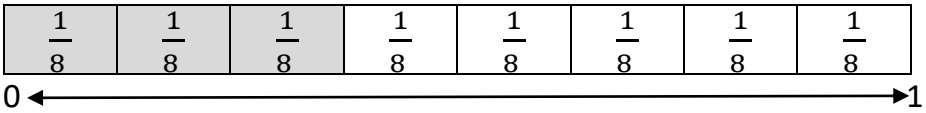


$\frac{3}{10} \times 3 = \frac{\quad}{10}$ There are $\frac{\quad}{10}$ of a pizza in total.

2. Each glass contains $\frac{3}{8}$ litres of milk.

How many litres of milk are there in total?





$\frac{3}{8}$ x ☐ = $\frac{\quad}{8}$ = ☐

BLUE QUESTIONS

1. Complete the multiplications, simplifying your answers where necessary.

a) 7 x $\frac{1}{8}$ = b) $\frac{1}{10}$ x 9 = c) $\frac{4}{9}$ x 4 =

2. Complete these multiplications giving your answers in the simplest form.

a) 5 x $\frac{1}{2}$ = b) $\frac{1}{4}$ x 7 kg = c) $\frac{1}{3}$ x 5 = d) $\frac{1}{8}$ x ☐ = 1 e) 11 x $\frac{1}{3}$ litre =

3. a) $\frac{1}{5}$ x ☐ = 1 $\frac{2}{5}$ b) $\frac{1}{\quad}$ x ☐ = 1 $\frac{1}{8}$

4. One person eats $\frac{2}{3}$ of a can of soup. How many cans are needed to feed 5 people?

5. Mike uses $\frac{1}{4}$ of a banana in his cake. How many bananas does he need to buy to make 9 cakes?

YELLOW QUESTIONS

1. True or false? Prove you are correct.

a) 0 x $\frac{1}{8}$ is equal to $\frac{1}{8}$.

b) 8 x $\frac{1}{8}$ = 1

c) $\frac{1}{8}$ x 6 is equal to three-quarters.

2. Max worked out this multiplication:

$\frac{7}{20}$ x 17 = 5 $\frac{19}{20}$

Is Max correct? How do you know?

3. Work out the missing numbers.

a) $\frac{4}{9}$ x ☐ = 4 $\frac{4}{9}$ b) $\frac{\quad}{8}$ x 5 = 3 $\frac{1}{8}$ c) ☐ x $\frac{3}{10}$ = 3 $\frac{9}{10}$

4. Explain why $\frac{3}{7}$ x 5 ≠ $\frac{15}{35}$.

FRIDAY 19th JUNE – Remember to complete the quiz today.
Today you will focus on multiplying mixed numbers by whole numbers.

L.O. multiply mixed numbers by integers **19/06/20**

REMEMBER

EXAMPLE

Felix the cat eats $1\frac{2}{3}$ *bowls of food every day. How many bowls of food will he eat in 4 days?*

Method 1

Multiply the wholes: 1 x 4 = 4

Multiply the fractional part: $\frac{2}{3} \times 4 = \frac{8}{3} = 2\frac{2}{3}$

Recombine wholes and parts: $4 + 2\frac{2}{3} = 6\frac{2}{3}$

Felix eats $\mathbf{6\frac{2}{3}}$ **bowls** of food in 4 days.

Method 2

Convert the mixed number to an improper fraction before multiplying:

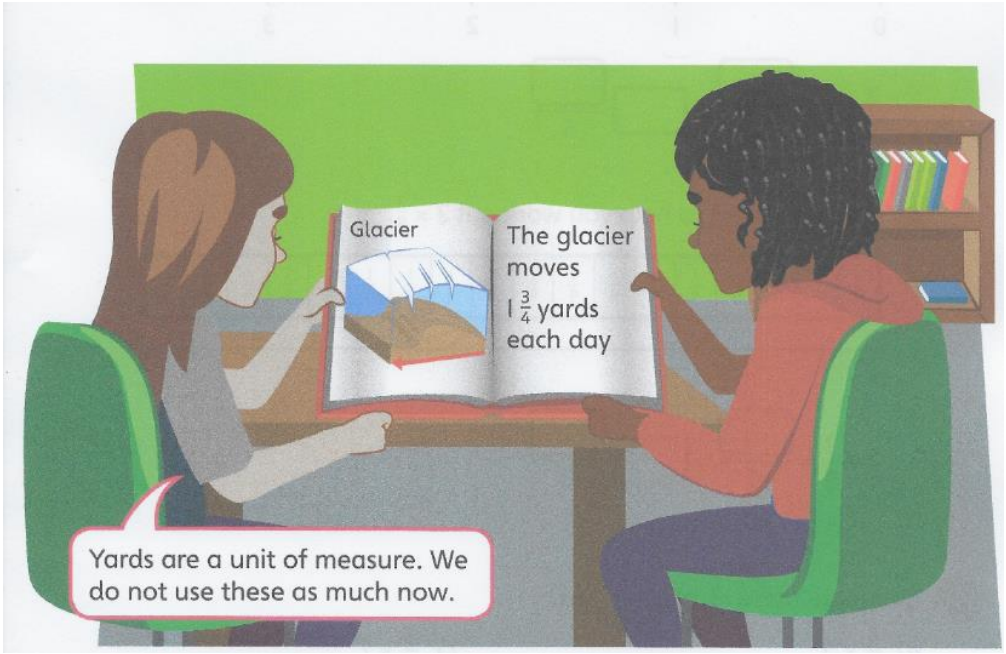
$1\frac{2}{3} = \frac{5}{3}$

Multiply the improper fraction:

$\frac{5}{3} \times 4 = \frac{4 \times 5}{3} = \frac{20}{3} = \mathbf{6\frac{2}{3}}$ **bowls.**

MULTIPLYING MIXED NUMBERS LESSON

Consider the question:



a) How far does the glacier travel in 3 days?

b) How many days will it take the glacier to travel more than 15 yards?

a) The glacier moves $1\frac{3}{4}$ yards each day.

Multiply $1\frac{3}{4}$ by 3 to work out how far it moves in 3 days.

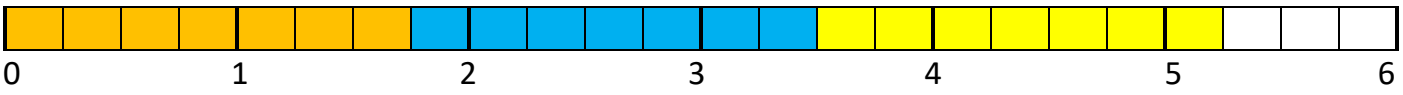
Day 1

Day 2

Day 3

Convert $1\frac{3}{4}$ to an improper fraction and then multiply by 3.

$1\frac{3}{4} = \frac{7}{4}$



$\frac{7}{4}$ x 3 = $\frac{21}{4} = 5\frac{1}{4}$ **The glacier travels $5\frac{1}{4}$ yards in 3 days.**

b) Multiply $\frac{7}{4}$ by different numbers until the answer is greater than 15.

Use trial and error and number knowledge.

I know from a) that $\frac{7}{4}$ x **3** = $\frac{21}{4} = 5\frac{1}{4}$

Double to get $\frac{7}{4}$ x **6** = $\frac{42}{4} = 10\frac{2}{4} = 10\frac{1}{2}$

The numerator is going up in 7s, so $\frac{7}{4}$ x **7** = $\frac{49}{4} = 12\frac{1}{4}$

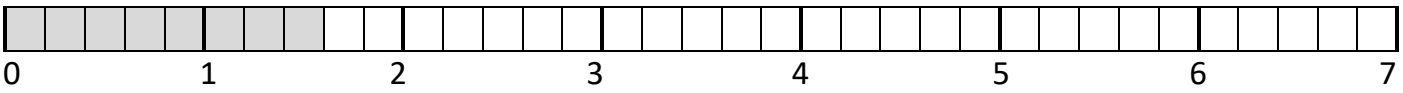
$\frac{7}{4}$ x **8** = $\frac{56}{4} = 14$

$\frac{7}{4}$ x **9** = $\frac{63}{4} = 15\frac{3}{4}$

After 9 days, the glacier has moved more than 15 yards.

RED QUESTIONS

A bag of flour has a mass of $1\frac{3}{5}$ kg.



a) What is the mass of 2 bags of flour?

$1\frac{3}{5} = \frac{\quad}{5}$

$\frac{\quad}{5}$ x 2 = $\frac{\quad}{5}$ = $\square\frac{\quad}{5}$ kg

b) What is the mass of 3 bags?

$\frac{\quad}{5}$ x 3 = $\frac{\quad}{5}$ = $\square\frac{\quad}{5}$ kg

c) What is the mass of 4 bags?

BLUE QUESTIONS

1. A horse eats $2\frac{3}{4}$ carrots each day.
   How many carrots does it eat over 3 days?

Multiply the wholes: ☐ x 3 = ☐

Multiply the parts: — x 3 = — = ☐ —

Recombine the parts and wholes: ☐ + ☐ — = ☐ — carrots.

2. What is $1\frac{3}{8}$ x 5?

3. Work out these multiplications.

a) $7\frac{2}{5}$ x 6 = b) $8\frac{1}{3}$ x 6 =

4. Each day Laura runs $3\frac{1}{2}$ km.

How far does she run from Monday to Friday?

5.a) Louise wants to row 12 km in total. She rows $2\frac{7}{10}$ km each day for 5 days.

Does she meet her target? Prove it.

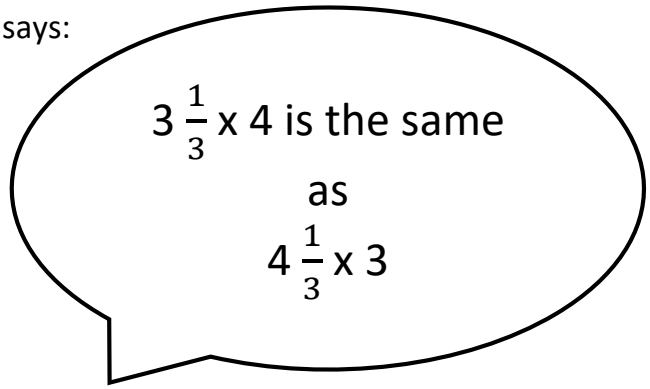
b) Louise cycles $1\frac{2}{3}$ km each day. How many days will it take her to cycle more than 12 km?

YELLOW QUESTIONS

1. Do you agree or disagree with Lee?

Explain your answer.

Lee says:



2. Reena makes lemonade and pours it into two different sized bottles.

A large bottle holds $5\frac{1}{4}$ glasses. A small bottle holds $2\frac{3}{4}$ glasses.

Reena fills 3 large bottles and 6 small bottles with lemonade.

How many **full** glasses of lemonade can be poured?

3. Which calculation gives the greatest answer?

a) $\frac{2}{3}$ x 20 $1\frac{2}{3}$ x 10 $2\frac{2}{3}$ x 5

b) Which calculation do you think will give the smallest answer without working it out? Prove that you are correct. $5\frac{1}{5}$ x 8 $2\frac{2}{7}$ x 13

4. These calculations give the same answer.
What are the missing numbers?

$2\frac{3}{8}$ x 15 = $\square$ — $\square$ — x 5 = $\square$ — $11\frac{7}{8}$ x $\square$ = $\square$ —

5. Max says $2\frac{3}{4}$ x 5 is the same as $10\frac{15}{4}$.

Do you agree?

What advice would you give to Max?