

The McDonald's Problem

Last week, I set you this tasty puzzle where you had to work out the value of '?'.
The hint I gave you was to pay attention to the objects.

This is why...


$$+ + = 30$$


$$= 10$$


$$+ + = 20$$

$$10 + _ + _ = 20.$$


$$= 5$$


$$+ + = 9$$

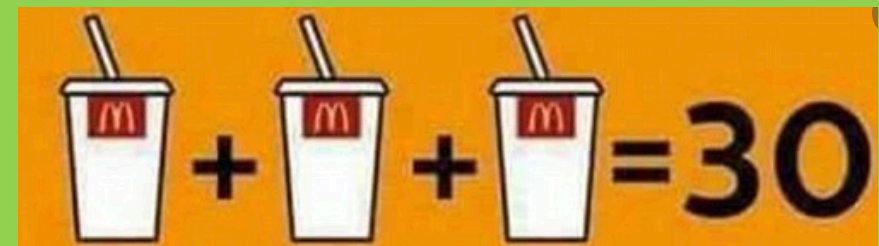
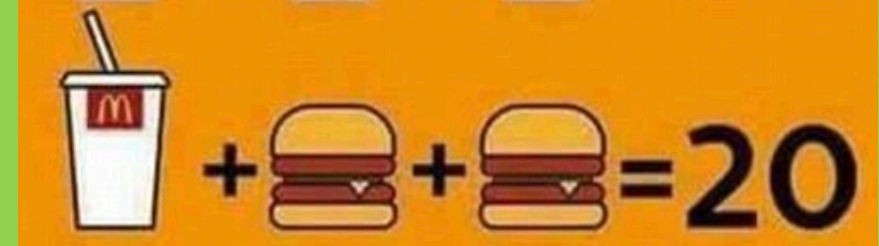
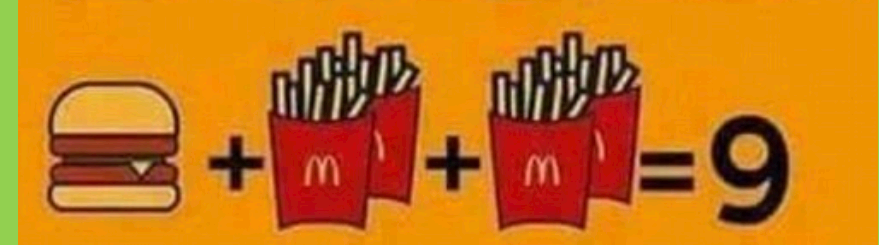
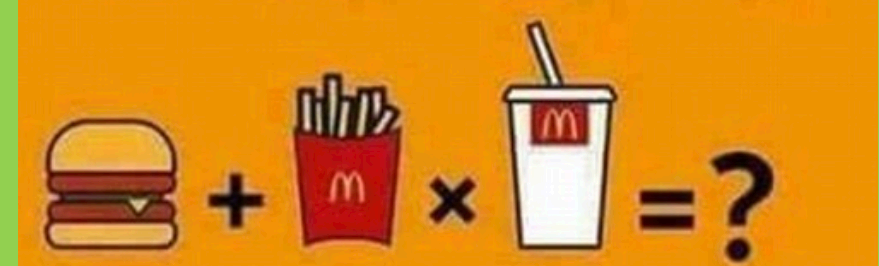
$$5 + _ + _ = 9.$$


$$= 2$$


$$+ \times = ?$$

$$5 + _ \times 10 = 15.$$

If two portions of chips are worth 2 then, one portion is worth 1.


$$+ + = 30$$

$$+ + = 20$$

$$+ + = 9$$

$$+ \times = ?$$

$$? = 15.$$

Home Learning: Mathematics

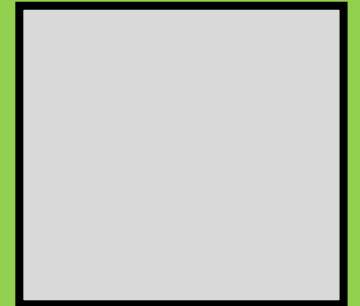
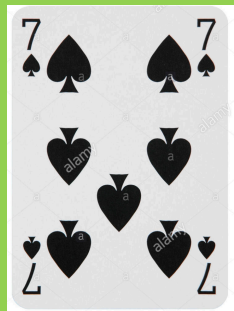
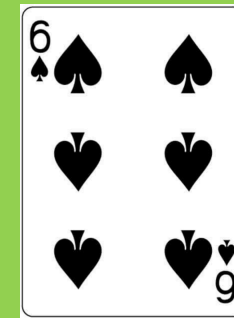
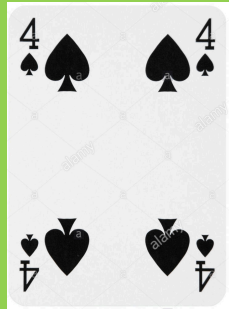
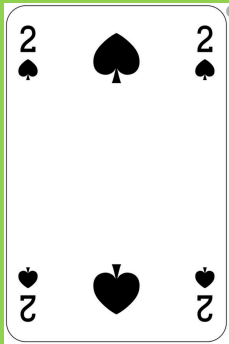
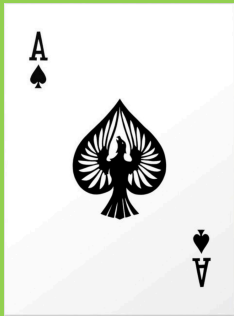
Summer 1: Week 3

Monday 4th May – Friday 8th May 2020



Magic Squares

Using the playing cards (only once), place them into the grid so that each row and column adds up to 15.



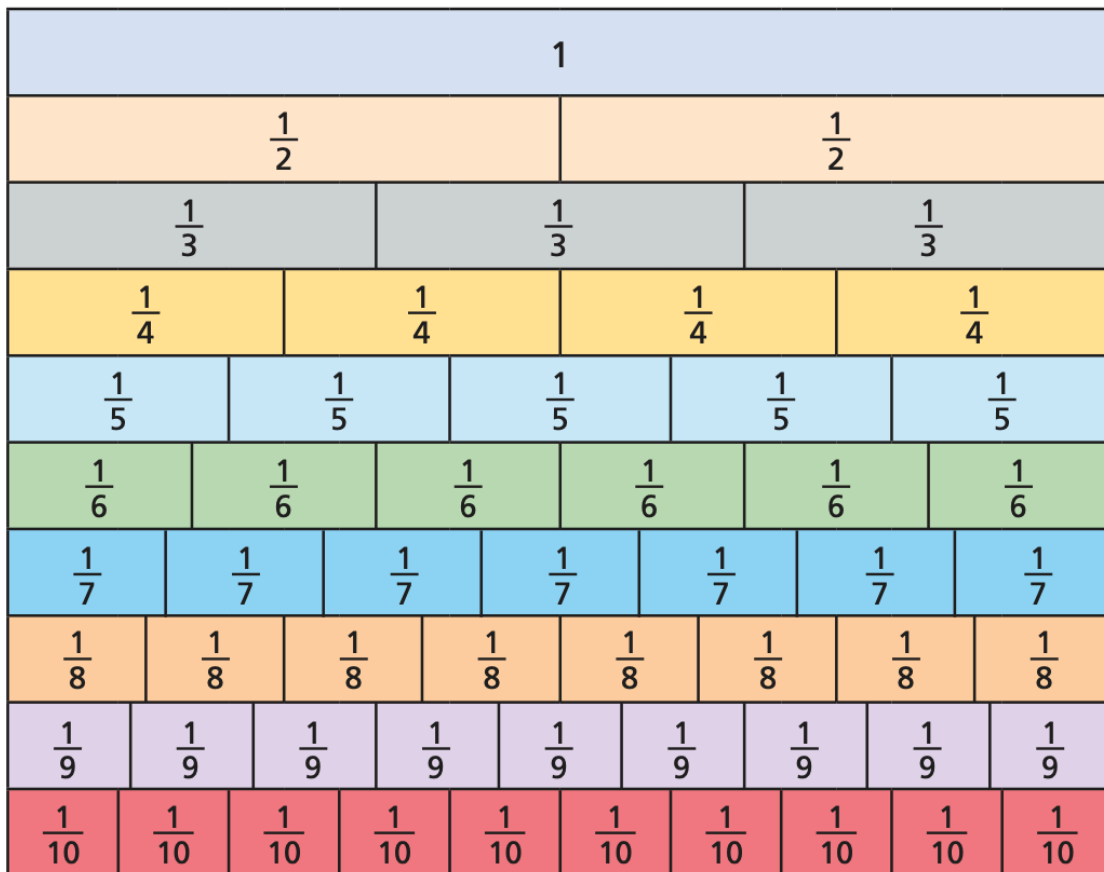
The answer (and strategy) will be revealed next week...



Monday 4th May
2020

Subject of Focus: Simplify Fractions

1



Question

Use the fraction wall to write each fraction in its simplest form.

a) $\frac{4}{6} =$

c) $\frac{6}{8} =$

b) $\frac{8}{10} =$

d) $\frac{4}{8} =$

Use a fraction wall to explain why $\frac{7}{10}$ does not simplify.

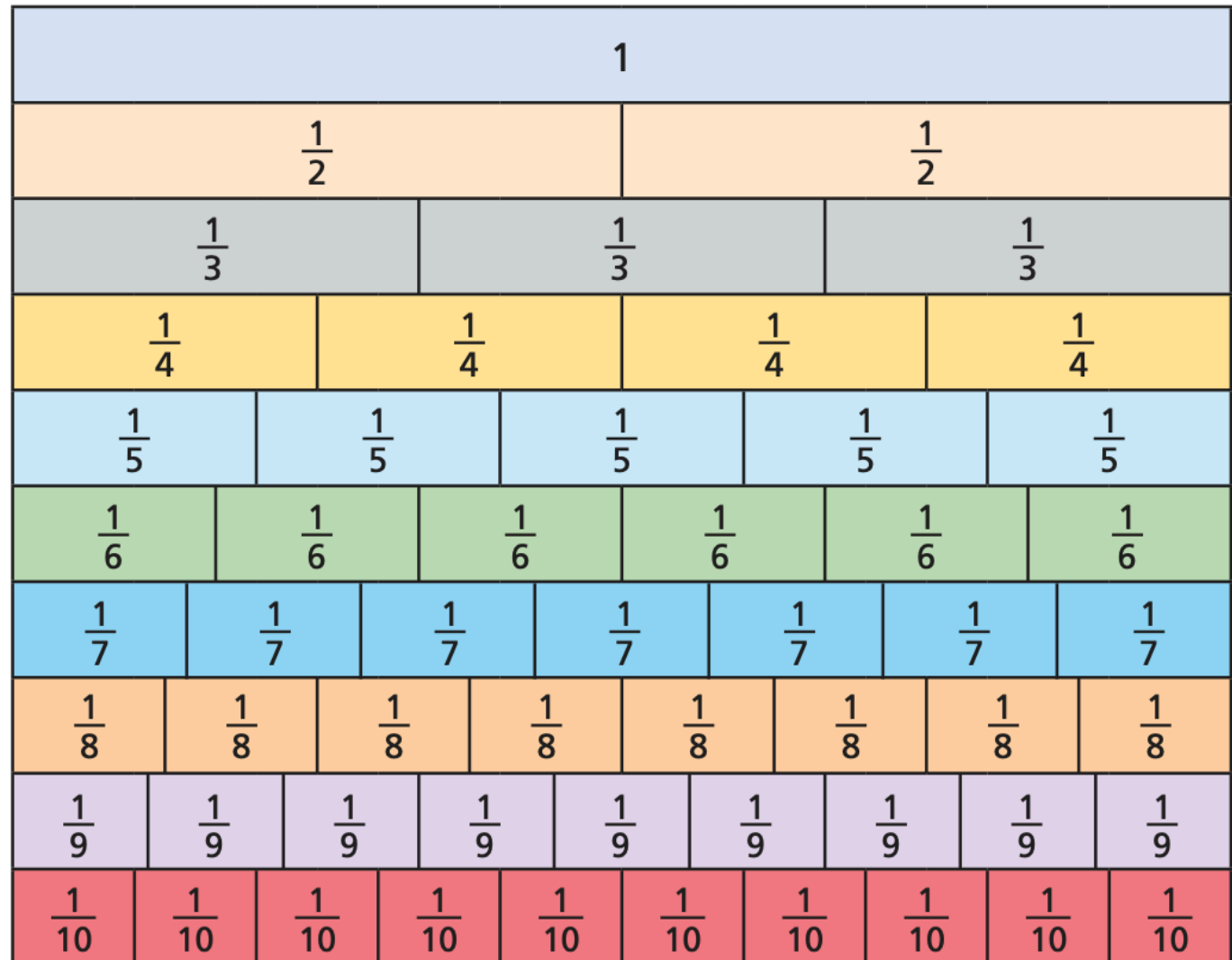
Extension

How do I know that
 $\frac{6}{10}$ is equivalent to
 $\frac{3}{5}$?

Explain your reasoning
and use your own
images.

Extension

How do I know that
 $\frac{4}{7}$ is NOT
equivalent to $\frac{3}{8}$?



Mo, Eva and Ron are trying to simplify $\frac{5}{20}$



Mo

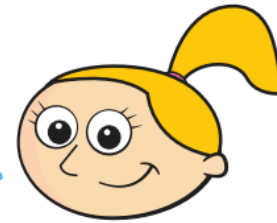
I can't simplify this because one number is odd and the other is even.



Ron

I can simplify any fraction.

I can't simplify this because only one number can be halved.



Eva

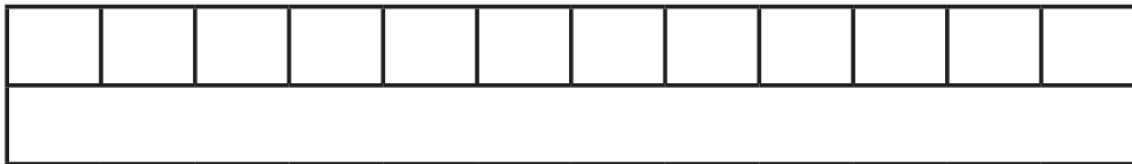
Question

Who do you agree with? Explain your reasoning.

Extension

Simplify $\frac{5}{20}$. Explain how you did it.

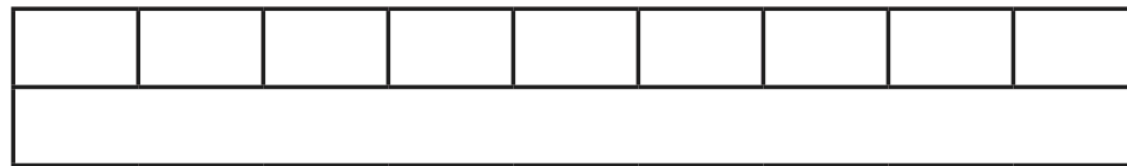
Draw lines on the bar model to show that $\frac{9}{12}$ is equal to $\frac{3}{4}$



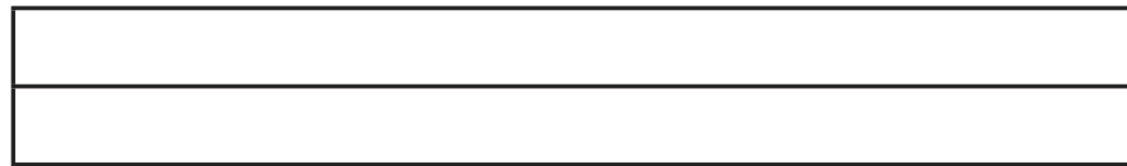
Extension

Without using a bar model, what would $9/36$ be equivalent to?
Explain your reasoning.

Complete each bar model and calculation.



$$\boxed{} = \frac{3}{9}$$



$$\boxed{} = \frac{5}{15}$$

Simplify the fractions.

a) $\frac{4}{12} =$

b) $\frac{8}{12} =$

c) $\frac{40}{120} =$

d) $\frac{12}{4} =$

$\frac{4}{16} =$

$\frac{8}{16} =$

$\frac{40}{160} =$

$\frac{120}{4} =$

$\frac{4}{20} =$

$\frac{8}{20} =$

$\frac{40}{200} =$

$\frac{12}{400} =$

Describe and explain any patterns that you noticed.

Teddy and Dora are both simplifying $\frac{30}{42}$

Teddy

$$\frac{30}{42} = \frac{15}{21} = \frac{5}{7}$$

Dora

$$\frac{30}{42} = \frac{5}{7}$$

- a) How do you think Dora was able to simplify the fraction in one step?

Extension

Simplify these fractions in **one-step** only.

$$\frac{24}{30} = \boxed{}$$

$$\frac{16}{20} = \boxed{}$$

$$\frac{56}{64} = \boxed{}$$

$$\frac{99}{121} = \boxed{}$$

Explain how you were able to do so.

Find all of the
possible
combinations
up to 200.



is a prime number.  is a multiple of 10

The fraction can be simplified.

What could each number be? Explain your reasoning.

Sort the fractions into the table.

Simplifies to $\frac{1}{2}$	Simplifies to $\frac{1}{3}$	Simplifies to $\frac{1}{4}$

$\frac{5}{15}$	$\frac{2}{4}$	$\frac{4}{16}$	$\frac{8}{16}$	$\frac{5}{10}$	$\frac{3}{9}$	$\frac{6}{12}$	$\frac{2}{8}$
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Extension

Can you see any patterns between the numbers in each column?

What is the relationship between the numerators and denominators in each section?

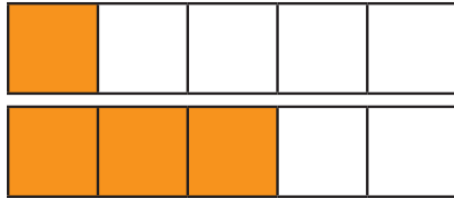
Add three more fractions to each section.

A large, irregular blue ink splatter or watercolor blotch serves as the background for the text. The splatter is centered and has a textured, painterly appearance with various shades of blue and white. The text is written in a white, elegant script font and is centered within the blue area.

Tuesday 5th May
2020

Subject of Focus: Compare and Order Fractions

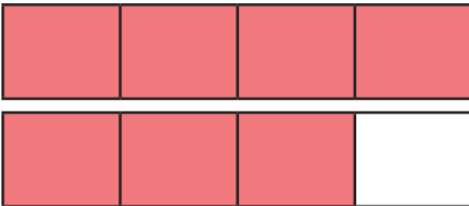
Question



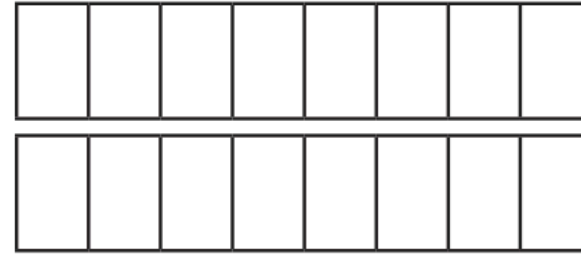
$$\frac{1}{5} \bigcirc \frac{3}{5}$$



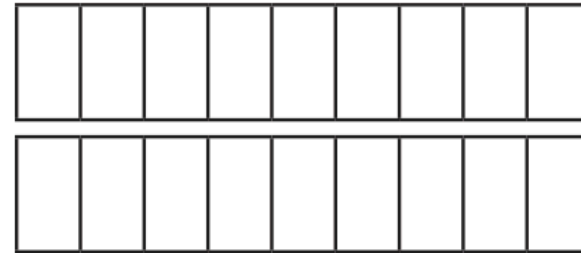
$$\frac{5}{7} \bigcirc \frac{4}{7}$$



$$\frac{4}{4} \bigcirc \frac{3}{4}$$



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



$$\frac{4}{9} \bigcirc \frac{6}{9}$$

What do you notice about your answers?

Complete the sentence:

When the denominator are the same, the _____ the numerator, the _____ the fraction

Use the bar models to sort these fractions in order from greatest to smallest.

$$\frac{14}{20}$$

greatest

$$\frac{9}{10}$$

$$\frac{4}{5}$$

$$\frac{3}{4}$$

smallest

Order the fractions from smallest to greatest.

$$\frac{7}{10}$$

$$\frac{1}{2}$$

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

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

Show your working out for both questions.

Remember to show your working out for each question

Amir is comparing the fractions $\frac{4}{15}$ and $\frac{3}{10}$

$$\frac{4}{15} = \frac{8}{30} \quad \frac{3}{10} = \frac{9}{30}$$

$\frac{9}{30}$ is greater than $\frac{8}{30}$

$\frac{3}{10}$ is greater than $\frac{4}{15}$

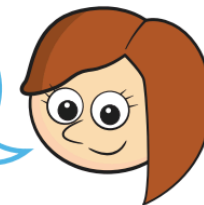
Explain Amir's method.

Ron and Rosie are practising penalties.

Ron scored 7 out of 10.

Rosie scored 23 out of 30

I scored more than you, so I should take penalties for the school team.



I did not miss as many as you, so I should take the penalties.

Compare fractions to explain who should take penalties for the school team.

Remember to show your working out for each question

Question

Write $<$, $>$ or $=$ to compare the fractions.

a) $\frac{3}{4}$ $\frac{5}{6}$

d) $\frac{3}{5}$ $\frac{5}{7}$

b) $\frac{2}{3}$ $\frac{5}{9}$

e) $\frac{9}{10}$ $\frac{3}{4}$

c) $\frac{2}{3}$ $\frac{7}{8}$

f) $\frac{9}{10}$ $\frac{19}{20}$

Question

Annie, Tommy and Kim are making flags for the school fair.

Annie has completed $3\frac{3}{4}$ flags, Tommy has completed $3\frac{2}{3}$ flags and Kim has completed $\frac{18}{5}$ flags.

Who has completed the most flags?

Question

Colour the bar models to compare $\frac{3}{4}$ and $\frac{6}{10}$



Write $<$, $>$ or $=$ to complete the statement.

Question

Which is the greatest fraction? Circle your answer.

$$\frac{3}{100}$$

$$\frac{3}{1000}$$

$$\frac{3}{500}$$

How do you know?



Question

Scott scored 20 out of 24 in a game.

Dani scored 5 out of 7

Compare their scores.

Explain who you think did best and why.



Question

Explain how can you compare $\frac{2}{3}$ and $\frac{4}{5}$ using the same numerator rule.

Complete the sentence to compare $\frac{2}{3}$ and $\frac{4}{5}$

is greater than



Question

Scott scored 20 out of 24 in a game.

Dani scored 5 out of 7

Compare their scores.

Explain who you think did best and why.

Question

Explain how can you compare $\frac{2}{3}$ and $\frac{4}{5}$ using the same numerator rule.

Complete the sentence to compare $\frac{2}{3}$ and $\frac{4}{5}$

is greater than

Write $<$, $>$ or $=$ to complete each statement.

a) $\frac{2}{5} \bigcirc 1\frac{1}{3}$

b) $\frac{2}{5} \bigcirc \frac{6}{11}$

c) $3\frac{2}{3} \bigcirc \frac{11}{4}$

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

$1\frac{2}{5} \bigcirc 3\frac{6}{11}$

$11\frac{2}{9} \bigcirc \frac{101}{3}$

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

$3\frac{2}{5} \bigcirc 3\frac{6}{11}$

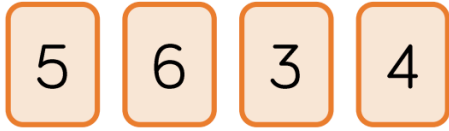
$11\frac{1}{9} \bigcirc \frac{100}{8}$

$\frac{12}{5} \bigcirc \frac{12}{3}$

$\frac{12}{5} \bigcirc \frac{36}{11}$

$27\frac{3}{4} \bigcirc \frac{111}{3}$

Use the digit cards to complete the statements.



$$\frac{\boxed{}}{\boxed{4}} > \frac{\boxed{}}{\boxed{6}} \quad \frac{\boxed{}}{\boxed{4}} < \frac{\boxed{6}}{\boxed{}}$$

Find three examples of ways you could complete the statement.

$$\frac{\boxed{}}{\boxed{}} < \frac{\boxed{}}{\boxed{}}$$

Can one of your ways include an improper fraction?



Teddy is comparing $\frac{3}{8}$ and $\frac{5}{12}$



To find the lowest common multiple, I will multiply 8 and 12 together.

$$8 \times 12 = 96$$

I will use a common denominator of 96

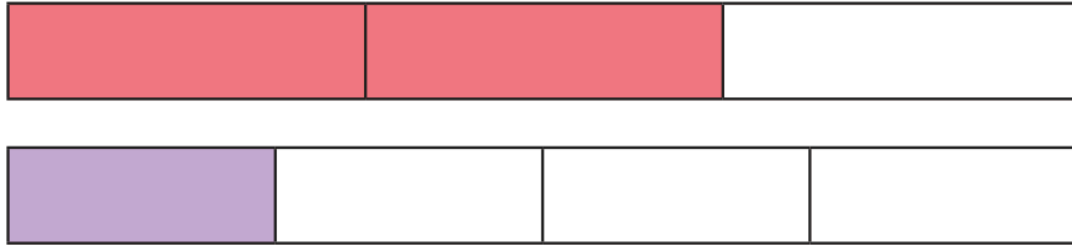
Is Teddy correct?
Explain why.

A large, irregular blue watercolor splash serves as the background for the text. The splash is centered and has a textured, painterly appearance with various shades of blue and white. The text is written in a white, elegant script font and is centered within the splash.

Wednesday 6th May
2020

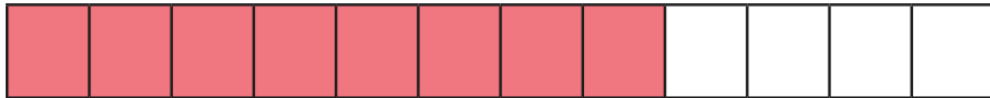
Subject of Focus: Adding & Subtracting Fractions

Amir is using fraction strips to work out $\frac{2}{3} + \frac{1}{4}$



Amir says he needs to find a common denominator.

Complete Amir's method.



$$\frac{2}{3} = \frac{\boxed{}}{12}$$



$$\frac{1}{4} = \frac{\boxed{}}{12}$$

$$\frac{2}{3} + \frac{1}{4} = \frac{\boxed{}}{12} + \frac{\boxed{}}{12} = \frac{\boxed{}}{12}$$

Extension

Could Amir have used a different common denominator?
Explain your reasoning.

What common denominator can you use to add the fractions?

a) $\frac{2}{5} + \frac{1}{2}$

Common denominator =

b) $\frac{2}{3} + \frac{4}{5}$

Common denominator =

c) $\frac{7}{8} - \frac{1}{4}$

Common denominator =

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

Common denominator =

e) $\frac{11}{15} + \frac{3}{10}$

Common denominator =

Extension

Solve each question

Extension

What mathematical knowledge do you need to find the common denominator in each question?

Questions

What is the same about Ron's and Eva methods?

What is different between their methods?

Which method do you prefer and why?

Ron and Eva are working out $\frac{1}{4} + \frac{5}{6}$

Ron's method

$$\frac{1}{4} + \frac{5}{6} = \frac{3}{12} + \frac{10}{12} = \frac{13}{12}$$

Eva's method

$$\frac{1}{4} + \frac{5}{6} = \frac{6}{24} + \frac{20}{24} = \frac{26}{24}$$

Complete the calculations.

a) $\frac{1}{5} + \frac{3}{4} =$

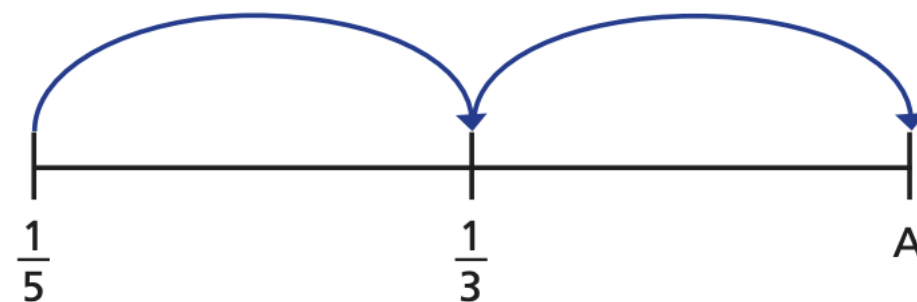
c) $\frac{1}{2} - \frac{1}{7} =$

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

d) $\frac{11}{18} + \frac{7}{12} =$

Mo is drawing jumps on a number line.

The jumps are the same size.



What is the size of each jump?

What is the value of A?

Extension: What fraction would come halfway between $\frac{1}{5}$ and $\frac{1}{3}$?

Complete the additions.

Give your answers as mixed numbers and as improper fractions.

a) $\frac{4}{5} + \frac{5}{4} = \boxed{} = \boxed{}$ c) $\frac{9}{8} + \frac{8}{9} = \boxed{} = \boxed{}$

b) $\frac{2}{3} + \frac{3}{2} = \boxed{} = \boxed{}$ d) $\boxed{} = \boxed{} = \frac{5}{3} + \frac{3}{5}$

What patterns do you notice?

Look at these additions.

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

$$\frac{1}{2} + \frac{1}{3} + \frac{1}{4} = \boxed{}$$

$$\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} = \boxed{}$$

Questions:

When does this pattern first give an answer greater than 2?

Show your working out.

Do you think the pattern will ever give an answer greater than 100?

Explain your reasoning.

Alex is adding fractions.

$$\frac{3}{5} + \frac{1}{15} = \frac{4}{20} = \frac{1}{5}$$

Do you agree with her?
Explain your answer.

Use the same digit in both boxes to complete the calculation.
Is there more than one way to do it?

$$\frac{\boxed{}}{\boxed{20}} + \frac{\boxed{1}}{\boxed{}} = \frac{\boxed{9}}{\boxed{20}}$$

NB: Remember to show your working out for each question.

Extension

If the journey is 270 miles, how far did the car travel in the morning?
How far did the car travel in the afternoon?
How far does the car have left to travel?

Show your working out.

A car is travelling from Halifax to Brighton.
In the morning, it completes $\frac{2}{3}$ of the journey.

In the afternoon, it completes $\frac{1}{5}$ of the journey.

What fraction of the journey has been travelled altogether?

What fraction of the journey is left to travel?



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Thursday 7th May
2020

Subject of Focus: Adding and Subtracting with Mixed Numbers

Work out the calculations.

a) $\frac{2}{5} + \frac{3}{4} =$

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

c) $3\frac{7}{10} - 2\frac{1}{4} =$

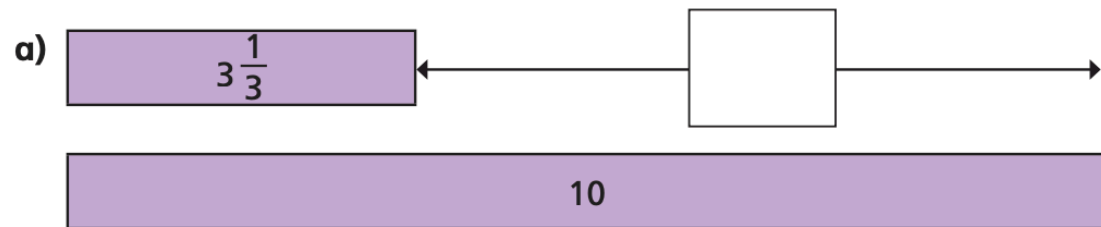
Complete the calculation.

$$\frac{5}{6} + 1\frac{2}{9} - \frac{1}{2} =$$

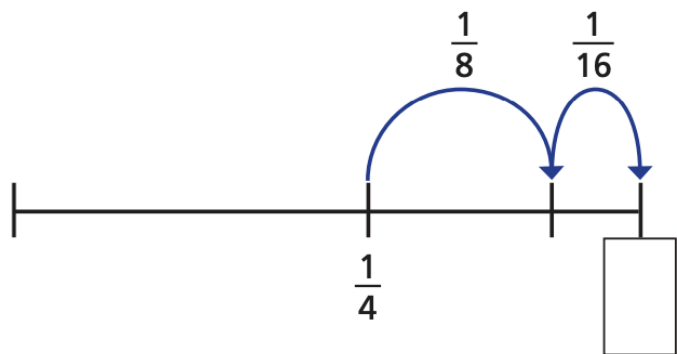
hint: BODMAS

Represent each answer as an improper fraction and a mixed number

Work out the missing fractions.



b)



Complete the calculations.

a) $\frac{2}{5} + \frac{1}{5} + \boxed{} = 1$

b) $\frac{2}{5} + \frac{1}{5} + \boxed{} = 1\frac{1}{2}$

c) $\frac{2}{5} + \frac{1}{5} + \boxed{} = \frac{4}{3}$

d) $\frac{4}{5} = \boxed{} - \frac{4}{5}$

Which of these are true and which are false?

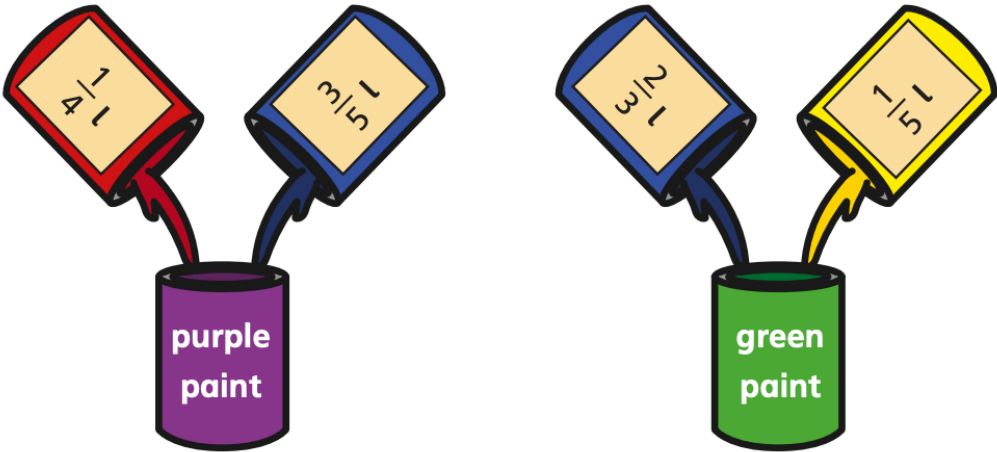
Can you decide without having to do the additions or the subtractions?

Talk about your reasons with a partner.

	True or false?
$2\frac{1}{3} + 3\frac{3}{4}$ is equal to $3\frac{1}{3} + 2\frac{3}{4}$	
$3\frac{3}{4} - \frac{1}{3}$ is less than $4\frac{3}{4} - 1\frac{1}{3}$	
$3\frac{3}{4} - 2\frac{1}{3}$ is equal to $3\frac{1}{3} - 2\frac{3}{4}$	

A painter uses the following mixtures.

How much more green paint does she have than purple paint?



Complete the addition grid.

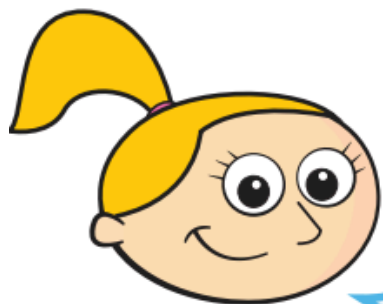
$1\frac{1}{4}$		$\frac{1}{4}$	$= 3\frac{3}{5}$
$\frac{1}{25}$	$1\frac{3}{20}$		$= 3\frac{39}{100}$
	$1\frac{1}{50}$	$1\frac{3}{100}$	$= 5\frac{9}{20}$

Remember to show your working out.

8

Eva and Amir are working out this calculation.

$$\frac{1}{4} + \frac{25}{100} - \frac{2}{8} - \frac{9}{36}$$



This is going to be very difficult, because I can't find a common denominator.



I have found an easier way.

Find Amir's solution. Explain how this calculation can be solved.

hint: remember to show your working out for your explanation.

The mass of Annie's suitcase is $29\frac{1}{2}$ kg.

Teddy's suitcase is $2\frac{1}{5}$ kg lighter than Annie's.

How much does Teddy's suitcase weigh?

How much do the suitcases weigh altogether?

Jack and Whitney have some juice.

Jack drinks $2\frac{1}{4}$ litres and Whitney drinks $2\frac{5}{12}$ litres.

How much do they drink altogether?

Complete this using two different methods.

Which method do you think is more efficient? Why?

NB: Remember to show your working out for each question.

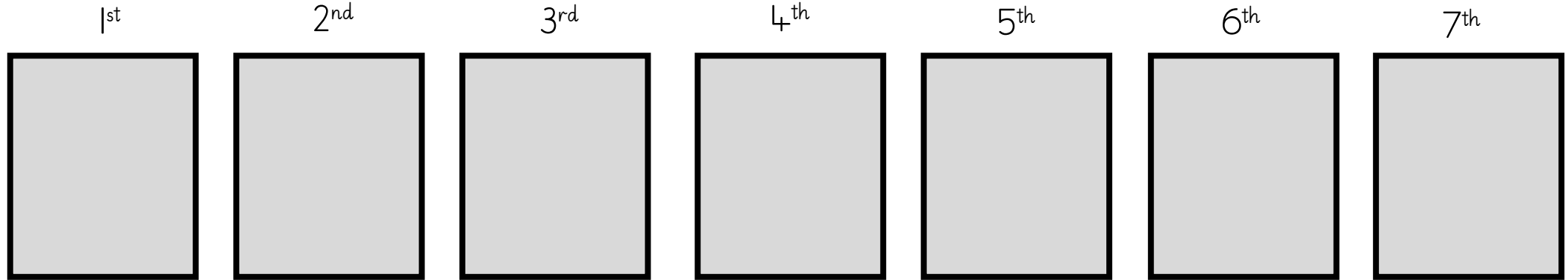
A large, irregular blue ink splatter or watercolor blotch serves as the background for the text. The splatter is centered and has a textured, painterly appearance with various shades of blue and white. The text is overlaid on this splatter.

Friday 8th May 2020

Subject of Focus:
Calculating Angles

Playing Cards

I have **fifteen** cards, numbered **1 – 15**.



I placed **seven** of them at random in the spaces above.

The numbers on the first two cards **add to 15**.

The numbers on the second and third cards **add to 20**.

The numbers on the third and fourth cards **add to 23**.

The numbers on the fourth and fifth cards **add to 16**.

The numbers on the fifth and sixth cards **add to 18**.

The numbers on the sixth and seventh cards **add to 21**.

You can only use each card **ONCE**.

Questions

1. What are my cards?
2. Are there any other solutions to the problem?
3. How do you know that you've found all the different solutions?