Maths Fluency Year 6

| 1 | **Addend plus addend equals the sum**
Largest number first
Place value is correct
Start with the Ones

$$\begin{array}{cccc} 5 & 5 & 3 & 1 \\ & 4 & 2 & 1 \\ + & 3 & 4 & 3 \\ \hline 6 & 2 & 9 & 5 \\ 1 \end{array}$$ | 2 | There are 4 plates.
Each plate has 0 doughnuts on it.
There are 0 doughnuts altogether. $0 \times 4 = 0$ $4 \times 0 = 0$

Multiplying anything by 0 gives an answer of 0 as this is the same as no lots of anything

There are 4 plates.
Each plate has 1 doughnut on it. $4 \times 1 = 4$
There are 4 doughnuts altogether. $1 \times 4 = 4$

Multiplying anything by 1 gives the same number as this is the same as one lot of anything

Dividing anything by 1 gives the same number, as this is just one group of anything. |

3

Total is known ✓

Part is missing ✓

Do the inverse ✓

− SUBTRACT

60	
40	?

4

100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

Gattegno Chart

$2100 \div 30 =$

$210\cancel{0} \div 3\cancel{0} =$

Make it ten times smaller

How many lots of the divisor go into the dividend?

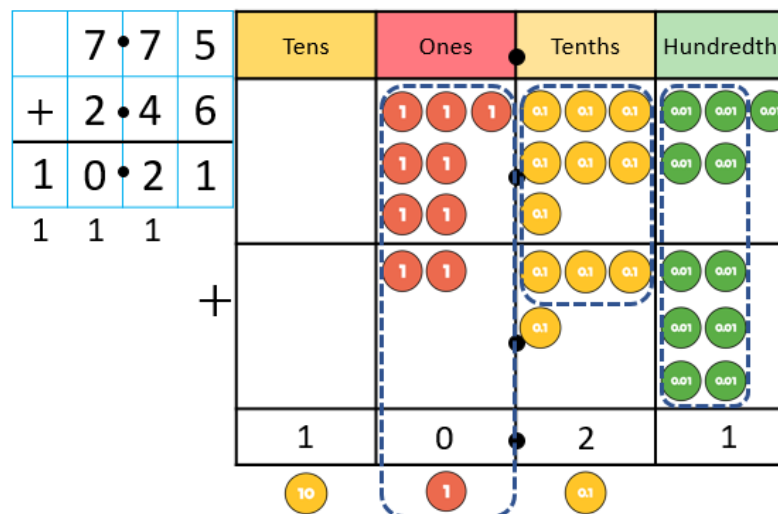| 5 | Total is known ✓

Part is missing ✓

Do the inverse ✓

− SUBTRACT

| 60 |
|---|
| 40 | ? | | 6 | **Addend plus addend equals the sum**
Largest number first
Think about decimals like money £__.__p
Place value is correct
Start with the Ones

$7.75 + 2.46 = 10.21$

 |
| 7 | How many lots of the divisor go into the dividend? | 8 | How many lots of the divisor go into the dividend? |

$261 \div 3 = 87$

```
    0 8 7
3 | 2 ²6 ²1
```

$261 \div 3 = 87$

```
    0 8 7
3 | 2 ²6 ²1
```

| 9 | Minuend minus subtrahend is equal to the difference
If we cannot subtract, we must exchange from the column to the left.

Larger number first
Place value is correct
Start with the Ones
Top number smaller than bottom number
Knock next door to exchange a ten

Total is known ✓

Part is missing ✓

Do the inverse ✓ | 10 | When multiplying by 10, the digits move one place to the left

When multiplying by 100, the digit move two places to the left |

Th	H	T	O	•	Tth	Hth
				•		
				•		

11	How many lots of the divisor go into the dividend? $261 \div 3 = 87$ 0 8 7 3	2 ^{2}6 ^{2}1	12	$2 \times 5 \times 3$ $3 \times 2 \times 5$ $5 \times 3 \times 2$ 10×3 6×5 15×2 30 30 30 Multiply left to right

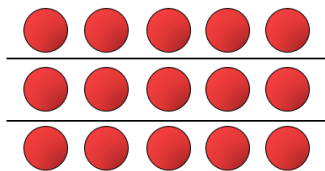| 13	$589 \div 19 = 31$ 19 | 38 | 57 | 76 | 95 | 114 | 133 | 152 | 171 | 190 3 1 19 | 5 8 9 − | 5 7 1 9 − | 1 9 0 Dad — divides — $4 \div 2 =$ Mum — multiplies — $3 \times 2 =$ Sister — subtracts — $3 - 1 - 2 =$ Brother — brings down Rex — dog — repeats	14	Minuend minus subtrahend is equal to the difference If we cannot subtract, we must exchange from the column to the left. Larger number first Place value is correct Start with the Ones Top number smaller than bottom number Knock next door to exchange a ten 5 1 ^{9} 1 6 0 0 0 0 − 7 0 0 5 9 3 0 0

15	lots of ___ make

There are ___ rows of ___ that makes_____

There are __3__ rows of __5__

__5__ + __5__ + __5__ = _15_

__3__ × __5__ = _15_

16	When dividing by 10 the number is being split into 10 equal parts

The number is 10 times smaller

When dividing by 10, we move the digits one place to the right

$$32 \div 10 = 3.2$$
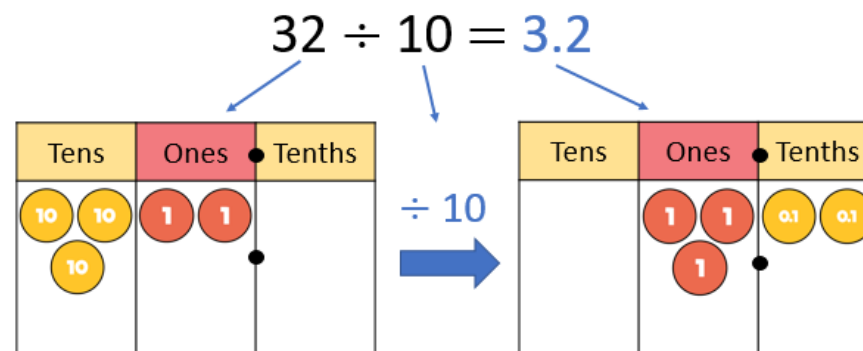
17

$589 \div 19 = 31$

19	38	57	76	95	114	133	152	171	190

		3	1
19	5	8	9
−		5	7
		1	9
−		1	9
			0

Dad — 4÷2= divides

Mum — 3x2= multiplies |

Sister — 3-1-2= subtracts

Brother — brings — down

Rex — dog — repeats

18

Equivalent means the same value

Find the LCD and make the fractions equivalent

Denominators the same it stays the same
Subtract numerators

$$\frac{1}{4} + \frac{1}{3}$$

$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$					

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

$$\frac{1}{4} + \frac{1}{3} = \frac{3}{12} + \frac{4}{12} = \frac{7}{12}$$

| 19 | Larger number first | | | 20 | When multiplying by 10, the digits move one place to the left |

19

Larger number first
Place value is correct
Line
Line
Line
Zero

$326 \times 32 = 10,432$

	Th	H	T	O	
		3	2	6	
×			3	2	
		6	5	2	(326×2)
+	9	7	8	0	(326×30)
1	0	4	3	2	

1 1

20

When multiplying by 10, the digits move one place to the left

When multiplying by 100, the digit move two places to the left

Th	H	T	O	Tth	Hth

21	Convert from mixed number to improper	22	Fraction of an amount ÷ by the denominator

21 Convert from mixed number to improper

Denominators the same, they stay the same

$$2\frac{1}{5} + 3\frac{3}{5} = \frac{29}{5} = 5\frac{4}{5}$$

I'm going to convert both mixed numbers to improper fractions first
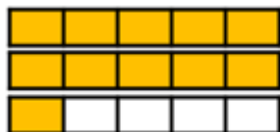
$$2\frac{1}{5} = \frac{11}{5}$$

$$3\frac{3}{5} = \frac{18}{5}$$

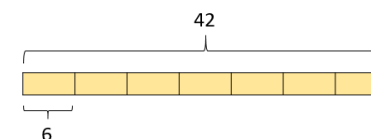**22** Fraction of an amount ÷ by the denominator

x by the numerator

$\frac{3}{7}$ of 42 = 18
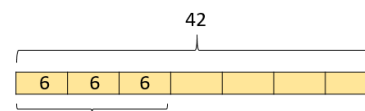
$42 \div 7 = 6$

$6 \times 3 = 18$

$\frac{1}{7}$ of 42 = 6

$42 \div 7$

| 23 | Minuend minus subtrahend is equal to the difference
If we cannot subtract, we must exchange from the column to the left.

Larger number first
Think about decimals like money £__.__p
Place value is correct
Drop the decimal point
Start with the smallest value
Top number smaller than bottom number
Knock next door to exchange a ten | 24 | Numerator stays the same
Do the inverse |

23:

	T	O	.	Tth	Hth	Thth
		⁴5̶	.	⁹1̶0̶	⁹1̶0̶	¹0
−		1	.	5	8	2
		3	.	4	1	8

24:

$$\frac{2}{3} \div 5 = \frac{2}{15}$$

$$3 \times 5$$

25

Equivalent means the same value

Find the LCD and make the fractions equivalent

Denominators the same it stays the same
Subtract numerators

$$\times 2 \begin{cases} \dfrac{3}{4} - \dfrac{3}{8} = \dfrac{3}{8} \\ \dfrac{6}{8} \end{cases}$$
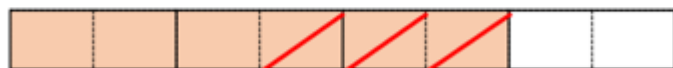
26

Minuend minus subtrahend is equal to the difference
If we cannot subtract, we must exchange from the column to the left.

Larger number first
Think about decimals like money £__.__p
Place value is correct
Drop the decimal point
Start with the smallest value
Top number smaller than bottom number
Knock next door to exchange a ten

	T	O	.	Tth	Hth	Thth
		$^4\cancel{5}$	.	$^9\cancel{\,^1 0}$	$^9\cancel{\,^1 0}$	$^1 0$
−		1	.	5	8	2
		3	.	4	1	8

Maths Fluency Year 6

27	% Percentage or percent means how many parts per hundred	28	% Percentage or percent means how many parts per hundred
	15% of 265		15% of 265
	Step 1.) Make the % a fraction over 100 15/100		Step 1.) Make the % a fraction over 100 15/100
	Step 2.) Divide by the denominator 265 ÷ 100= 2.65		Step 2.) Divide by the denominator 265 ÷ 100= 2.65
	Step 3.) Multiply by the numerator Use long multiplication		Step 3.) Multiply by the numerator Use long multiplication

Step 27 calculation:

$$\begin{array}{r} 2.6\ 5 \\ \times\ \ \ \ 1\ 5 \\ \hline 1\ 3.2\ 5 \\ 2\ 6.5\ 0 \\ \hline 3\ 9.7\ 5 \end{array}$$

Step 28 calculation:

$$\begin{array}{r} 2.6\ 5 \\ \times\ \ \ \ 1\ 5 \\ \hline 1\ 3.2\ 5 \\ 2\ 6.5\ 0 \\ \hline 3\ 9.7\ 5 \end{array}$$

| 29 | Drop the decimal point down | 30 | % Percentage or percent means how many parts per hundred |

Drop the decimal point down

$$4.01 \times 6 = 24.06$$

% Percentage or percent means how many parts per hundred

15% of 265

Step 1.) Make the % a fraction over 100   15/100

Step 2.) Divide by the denominator   265 ÷ 100= 2.65

Step 3.) Multiply by the numerator
Use long multiplication

$$
\begin{array}{r}
2.65 \\
\times \quad 15 \\
\hline
13.25 \\
26.50 \\
\hline
39.75 \\
\end{array}
$$

31	Multiply across	32	Convert from mixed number to improper or make the fractions equivalent
	$$\frac{3}{5} \times \frac{2}{3}$$		Denominators the same, they stay the same $$2\frac{1}{4} - \frac{5}{12}$$ $$\times 3$$ $$2\frac{3}{12}$$ $$2\frac{3}{12} - \frac{5}{12}$$

33	Larger number first

Larger number first
Place value is correct
Line
Line
Line
Zero

$326 \times 32 = 10,432$

	Th	H	T	O	
		3	2	6	
×			3	2	
		6	5	2	(326 × 2)
+	9	7	8	0	(326 × 30)
1	0	4	3	2	

34	Step 1.) Draw a number line

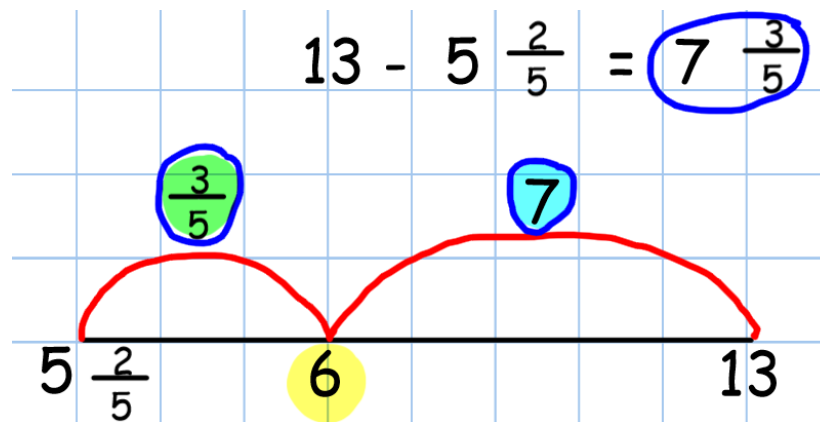Step 1.) Draw a number line
Step 2.) Mixed number at the start
          Integer at the end
Step 3.) Write the next whole number
Step 4.) How many parts to get to the next whole?
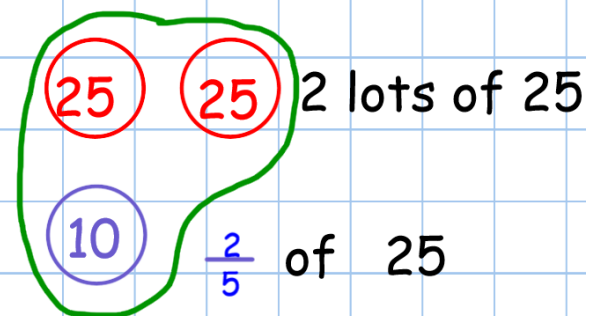Step 5.) How many whole ones to get to the end? Add them

$$13 - 5\frac{2}{5} = 7\frac{3}{5}$$

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Order of Operations

B	Brackets	$10 \times (4 + 2) = 10 \times 6 = 60$
I	Indices	$5 + 2^2 = 5 + 4 = 9$
D	Division	$10 + 6 \div 2 = 10 + 3 = 13$
M	Multiplication	$10 - 4 \times 2 = 10 - 8 = 2$
A	Addition	$10 \times 4 + 7 = 40 + 7 = 47$
S	Subtraction	$10 \div 2 - 3 = 5 - 3 = 2$

36

$2 \frac{2}{5}$ of $25 = 60$

×

(25) (25) 2 lots of 25

(10) $\frac{2}{5}$ of 25

- https://mathsbot.com/primary/ks2Mini
- https://vimeo.com/911532990