How shall I add?
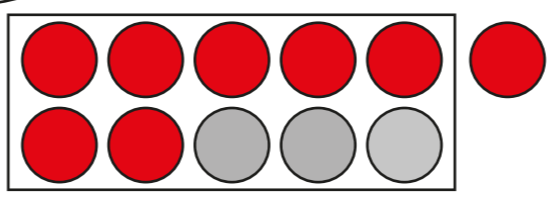
4 + 1, 6 + 3, 10 + 4
Number facts
Single digit numbers
Doubles
Ten and single digits

I just knew it!
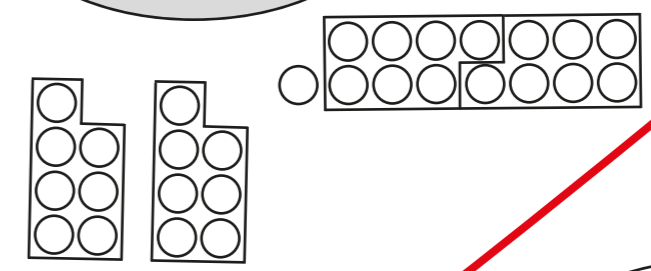
3 + 7
Use known addition facts

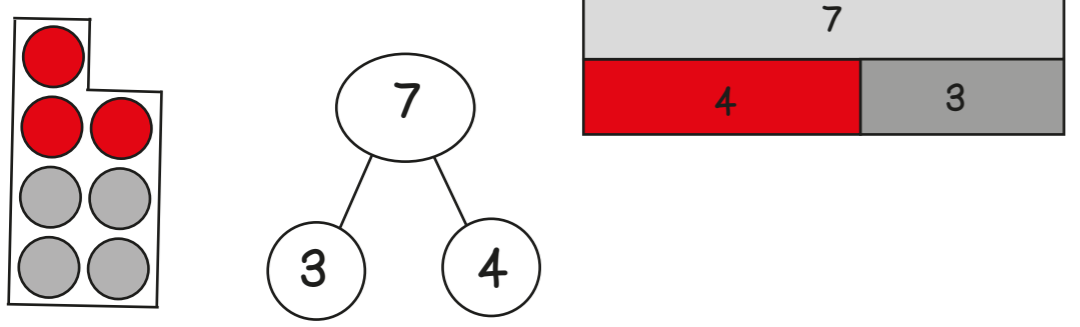If I know 3 + 7 = 10
then I know
3 + 8 = 11
because it is 1 more

7 + 8
Use near doubles

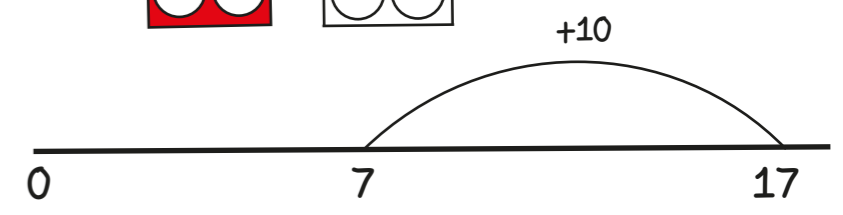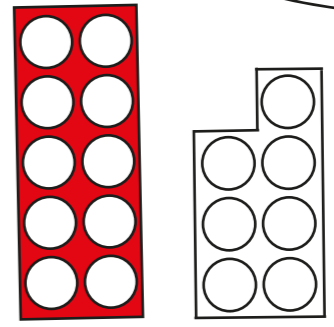If I know 7 + 7 = 14
then I know
7 + 8 = 15
because it is 1 more

7 = 3 + 4
Secure addition bonds of
single digits and ten

7

3   4

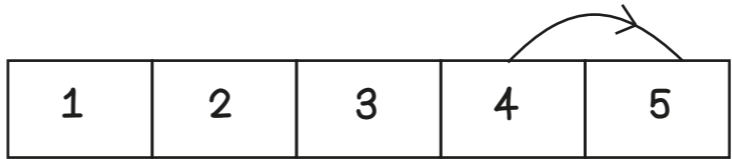| 7	
4	3

7 + 10
Add ten

+10

0   7   17

12 + 4
Counting on in 1s

+1   +1   +1   +1

0   12   13   14   15   16

Notice the relationships

24 + 1
Find one more

1 more than 4 is 5
1 more than 14 is 15
1 more than 24 is 25

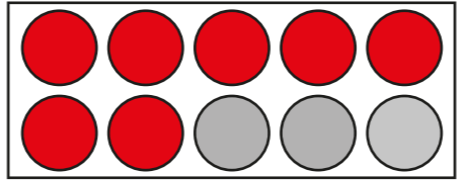| 1	2	3	4	5

7 + 4
Count all

CanDoMaths
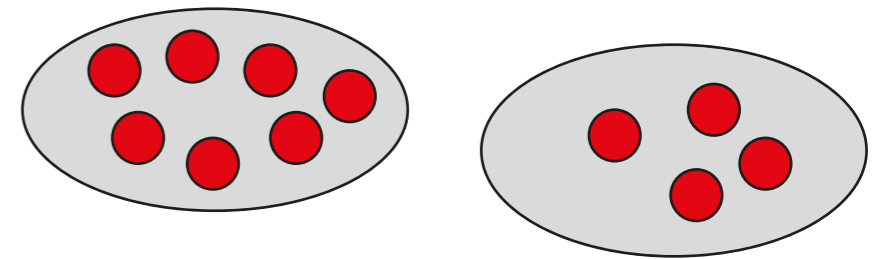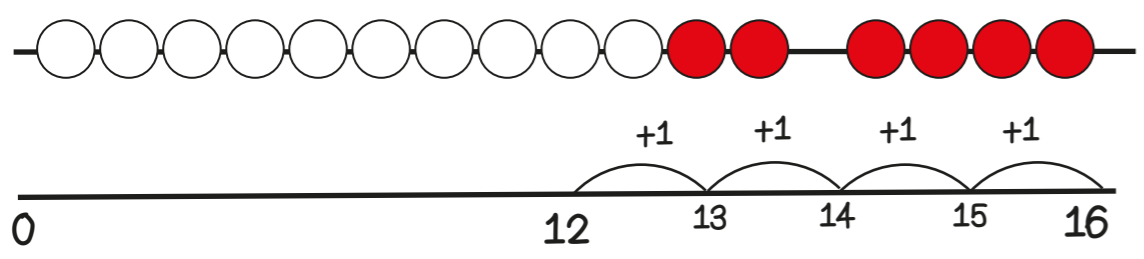
5 - 1, 7 - 3, 10 - 6
Number facts
Single digit numbers
Teens subtract single digits
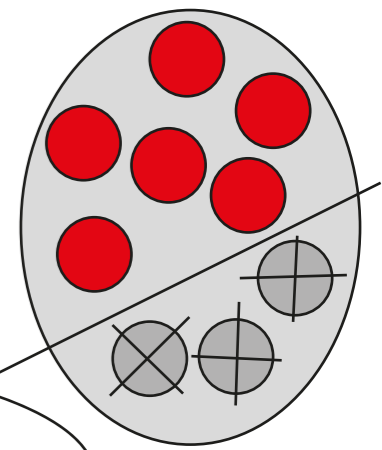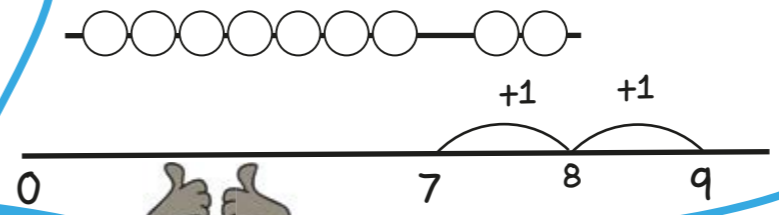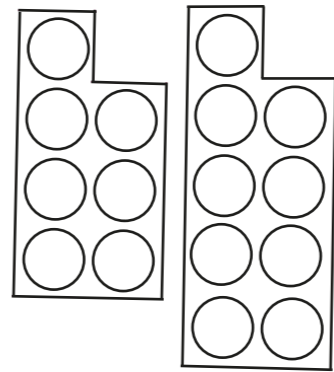
I just knew it!

3 + 7
Use known addition facts
to derive subtraction facts
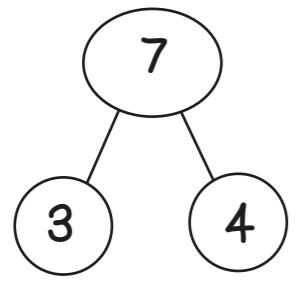
*If I know 3 + 7 = 10
then I know
10 - 3 = 7*

9 - 7
Find the difference between
two numbers

*9 is 2 more than 7
7 is 2 less than 9 so
the difference
between 7 and 9 is 2*

7 - 3 = 4
Secure subtraction facts of
single digits and ten

7	
4	3

7
3   4
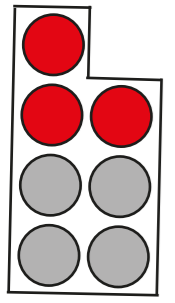
How shall I subtract?

9 - 3
Take away

+1   +1
0   7   8   9

16 - 4
Counting back in 1s

-1   -1   -1   -1
0   12   13   14   15   16
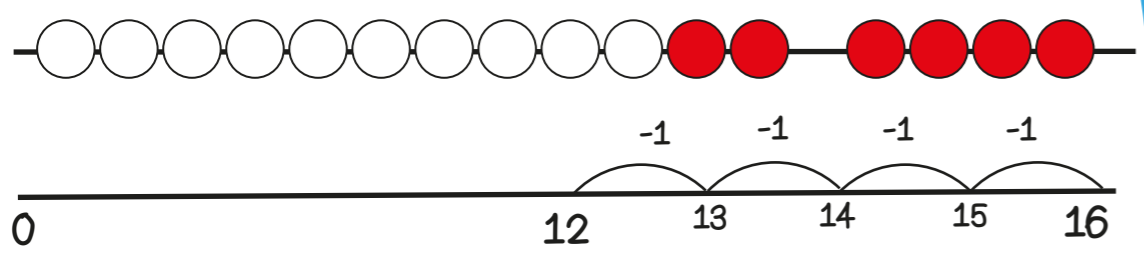
Notice the relationships

23 - 1
Find one less

1 less than 4 is 3
1 less than 14 is 13
1 less than 24 is 23

1	2	3	4	5

17 - 10
Take away ten

-10
0   7   17

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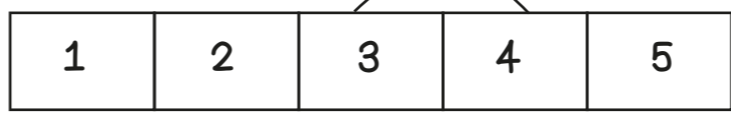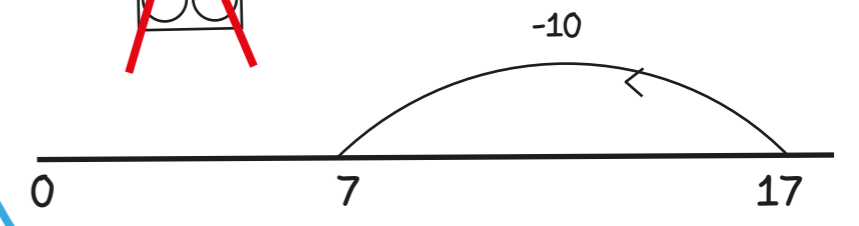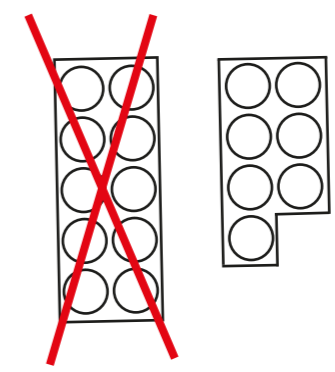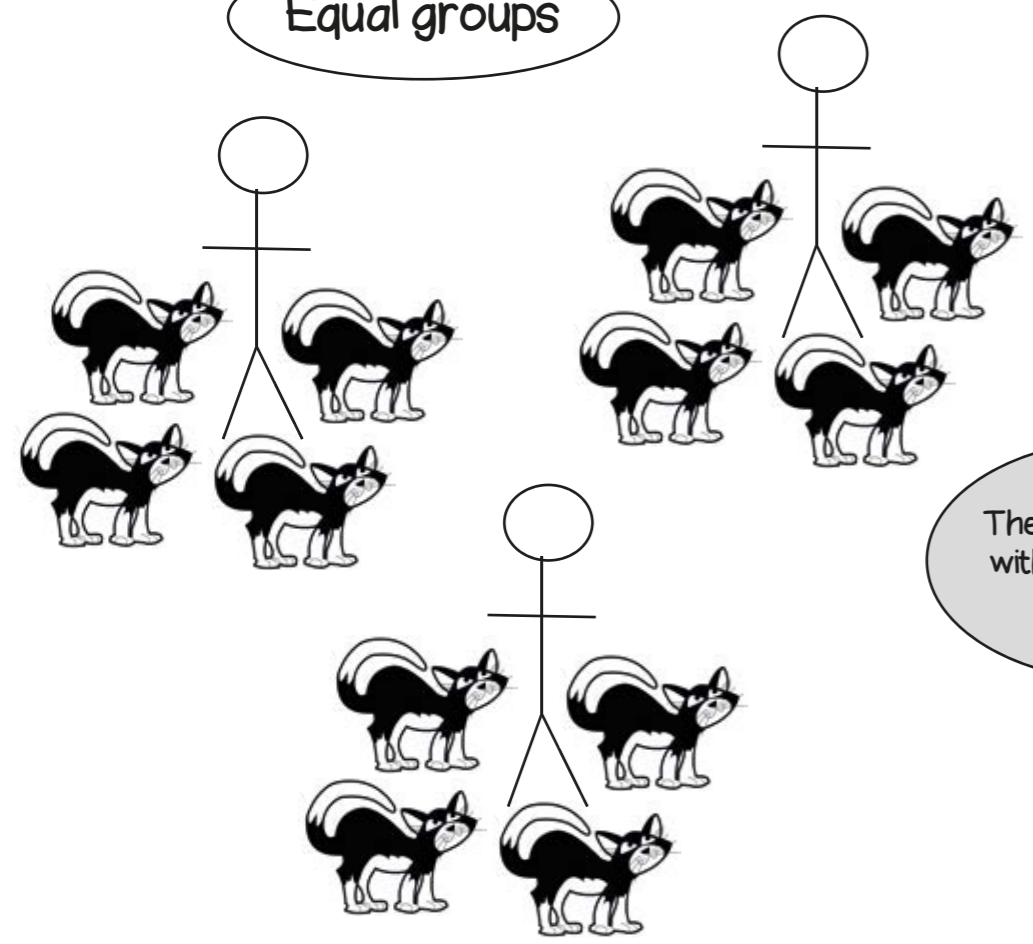
Equal groups

3 people each have 4 cats.
How many cats are
there in total?
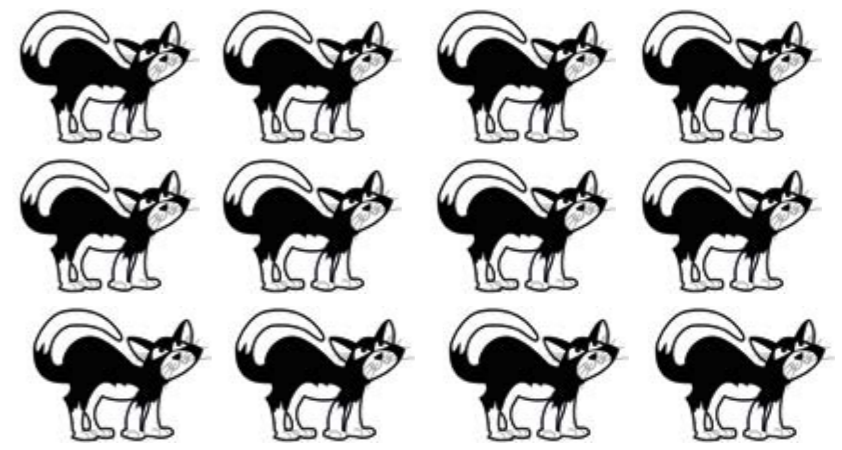
There are 3 groups
with 4 cats in each
group

Arrays

How shall I multiply?

Count in ones

1,2,3,**4**,5,6,7,**8**,9,10,11,**12**
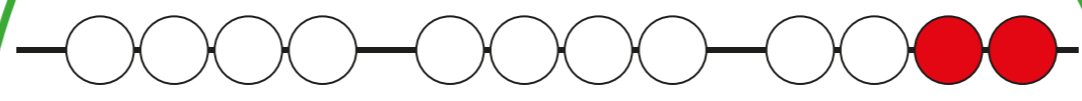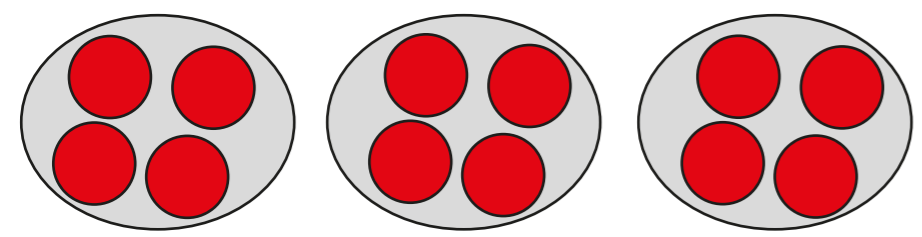
Repeated addition
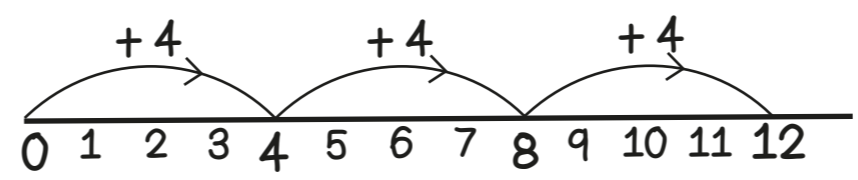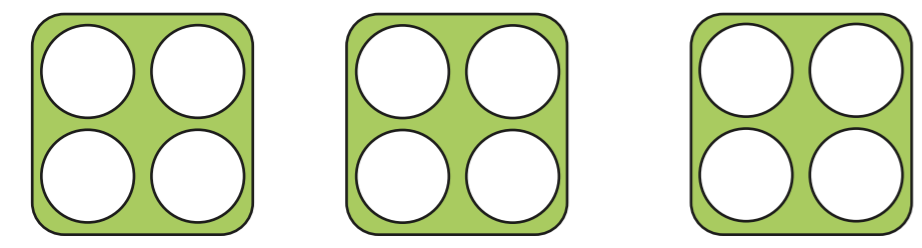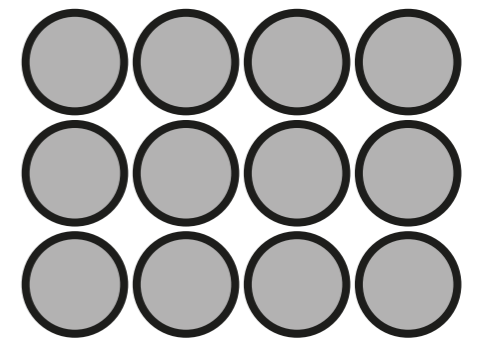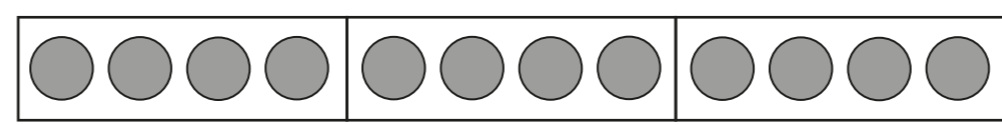
+4   +4   +4
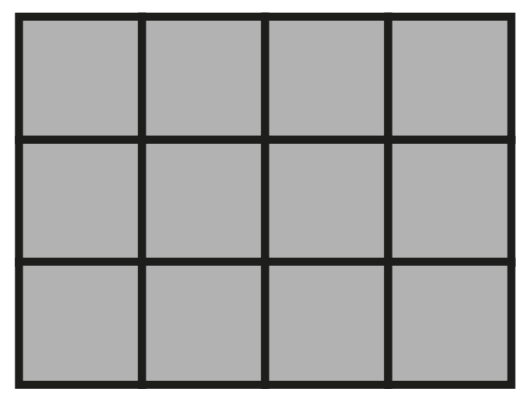
0 1 2 3 4 5 6 7 8 9 10 11 12

4 + 4 + 4 = 12

Sharing

12 shared into 3 equal groups

12 ÷ 3 = 4

Grouping

How many groups of 3 are there in 12?
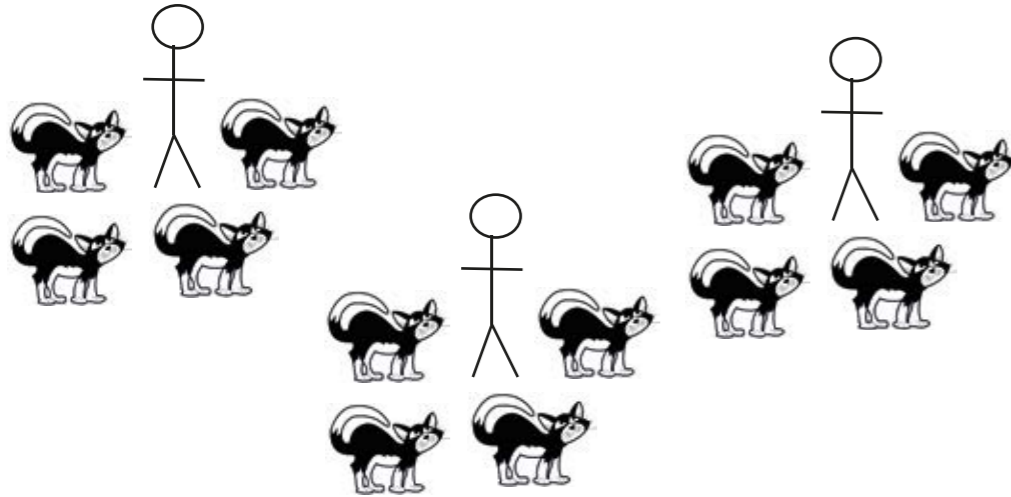
There are 12 cats.
Three people each have the same number of cats.
How many do they have each?

There are 12 cats.
Each person owns 3 cats.
How many people are there?

1 for you, 1 for you, 1 for you...
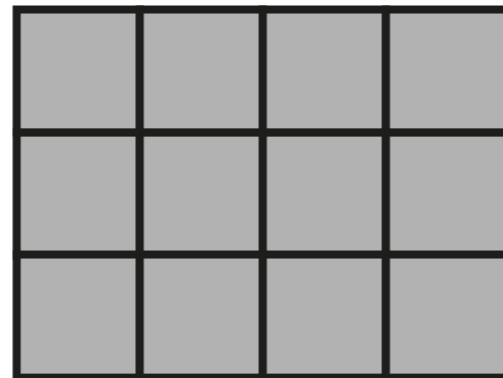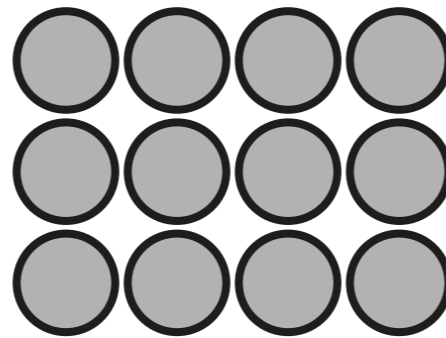
How shall I divide?
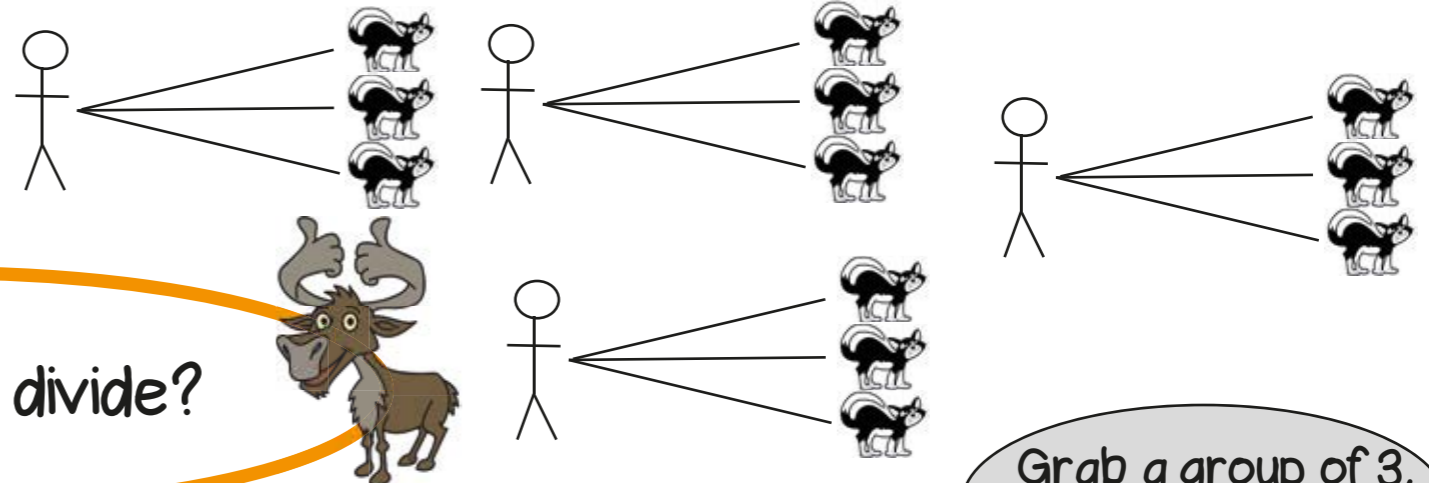
Grab a group of 3, grab a group of 3...

Bar model

12 can be described as 3 columns of 4 or 4 rows of three

12

+ 3   + 3   + 3   + 3

0 1 2 3 4 5 6 7 8 q 10 11 12
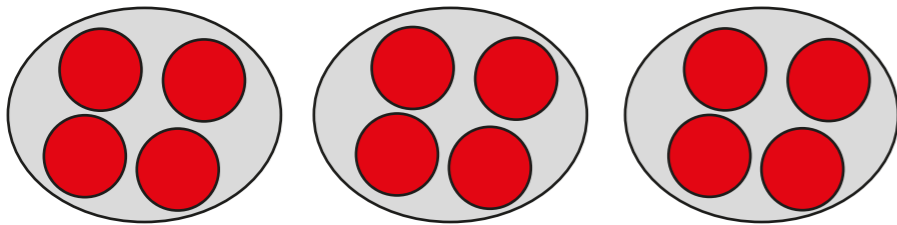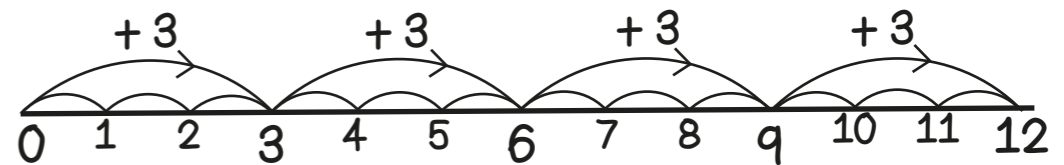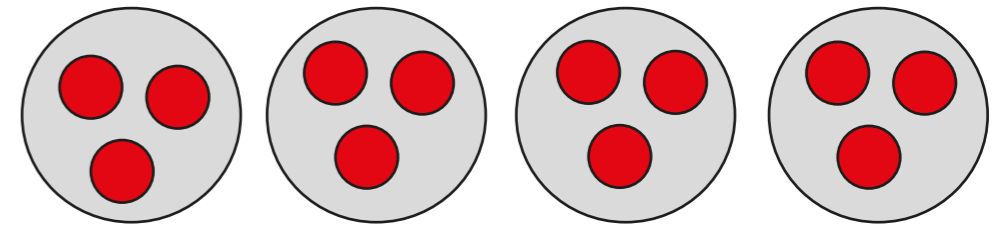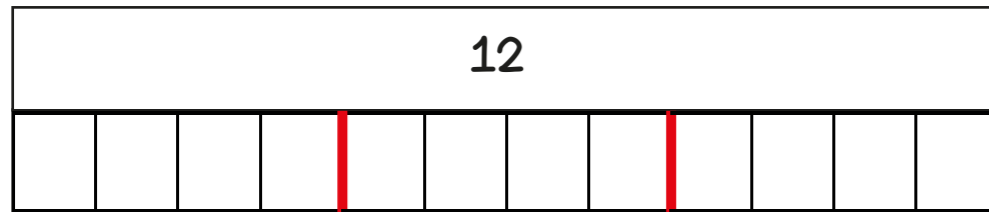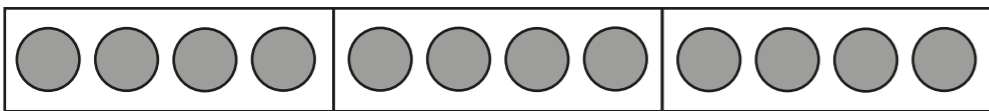
8 + 7, 9 + 9, 14 + 3
Number facts
Single digit numbers
Doubles
Teens and single digits

I just knew it!

13 + 17
Use known facts
30 + 70

If I know 3 + 7 = 10
then I know
3 tens + 7 tens = 10 tens

If I know 3 + 7 = 10
then I know
13 + 17 is 2 tens more
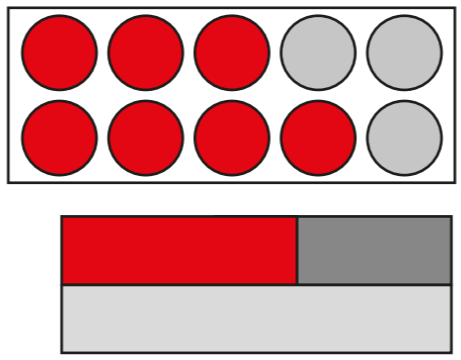
35 + 20
Add multiples of ten

If I know 3 + 2 = 5
then I know
3 tens + 2 tens = 5 tens
so 30 + 20 =50

10s   1s

+10   +10
0   35   45   55
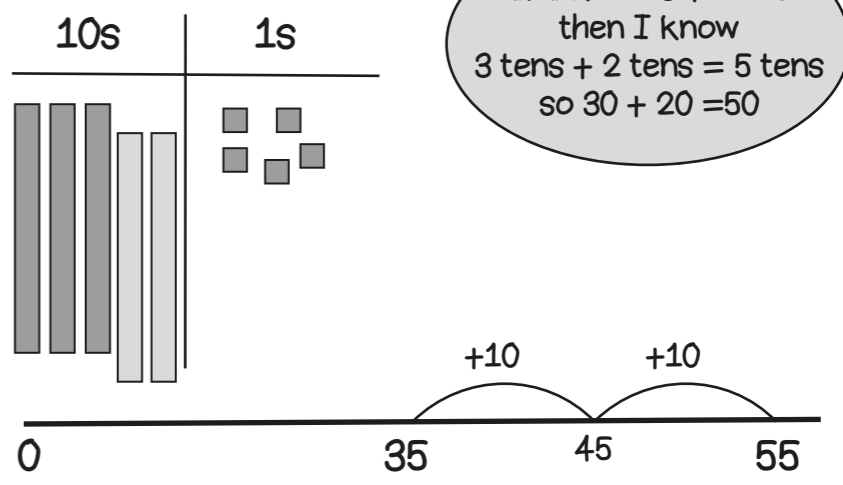
5 + 18
Greatest number first
then bridge

+2   +3
0   18   20   23

How shall I add?

37 + 19
Round then adjust

10s   1s
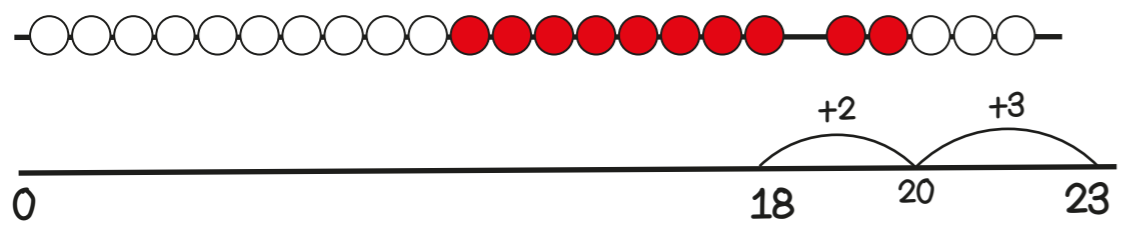
25 + 43
Partition and recombine

25 + 43
20 + 5 + 40 + 3

60 + 8 = 68

10s   1s

+10   +10   +5   +2
0   35   45   55   60   62

Add 20 then subtract 1

+20
-1
0   37   56   57
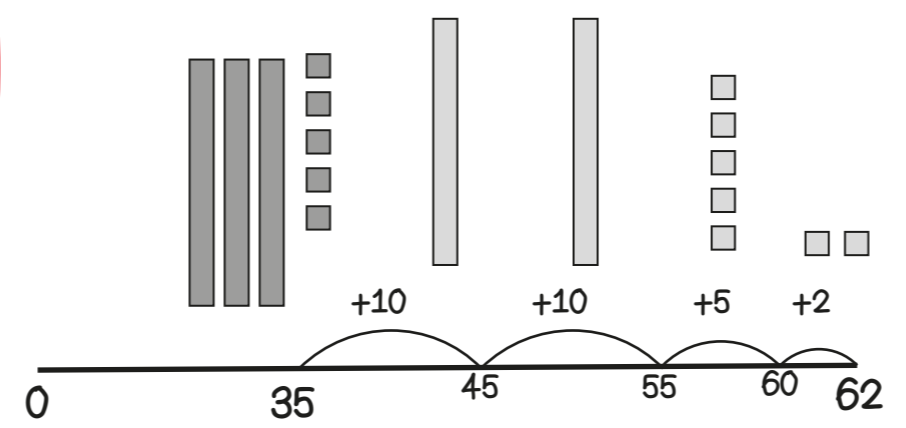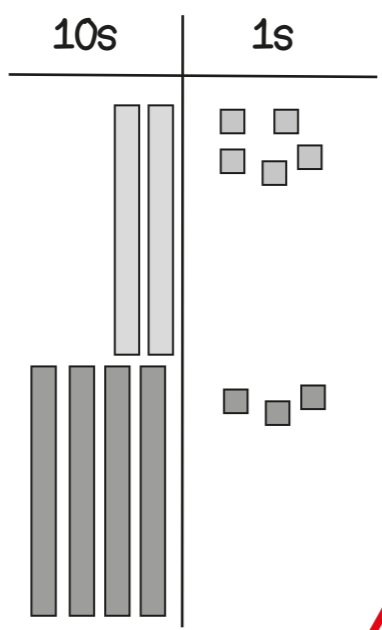
35 + 27
Count on in tens then ones

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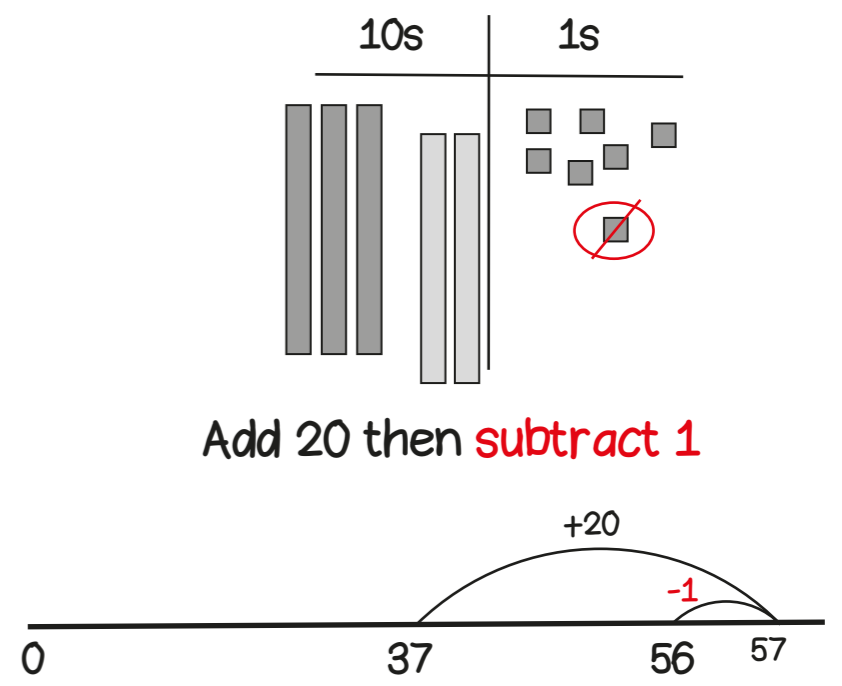
9 – 4, 13 – 5, 18 – 9
Number facts
Single digit numbers
Halves
Teens and single digits

I just knew it!

30 – 7
Use known facts
100 – 70

If I know 10 – 7 = 3
then I know
30 – 7 is 2 tens and 3
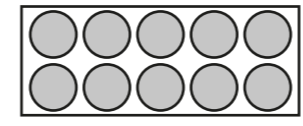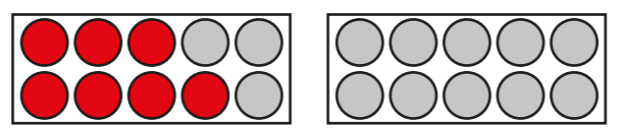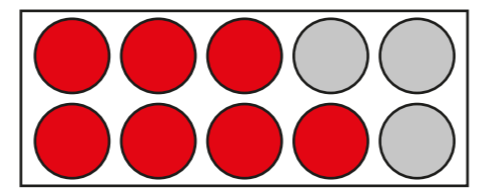
46 – 20
Count back: multiples of ten

If I know 4 – 2 = 2
then I know
4 tens – 2 tens = 2 tens
so 40 – 20 = 20

10s   1s

-10   -10
0   26   36   46
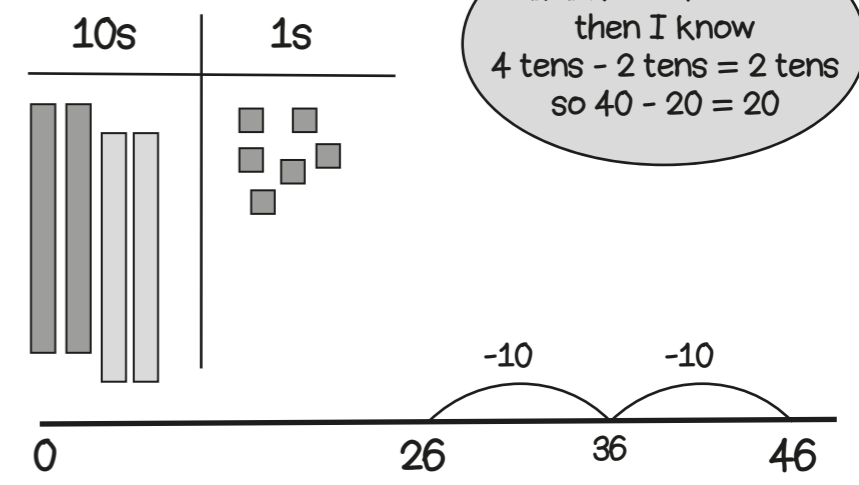
23 – 5
Count back: bridge through
a multiple of ten

-2   -3
0   18   20   23
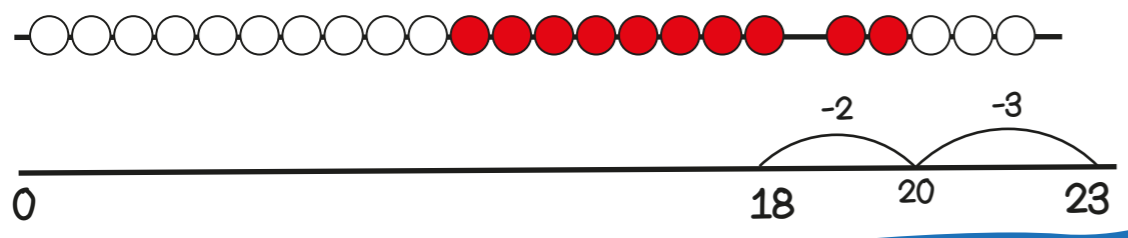
How shall I subtract?

47 – 19
Round then adjust

10s   1s
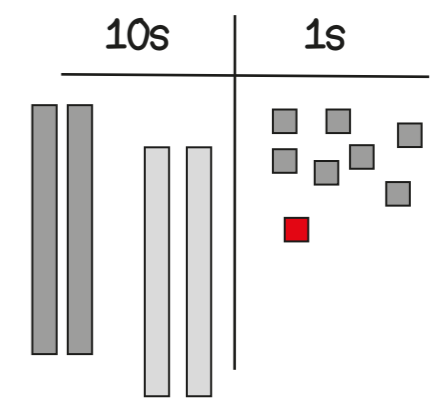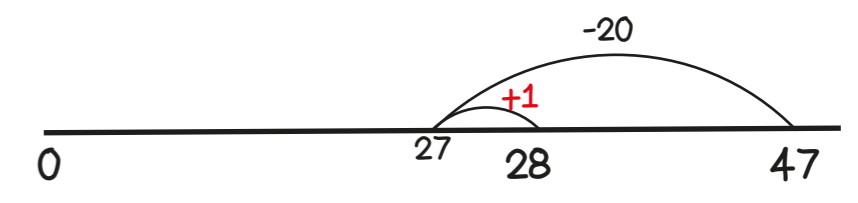
42 is 5 more than 37,
37 is 5 less than 42 so
the difference between
37 and 42 is 5

42 – 37
Find the difference between
two numbers

42
37   5

+3   +2
0   37   40   42

Take away 20 then add 1

-20
+1
0   27 28   47

-4   -10   -10
0   31   35   45   55
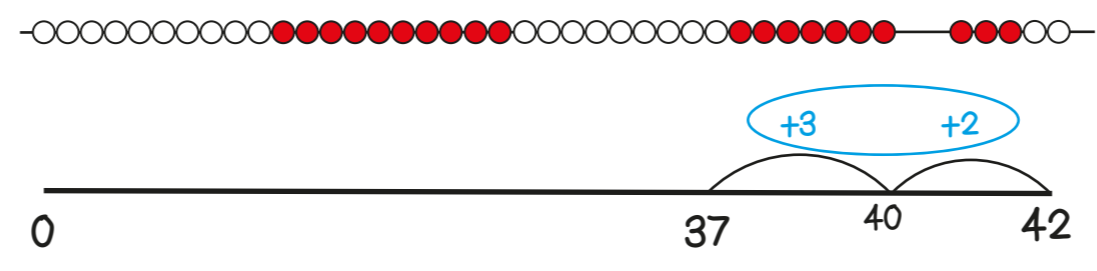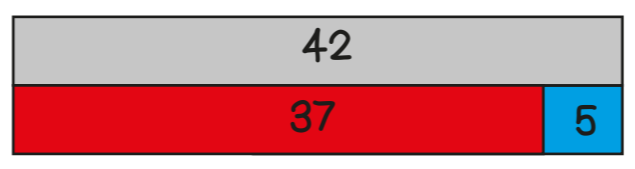
55 – 24
Count back in tens then ones

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2
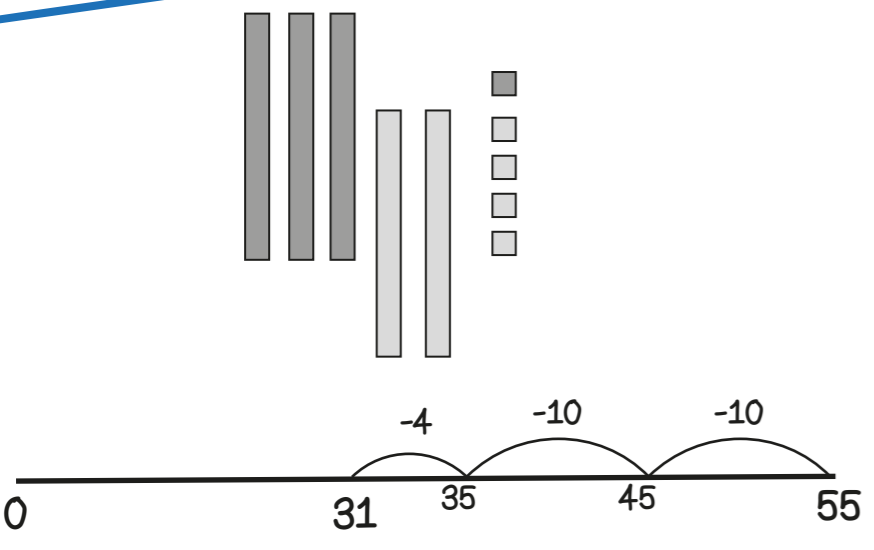
Equal groups

There are 3 groups with 4 cats in each group

3 people each have 4 cats. How many cats are there in total?

One to many correspondence

If each person has 4 cats, there are 4 times as many cats as people
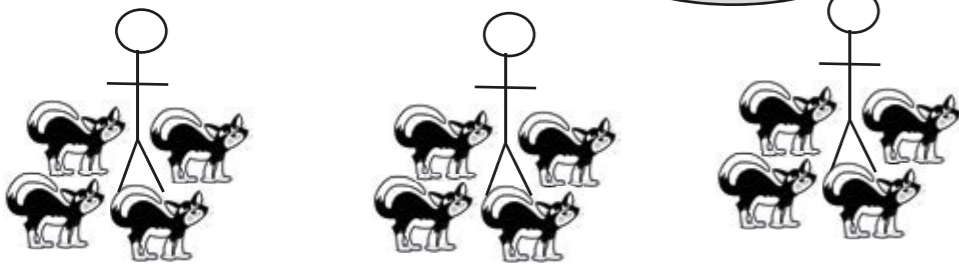
Four cats, multiplied by 3
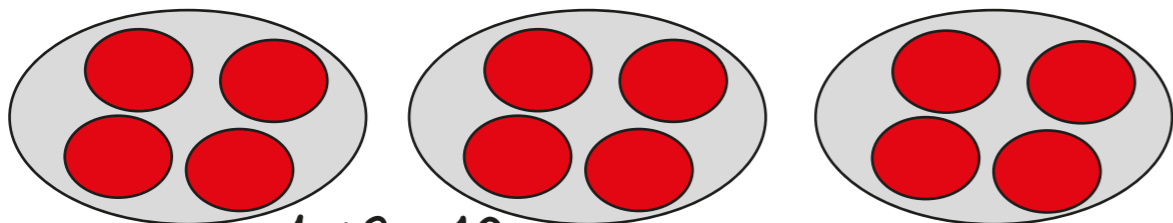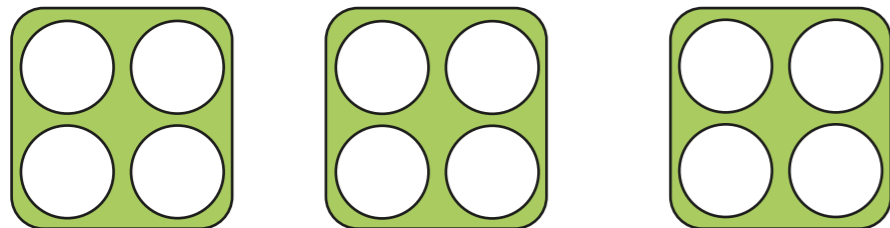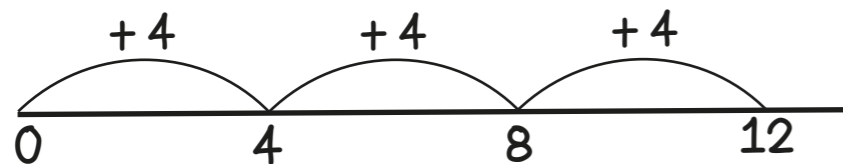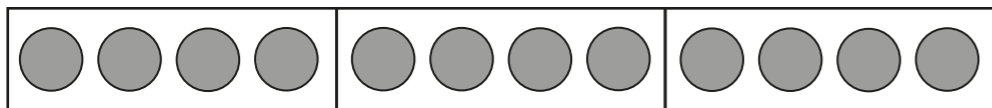
Recall of 2x, 5x and 10x tables

$4 \times 3 = 12$

People	Cats
1	4
2	8
3	12

Repeated addition

How shall I multiply?

Arrays

$4 \times 3 = 12$

$3 \times 4 = 4 \times 3$

4	4	4

+4 +4 +4

0   4   8   12

$4 + 4 + 4 = 12$
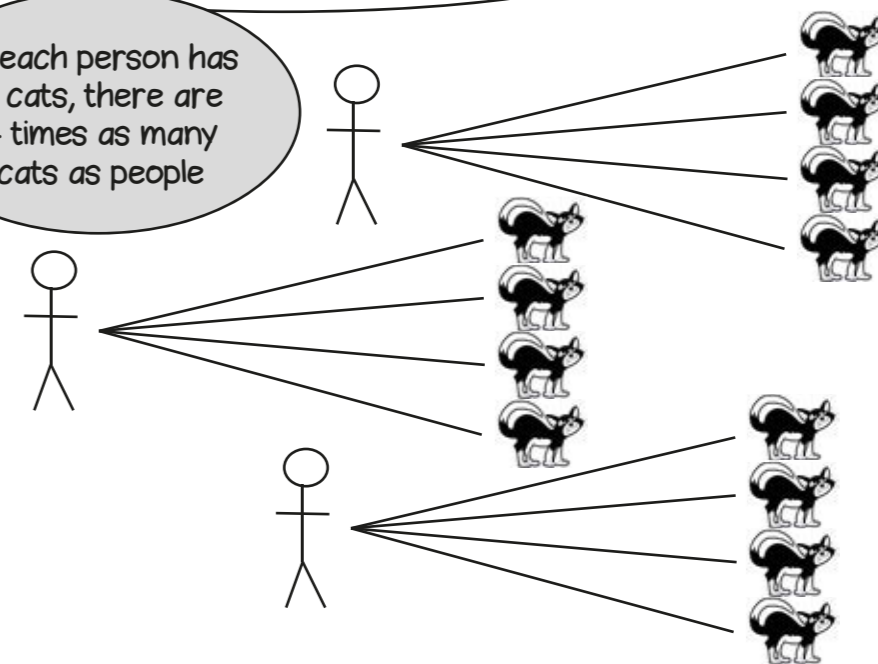
Count in ones

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Count in twos

2, 4, 6, 8, 10,12

Use a known fact

If 2 x 3 is 6, then 4 x 3 is double 6.
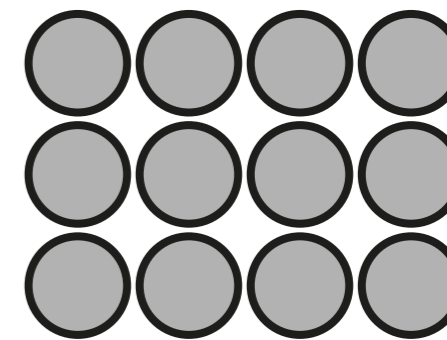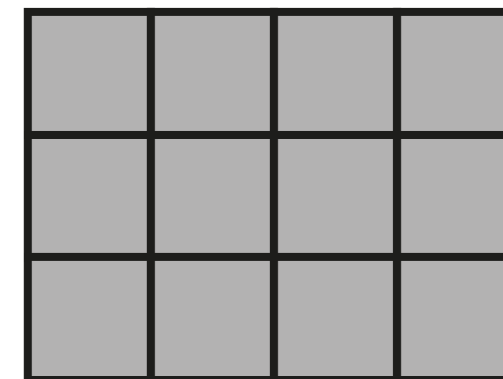
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Sharing

12 shared into 3 equal groups

12 ÷ 3 = 4

Grouping

How many groups of 3 are there in 12?

There are 12 cats.
Three people each have the same number of cats.
How many do they have each?

There are 12 cats.
Each person owns 3 cats.
How many people are there?

Recall and use 2x, 5x and 10x tables

1 for you, 1 for you, 1 for you…

Grab a group of 3, grab a group of 3…

How shall I divide?

Bar model

12 can be described as
3 columns of 4
or 4 rows of three

12		
4	4	4

+3   +3   +3   +3

0   3   6   9   12
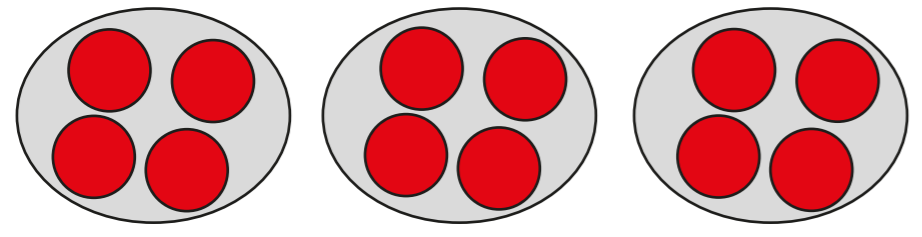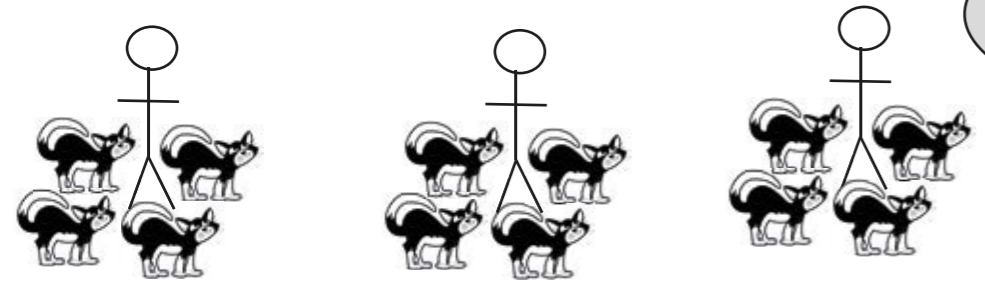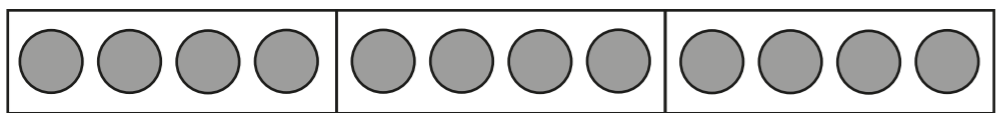
Link to fractions.
One third of 12 is 4

If I know 3 x 4 = 12
then I know 12 ÷ 3 = 4

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How shall I add?
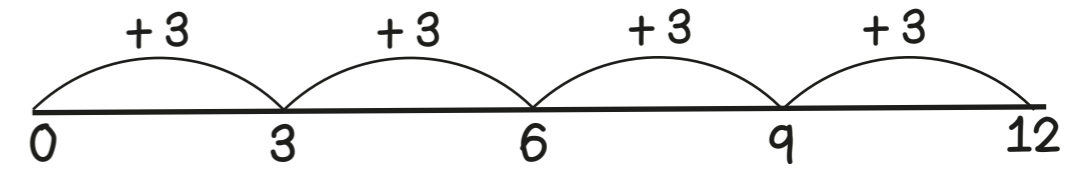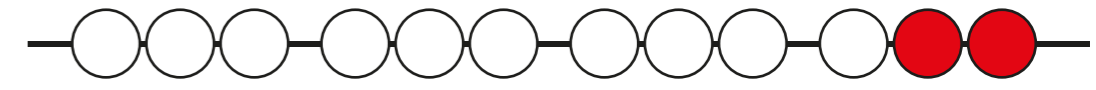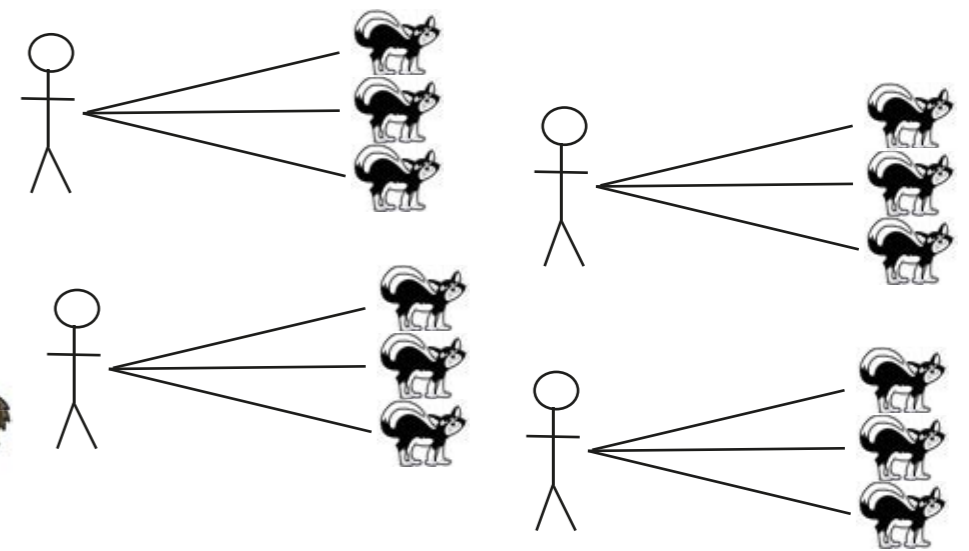
8 + 7, 9 + 9, 14 + 3
Number facts
Single digit numbers
Doubles
Tens to make 100

I just knew it!

150 + 80
Bridging boundaries

+50 +30
150   200   230

243 + 7
Use known facts
300 + 700

If I know 3 + 7 = 10
then I know
3 hundreds + 7 hundreds
= 10 hundreds

If I know 3 + 7 = 10
then I know
243 + 7 makes the
next multiple of 10

325 + 200
Add multiples of ten and hundred

If I know 3 + 2 = 5
then I know
3 hundreds + 2 hundreds
= 5 hundreds

100s   10s   1s

+100   +100
0   325   525
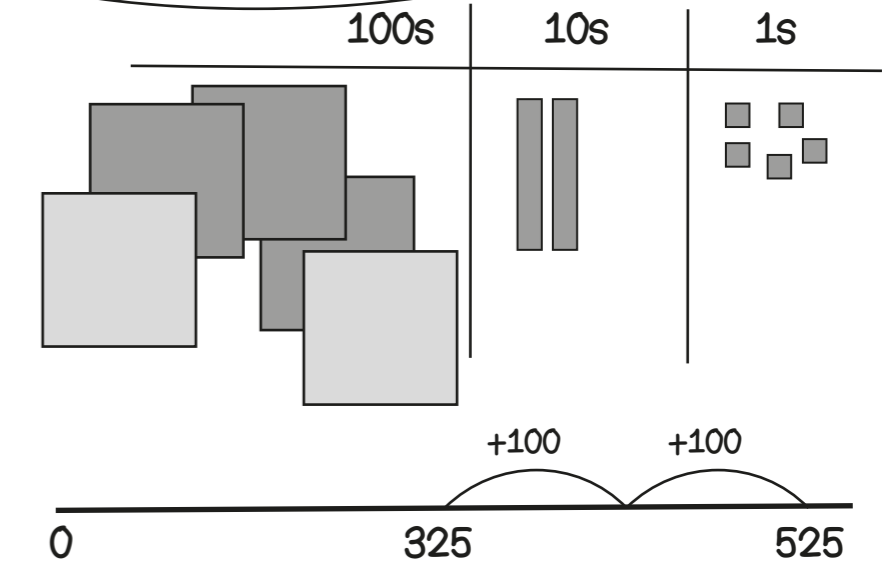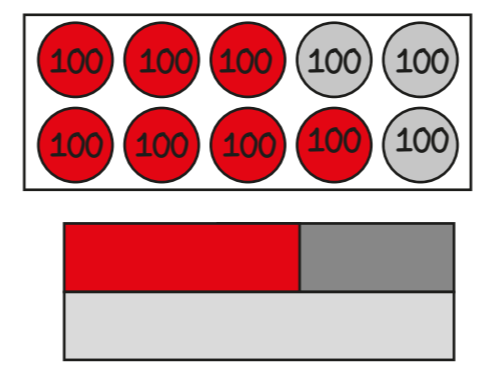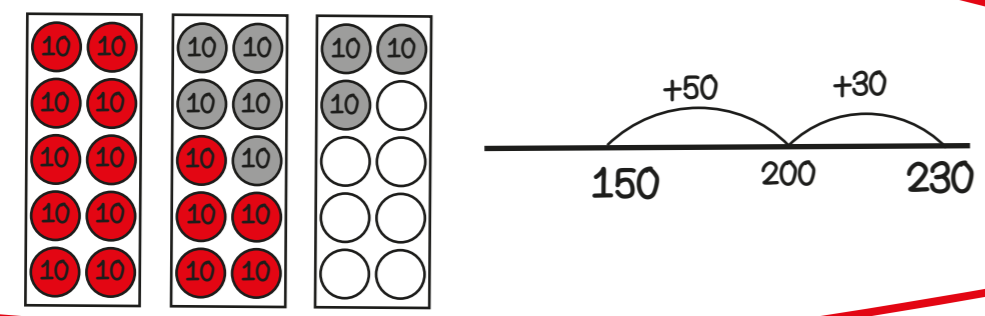
262 + 152
Formal written method

6 tens add 5 tens
= 11 tens or 110
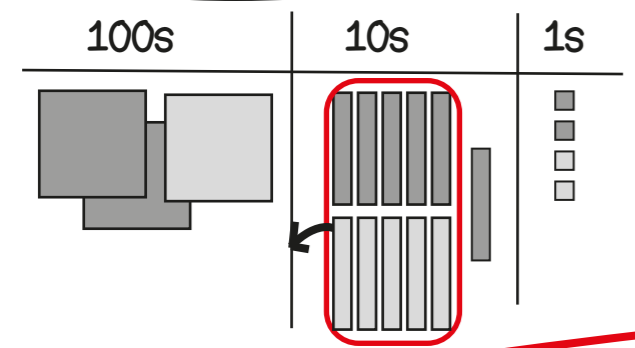
$$\begin{array}{r} 2\;6\;2 \\ +\;1\;5\;2 \\ \hline 4\;1\;4 \\ \hline {\scriptstyle 1} \end{array}$$

100s   10s   1s
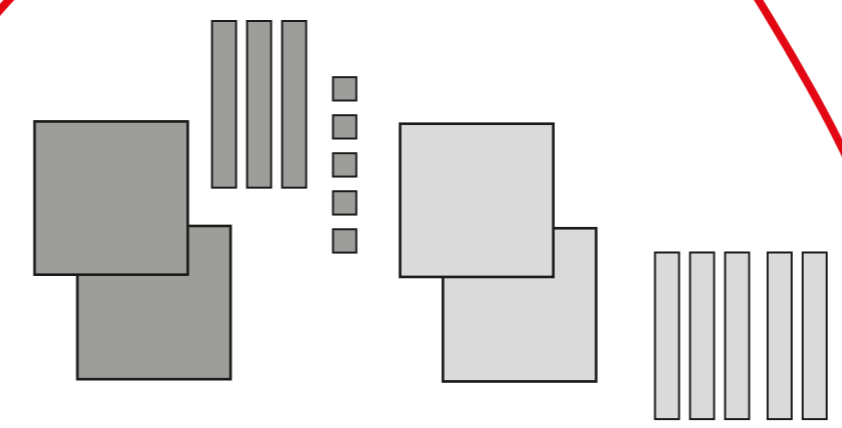
237 + 199
Round then adjust

100s   10s   1s
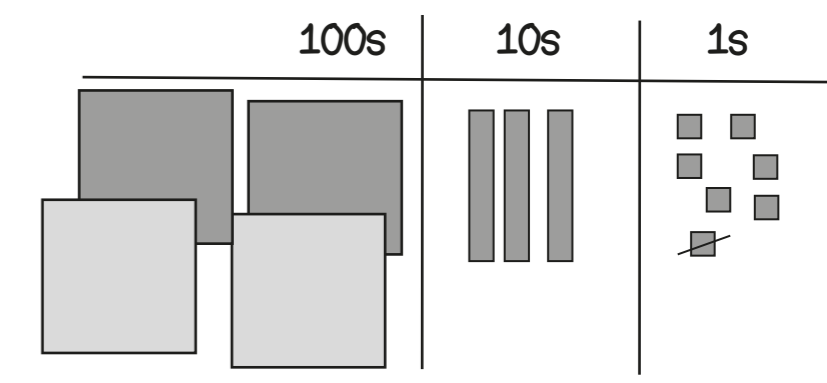
Add 200 then subtract 1

+200
           -1
0   237   436 437
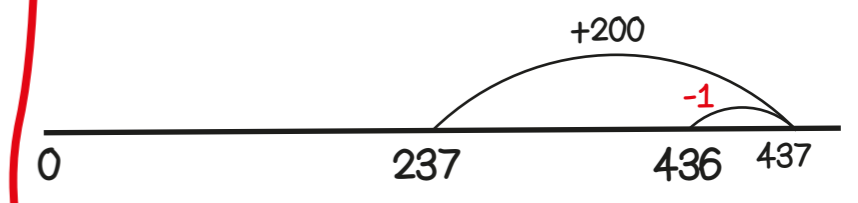
250 + 360
Partition and recombine

100s   10s   1s
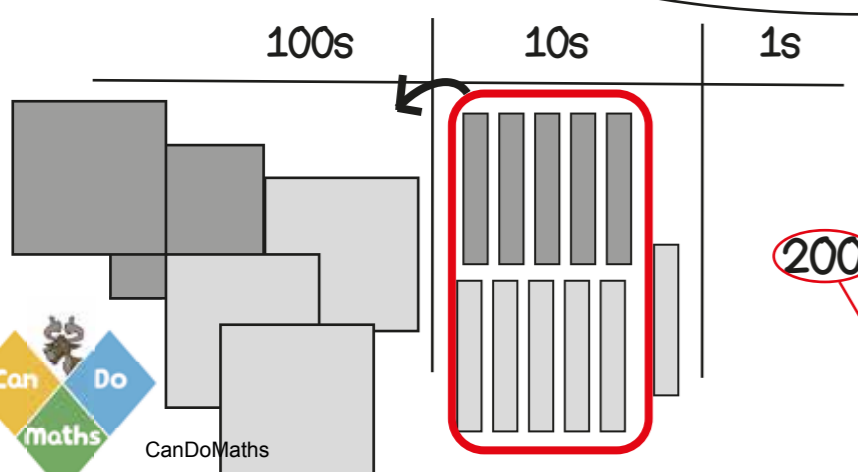
200 + 50 + 300 + 60

500 + 110 = 610

+100   +100   +50
0   235   335   435   485
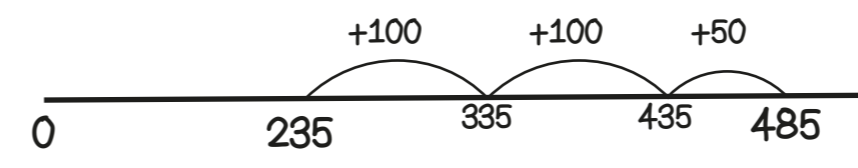
235 + 250
Count on in hundreds then tens

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How shall I subtract?

15 - 8, 18 - 5
Number facts
Single digit numbers
Teens and single digits

I just knew it!

240 - 7
Use known facts
1000 - 700

If I know 10 - 7 = 3
then I know
10 hundreds - 7 hundreds
= 3 hundreds

100 100 100 100 100
100 100 100 100 100

10 - 7 = 3

If I know 10 - 7 = 3
then I know
any multiple of 10,
take away 7 leaves
3 in the ones.

525 - 300
Take away multiples of ten
and a hundred

If I know 5 - 3 = 2
then I know
5 hundreds - 3 hundreds
= 2 hundreds

100s   10s   1s

-100   -100   -100

225   525

230 - 80
Bridging boundaries
by counting back in efficient steps

230 - 30 - 50 = 150

-50   -30

0   150   200   230
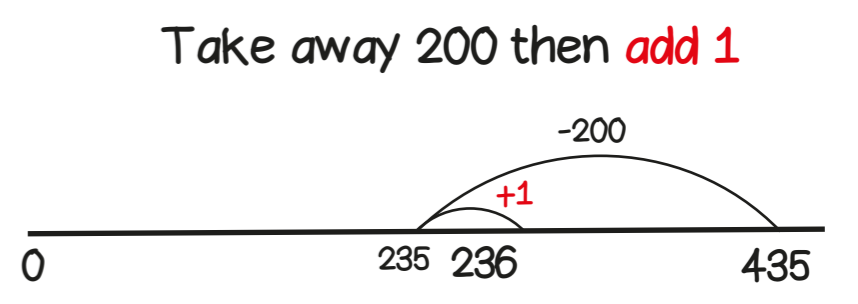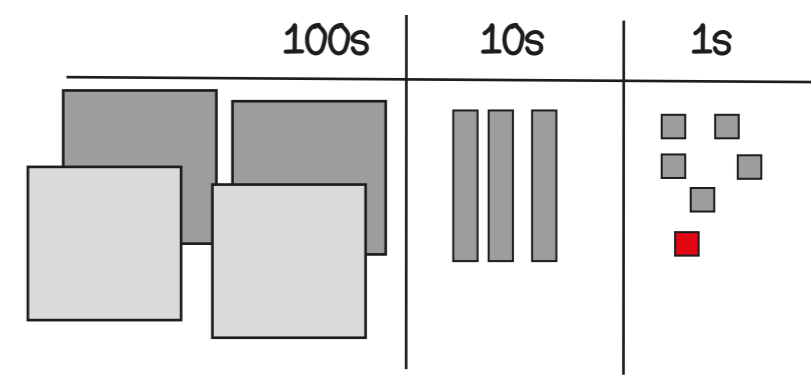
234 - 152
Formal written method

$$\begin{array}{r} 2^{1}3^{1}4 \\ -\ 1\ 5\ 2 \\ \hline 8\ 2 \end{array}$$

234 = 100 + 130 + 4

100s   10s   1s
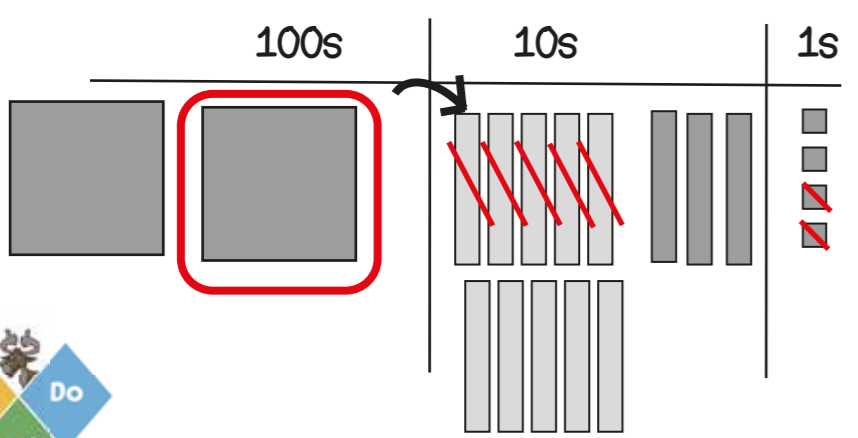
335 - 326
Find the difference
between two numbers

335 is 9 more than 326
326 is 9 less than 335
so the difference between
them is 9

+4   +5

326   330   335

335
326   9

435 - 199
Round then adjust

100s   10s   1s

Take away 200 then add 1

-200

+1

0   235 236   435

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3

How shall I multiply?
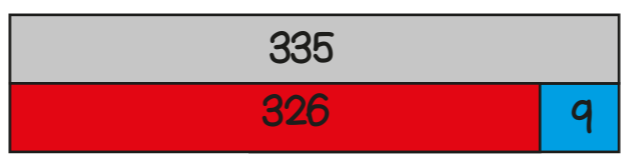
Rapid recall of 2x, 5x, 10x (year 2) 3x, 4x, 8x (year 3) multiplication tables

Multiply by 10

100s	10s	1s
		■ ■

2
↓ x10
20
↓ x10
200

6 x 4 Use known facts and place value

40 is ten times greater than 4
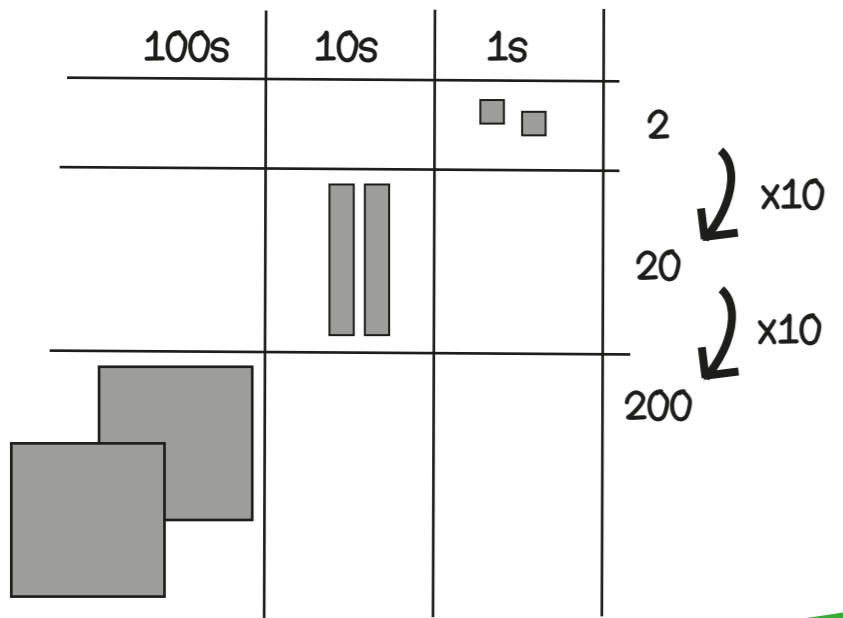
6 x 4 = 24
60 x 4 = 240
6 x 40 = 240

6 x 10 x 4
= 24 x 10

8 x 3 Repeated addition

8 + 8 + 8 = 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3

8	8	8

+8   +8   +8

0   8   16   24
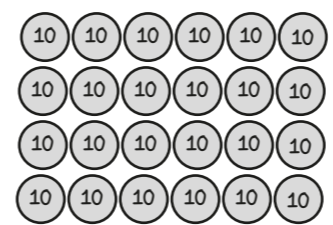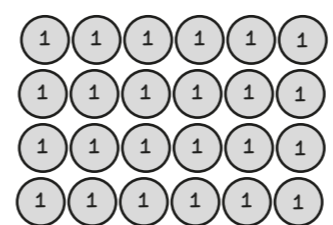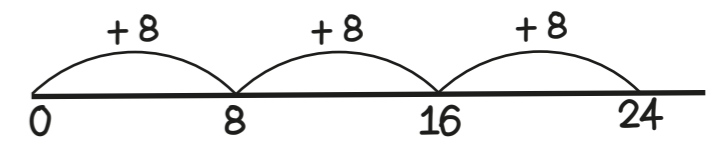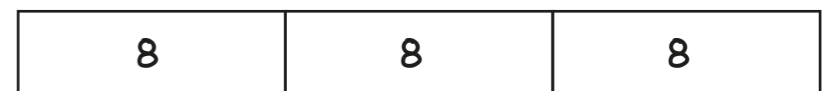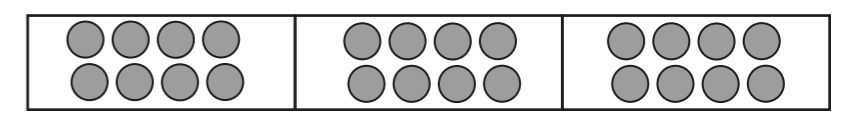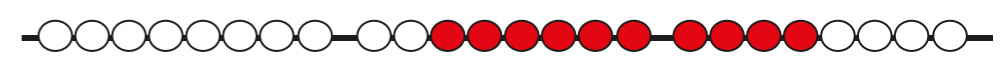
Arrays

If I know 3 x 8 then I know 8 x 3

5 x 18 Double and halve

5 x 18
= 5 x 2 x 18 ÷ 2
= 10 x 9
= 90

18
10 | 5
9
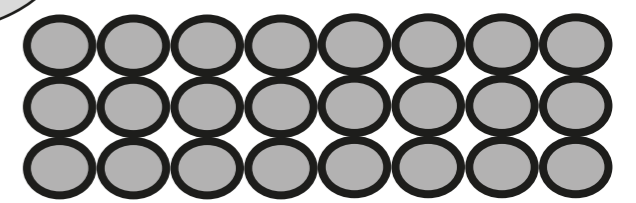
17 x 4 Partition and recombine

10 x 4 + 7 x 4
40 + 28 = 68

17 x 4

| 1 0 | 7 |

| 40 | 28 |
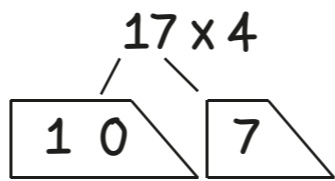
Scaling

The red tower is 3 times taller than the grey tower

24cm
8cm
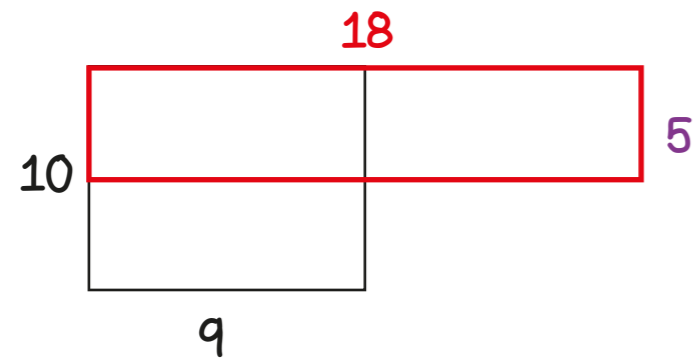
17 x 4 Formal written method

	10	7
4	40	28

17
x 4
68
2

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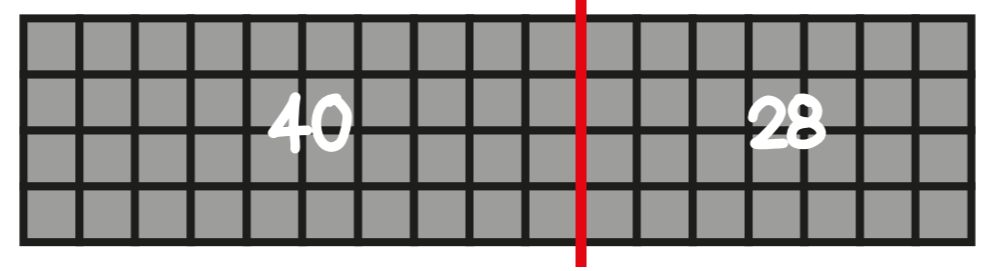
Known facts:
Use 2x, 5x, 10x (year 2) 3x, 4x, 8x (year 3) multiplication tables to derive division facts

$24 \div 4$
Use known facts and place value

240 is ten times greater than 24

$$24 \div 4 = 6$$
$$240 \div 40 = 6$$
$$240 \div 4 = 60$$

24 biscuits shared between 4 people means they will get 6 biscuits each.
If there are 10 times as many people and 10 times as many biscuits, how many biscuits each now?

How many 40s are there in 240?

$240 \div 40$
Repeated addition

$$240 \div 40 = 6$$
How many steps of 40 make 240?

$+ 40 \quad + 40 \quad + 40 \quad + 40 \quad + 40 \quad + 40$
0   40   80   120   160   200   240
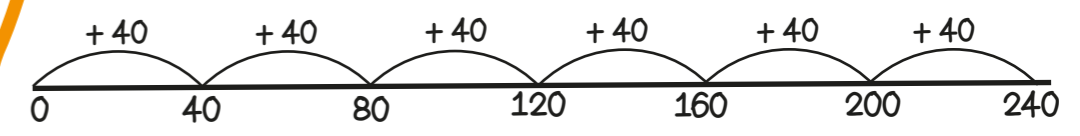
$200 \div 10$
Divide by 10

$200 \div 10 = 20$ so 20 is ten times smaller than 200

100s	10s	1s

200
$\div 10$
20
$\div 10$
2

A tenth of ▌ is ■

A tenth of 1 is 1 tenth
so $1 \div 10 = \frac{1}{10}$

How shall I divide?

$45 \div 3$
Sharing equally

10s	1s

10s	1s
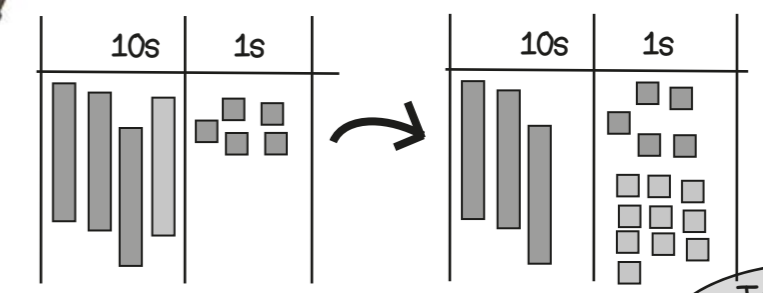
Ten for you, ten for you, ten for you…

45
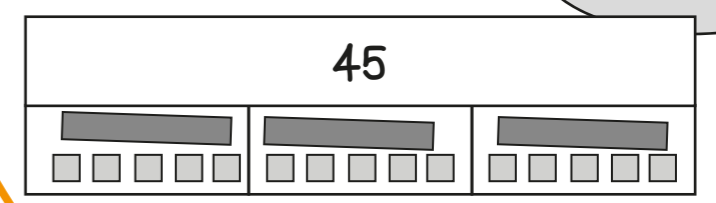
Link to fractions

$52 \div 4$
Partition and recombine

ten lots and the rest

$52 \div 4$
40   12
$\div 4$ $\div 4$
10   +   3   =   13
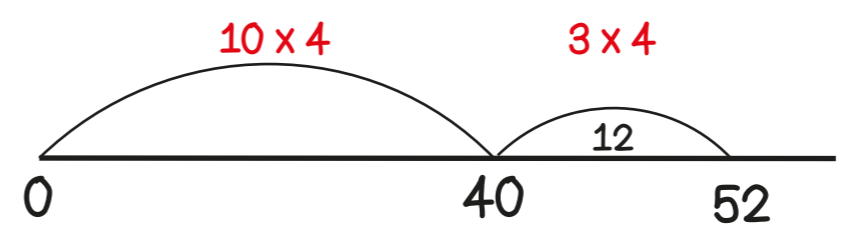
$42 \div 6$
Double and halve

If there are half as many biscuits and half as many people…

$$42 \div 6 = 21 \div 3$$

42					
7	7	7	7	7	7

21		
7	7	7

10 x 4   3 x 4

12

0   40   52

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0.9 + 0.9, 74 + 26
Number facts
Single digit decimals
Doubles
Bonds of 100

I just knew it!

7 + 8
Use known facts

If I know 7 + 8 = 15
then I know
0.7 + 0.8 = 1.5

70 + 80 = 150
700 + 800 = 1,500
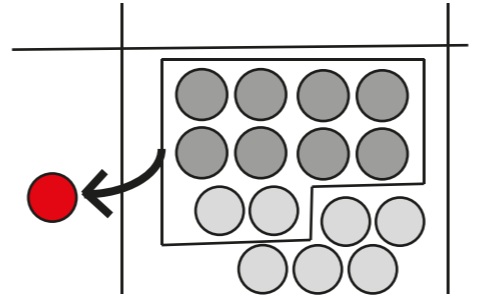
2,403 + 3,020
Use place value to add

If I know 2 + 3 = 5
then I know
2000 + 3000 = 5 000

I have noticed,
one number has no
hundreds or ones, the
other has no tens.

1000s	100s	10s	1s

1.6 + 0.7
Bridge through boundaries
by counting in efficient steps
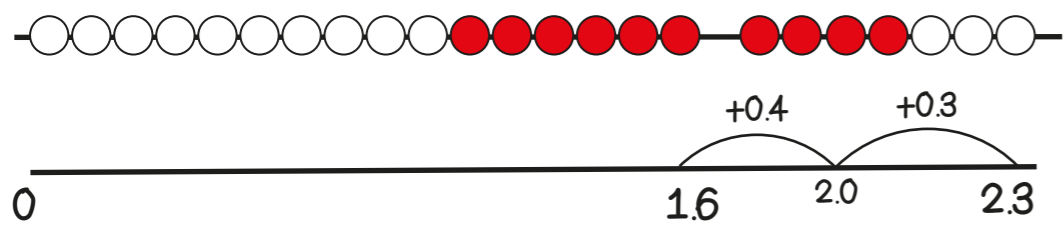
+0.4   +0.3

0   1.6   2.0   2.3

How shall I add?

3,356 + 1,998
Round then adjust

1000s	100s	10s	1s

Add **2,000** then *take away 2*

5,250 + 2,360
Partition and recombine

5000 + 200 + 50 + 2000 + 300 + 60

7000 + 500 + 110 = 7610

+2,000

-2

3,356   5,354   5,356

5354

3356   2000

5,748 + 3,374
Formal written method

Exchange ten of
these for one of
those!

Regroup and rename

$$5,748$$
$$+\ 3,374$$
$$\overline{9,122}$$
$$1\ 1\ 1$$

1000s	100s	10s	1s

1000s	100s	10s	1s

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How shall I subtract?
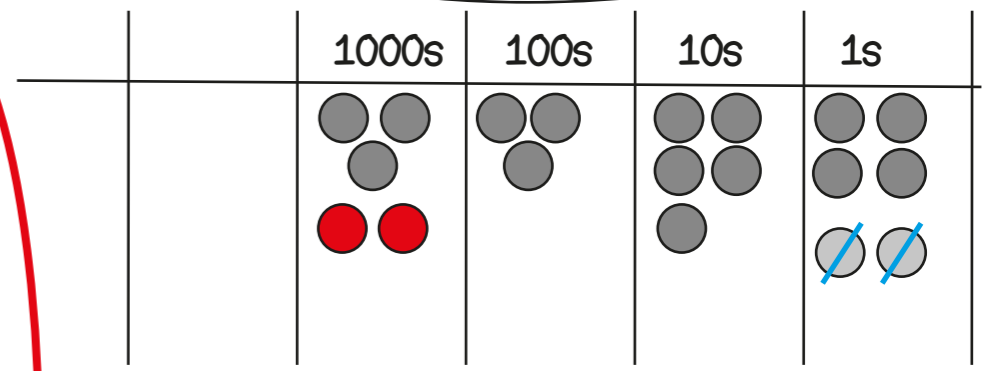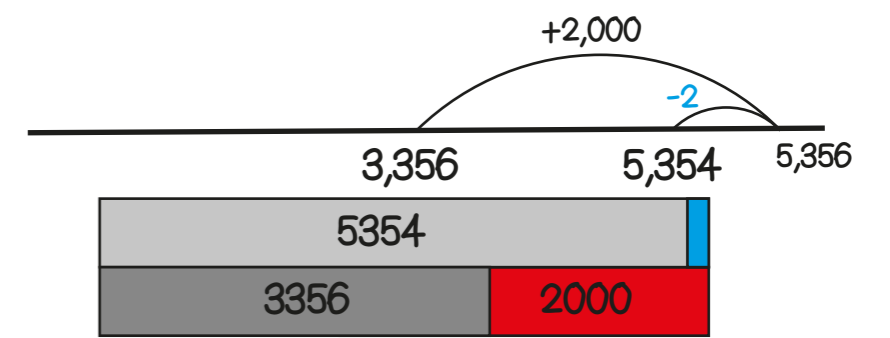
13 - 5, 1.8 - 0.8
Number facts
Single digit numbers
Halves
Wholes and tenths

I just knew it!

15 - 8 = 7
Use known facts

If I know 15 - 8 = 7 then I know 1.5 - 0.8 = 0.7

150 - 80 = 70
1500 - 800 = 700
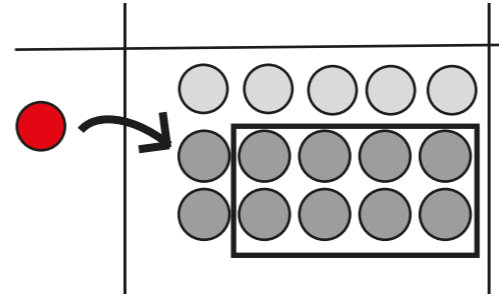
6,342 - 3,020
Use place value to subtract

By using place value counters it is easy to see how to take away
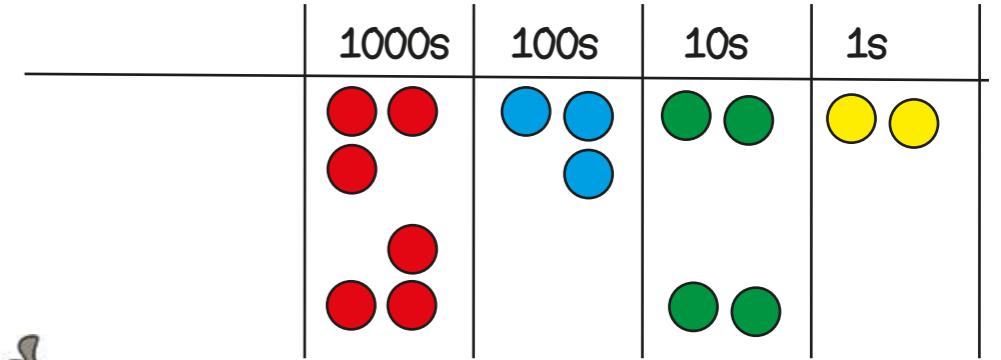
1000s	100s	10s	1s

1.5 - 0.7
Bridge through boundaries
by counting in efficient steps

- 0.2   - 0.5
0.8   1.0   1.5

4.56 - 1.99
Round then adjust

1s	$\frac{1}{10}$ s	$\frac{1}{100}$ s

Take away **2** then **add one hundredth**
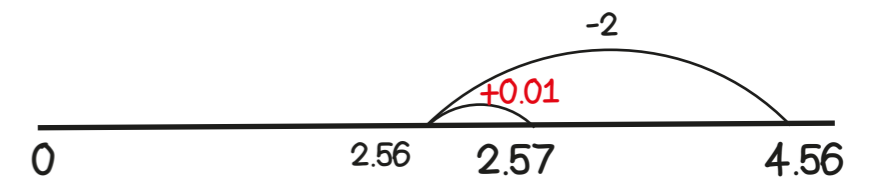
-2
+0.01
0   2.56   2.57   4.56

5,352 - 2,136
Formal written method

Exchange ten of these for one of those!

Regroup and rename

$$\begin{array}{r} 4\ ^1 4\ ^1 \\ 5,3\cancel{5}\cancel{2} \\ -\ 2,436 \\ \hline 2,916 \end{array}$$

1000s	100s	10s	1s

4007 - 3998
Find the difference between two numbers

+2   +7
3,998   4,000   4,007

4,007	
3,998	9

4

Known facts: Rapid recall of all multiplication tables up to 12 x 12

6 x 4 Use known facts and place value

40 is ten times greater than 4

6 x 4 = 24
60 x 4 = 240
60 x 40 = 2400
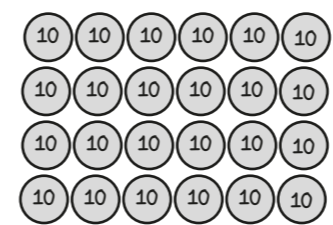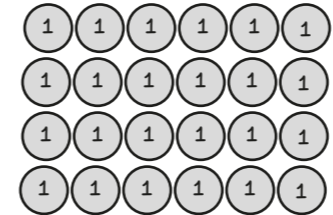
6 x 10 x 4 x 10
= 24 x 100

0.6 is ten times smaller than 6

6 x 4 Use known facts and place value

0.6 x 4 = 2.4
4 jumps of 0.6

+ 0.6   + 0.6   + 0.6   + 0.6

0   0.6   1.2   1.8   2.4

0.6 x 4 = 24 tenths
0.6 x 4 = 2.4

0.6   1

4

2.34 x 100 Multiply by 10, 100

1000s	100s	10s	1s	$\frac{1}{10}$ s	$\frac{1}{100}$ s

2.34

23.4   x10

x10   x100

234
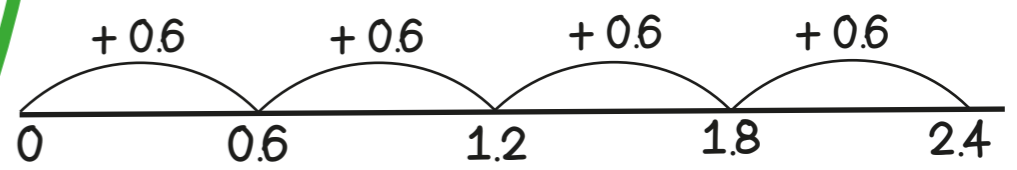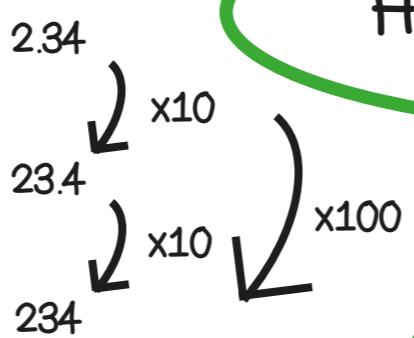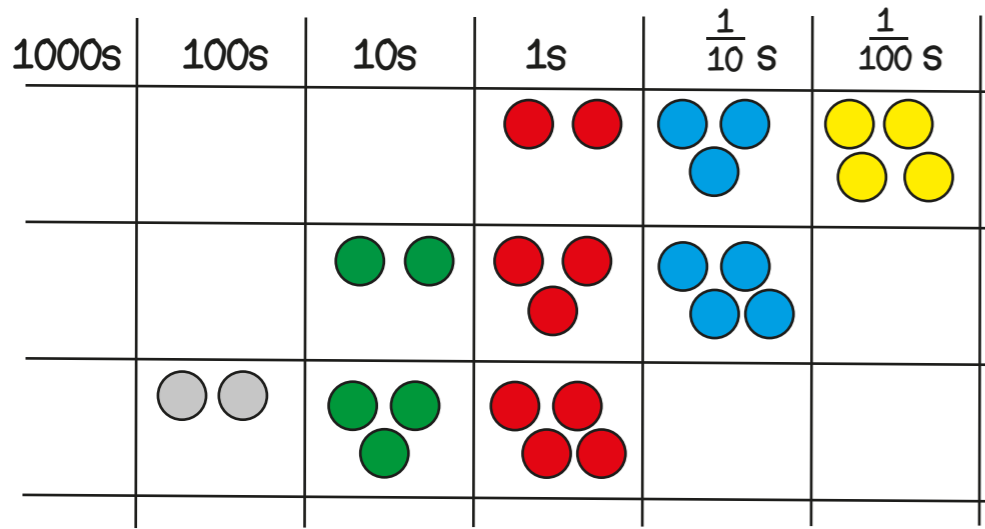
How shall I multiply?
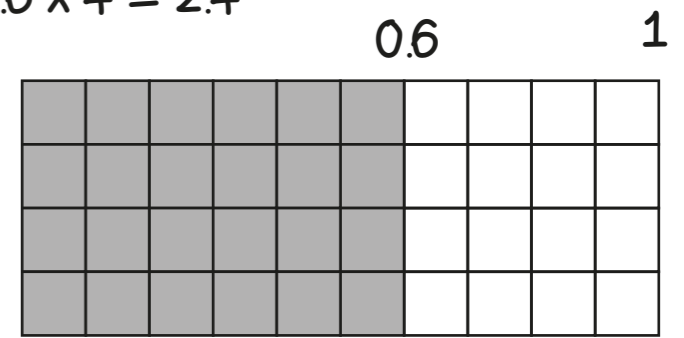
7 x 36 Use the distributive law

7 x 36

= 7 x 30 + 7 x 6
= 210 + 42
= 252

36
30   6
7   210   42
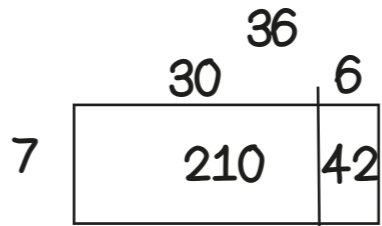
36 x 7 Formal written method

	30	6
7	210	42

36
x 7
252
4
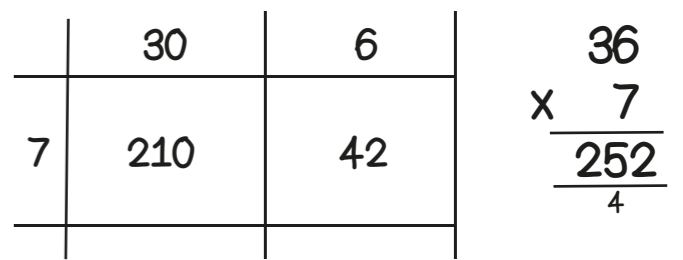
45 x 6 Use factors and commutativity

2
5   6

2 x (5 x 6) = (2 x 5) x 6
2 x 30 = 10 x 6

Write as factors then re-order

45 x 6
= 5 x 9 x 6
= 5 x 6 x 9
= 30 x 9
= 270

236 x 7

200   30   6
x7   x7   x7
1400 + 210 + 42 = 1652

4

Known facts: Use recall of all multiplication tables up to 12 x 12 to derive division facts

24 ÷ 4 Use known facts and place value

240 is ten times greater than 24

$24 \div 4 = 6$
$240 \div 40 = 6$
$2400 \div 400 = 6$

$2400 \div 400 = \dfrac{24 \times 100}{4 \times 100}$

$\dfrac{24}{4} = 6$

24 biscuits shared between 4 people means they will get 6 biscuits each.
If there are 100 times as many people and 100 times as many biscuits, how many biscuits each now?

60 is ten times greater than 6

2400 ÷ 60 Use known facts and place value

$2400 \div 60 = 40$
How many steps of 60 make 2400?

10 x 60   10 x 60   10 x 60   10 x 60

0   600   1200   1800   2400

24 ÷ 100 Divide by 10, 100

100s	10s	1s	$\frac{1}{10}$ s	$\frac{1}{100}$ s
●●	●●			
	●●			
		●●●		
			●●	●●●●

24
$\div 10$
2.4
$\div 10$ $\div 100$
0.24
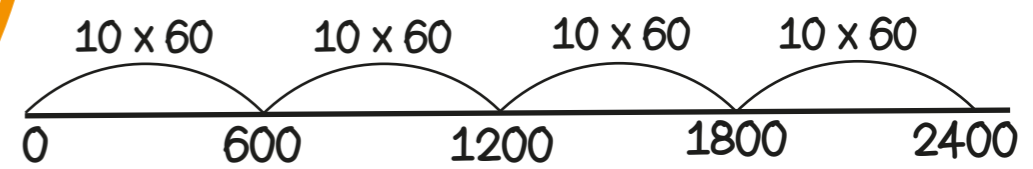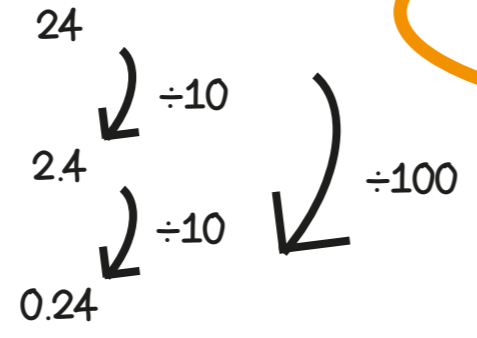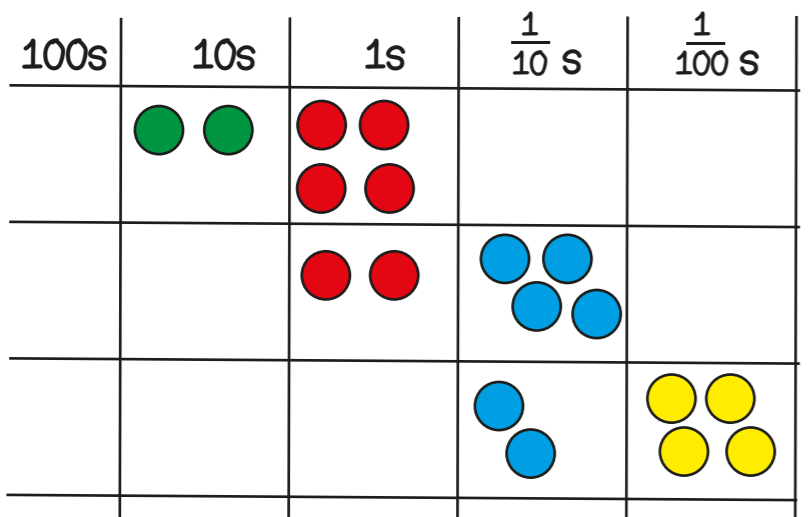
How shall I divide?

732 ÷ 6 Formal written method

100s	10s	1s

$6 \overline{)7^13\ 2}$ → 1

$6 \overline{)7^13^12}$ → 1 2 2

100s	10s	1s
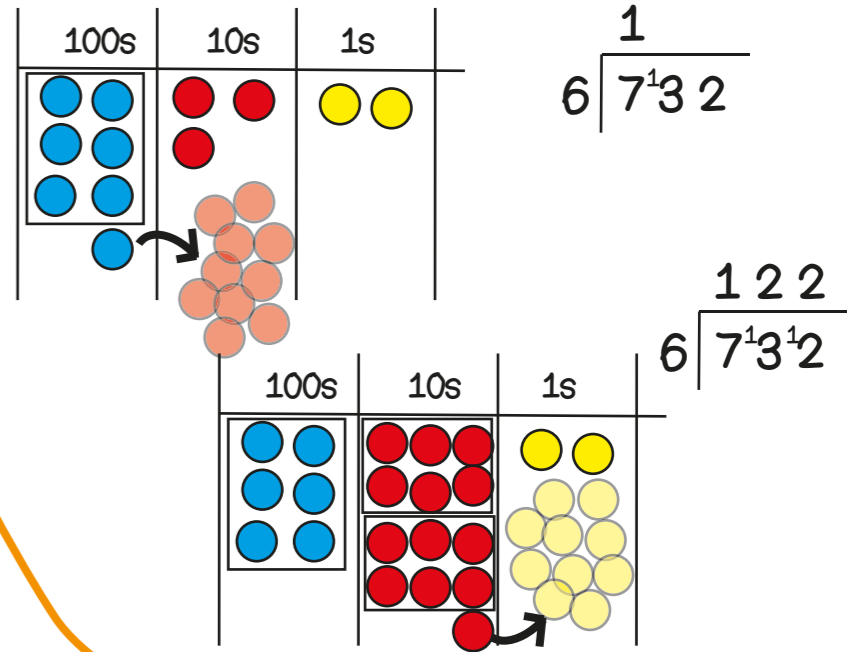
516 ÷ 12 Using factors

$516 \div 3 \div 4$

516		
172	172	172
43	43	43	43								

496 ÷ 8 Partition and recombine

$496 \div 8$

480   16

$\div 8$ $\div 8$

60   +   2   =   62

60 x 8   2 x 8

0   480   496

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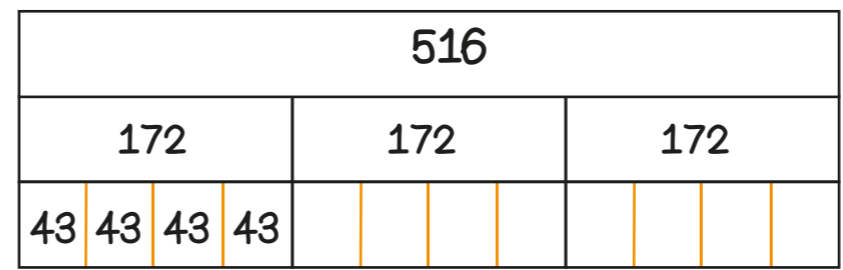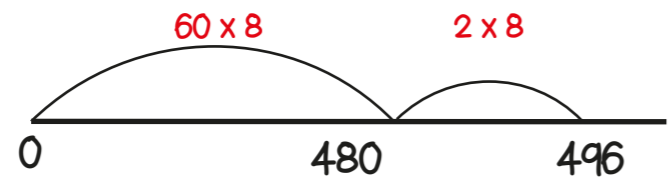
0.8 + 0.7, 45 + 45
Number facts
Single digit decimals
Doubles
Bonds of 1 and 100

I just knew it!

Rapid fluency of 2 digit add 2 digit numbers

7 + 8
Use known facts

If I know 7 + 8 = 15 then I know 0.7 + 0.8 = 1.5
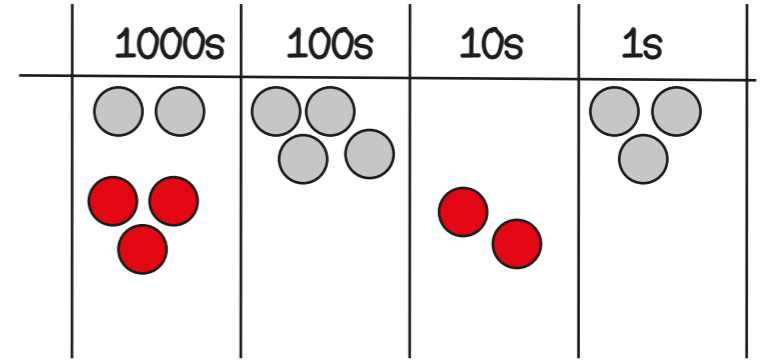
7,000 + 8,000 = 15,000
70,000 + 80,000 = 150,000
700,000 + 800,000 = 1,500,000
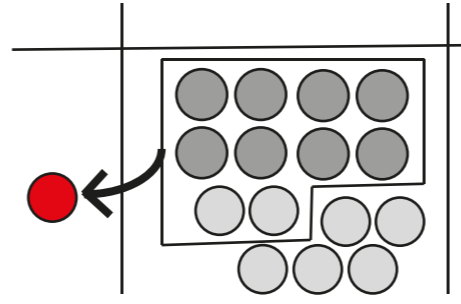
12,403 + 3,020
Use place value to add

If I know 2 + 3 = 5 then I know 2000 + 3000 = 5 000

I have noticed, one number has no hundreds or ones, the other has no tens.

10,000s	1000s	100s	10s	1s
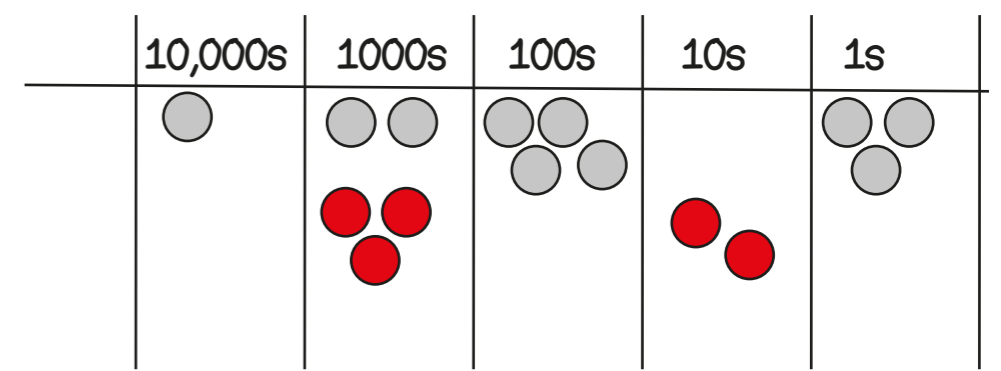
0.016 + 0.007
Bridge through boundaries
by counting in efficient steps

+0.004   +0.003

0.016   0.020   0.023

How shall I add?

32,356 + 19,998
Round then adjust

10,000s	1000s	100s	10s	1s

Add 20,000 then subtract 2

25,748 + 46,374
Formal written method

Exchange ten of these for one of those!

25,748
+ 46,374
72,122
1 1 1 1

Regroup and rename

10,000s	1000s	100s	10s	1s

35,040 + 22,070
Partition and recombine

30,000 + 5,000 + 40 + 20,000 + 2,000 + 70

50,000 + 7,000 + 110 = 57,110

10,000s	1000s	100s	10s	1s

+20,000

0   32,356   52,354   52,356
                                   −2

52,354

32,356   20,000

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How shall I subtract?
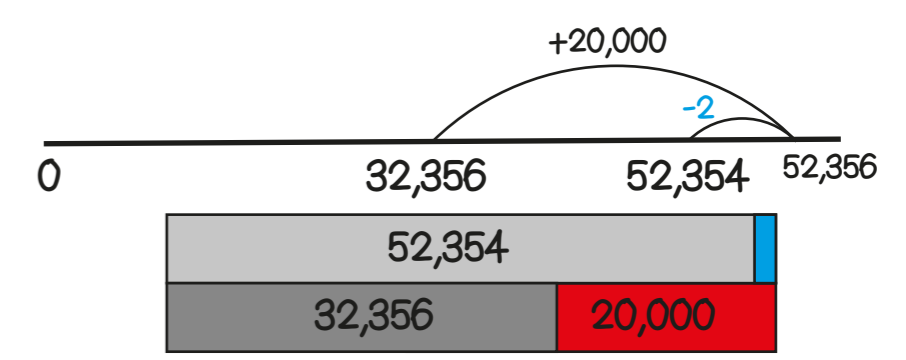
9 - 4, 13 - 5, 18 - 9
Number facts
Single digit decimals
Halves
Subtract from 1 and 100

I just knew it!

Rapid fluency of 2 digit subtract 2 digit numbers

15 - 8 = 7
Use known facts

If I know 15 - 8 = 7 then I know 1.5 - 0.8 = 0.7

15,000 - 8,000 = 7,000
150,000 - 80,000 = 70,000
1,500,000 - 800,000 = 700,000
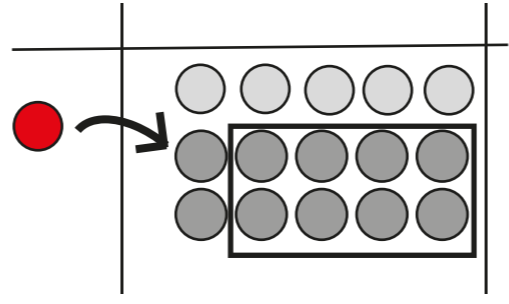
40,012 - 3,005
Use place value to subtract

5 less than 12 is 7 Now it is easy to take away 3000

If I know 40 - 3 = 37 then I know that 40 thousand take away 3 thousand is 37 thousand

40,000 = 4 tens of thousands or 40 thousands
12 = 1 ten and 2 ones or 12 ones

40,012 = 40 thousands and 12 ones
take away 3 thousands and 5 ones
equals 37 thousands and 7 ones.

0.54 - 0.17
Bridge through boundaries
by counting in efficient steps

- 0.03   - 0.04   - 0.1
0.16   0.40   0.44   0.54
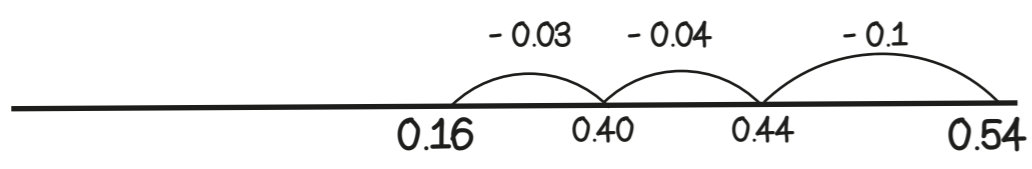
45,748 - 26,374
Formal written method

Exchange ten of these for one of those!

Regroup and rename

³⁴ ¹⁵ ⁶ ⁷ ¹⁸
45,748
- 26,374
19,374

10,000s	1000s	100s	10s	1s

20,045 - 19,989
Find the difference between two numbers

+11   +45
19,989   20,000   20,045
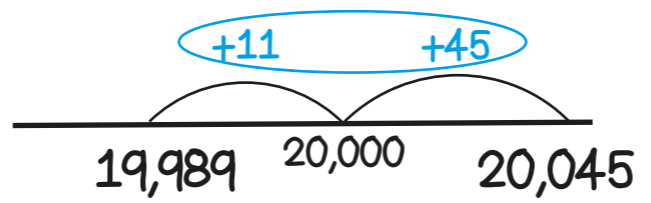
20,045	
19,989	56

43,453 - 19,998
Round then adjust

10,000s	1000s	100s	10s	1s

Take away 20,000 then add 2

-20,000
+2
0   23,453 23,455   43,453

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Known facts: Rapid recall of all multiplication tables up to 12 x 12

6 x 4 Use known facts and place value

40 is ten times greater than 4

$6 \times 4 = 24$
$60 \times 4 = 240$
$60 \times 40 = 2400$

$6 \times 10 \times 4 \times 10$

$= 24 \times 100$

0.6 is ten times smaller than 6

6 x 4 Use known facts and place value

$0.6 \times 4 = 2.4$
4 jumps of 0.6

+ 0.6   + 0.6   + 0.6   + 0.6

0   0.6   1.2   1.8   2.4

$0.6 \times 0.4 = 24$ hundredths
$0.6 \times 0.4 = 0.24$

0.6   1

0.4

1

2.34 x 1000 Multiply by 10, 100, 1000

1000s	100s	10s	1s	$\frac{1}{10}$ s	$\frac{1}{100}$ s

2.34
23.4   x10
234   x10   x100
2340   x10

How shall I multiply?

15 x 42 Using factors and distributive law

15×48
Factor pair

$= 15 \times 6 \times 8$
$= 90 \times 8$
$= 720$

6
8   15

423 x 4 Partition and recombine

423×4

4 0 0	2 0	3
x4	x4	x4

$1600 + 80 + 12 = 1692$

15×14

$= 15 \times 6 + 15 \times 8$
$= 90 + 120$
$= 210$

14
6   8

15

427 x 38 Formal written method

427
x 38
3416
12810
16226

	400	20	7
30	12,000	600	210
8	3,200	160	56

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Known facts:
Use recall of all multiplication tables up to 12 x 12 to derive division facts

Include calcuations where remainders occur

24 ÷ 4
Use known facts and place value

24,000 is a thousand times greater than 24

0.6 is ten times smaller than 6

2.4 ÷ 0.6
Use known facts and place value

$24 ÷ 4 = 6$
$240 ÷ 40 = 6$
$2400 ÷ 400 = 6$
$24,000 ÷ 4000 = 6$

$$24,000 ÷ 400 = \frac{24 \times 1000}{4 \times 100}$$

$$\frac{240}{4} = 60$$

24 biscuits shared between 4 people means they will get 6 biscuits each.
If there are 1000 times as many people and 1000 times as many biscuits, how many biscuits each now?

$2.4 ÷ 0.6 = 4$
How many steps of 0.6 make 2.4?

+ 0.6   + 0.6   + 0.6   + 0.6

0   0.6   1.2   1.8   2.4

24 ÷ 1000
Divide by 10, 100, 1000

100s	10s	1s	$\frac{1}{10}$ s	$\frac{1}{100}$ s	$\frac{1}{1000}$ s

24
↓ ÷10
2.4
↓ ÷10   ↓ ÷1000
0.24
↓ ÷10
0.024
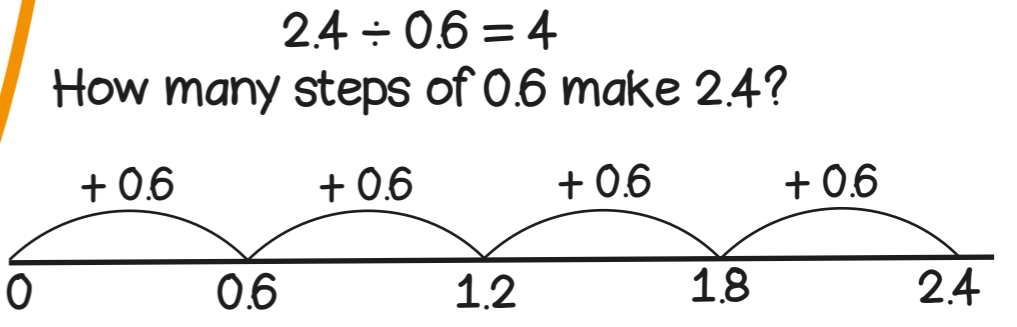
How shall I divide?

5724 ÷ 4
Formal written method
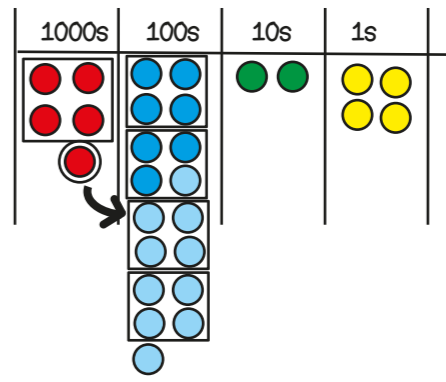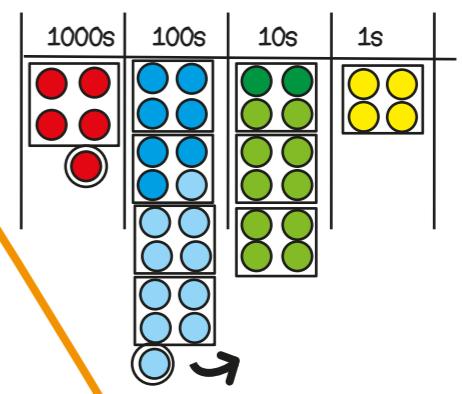
1000s	100s	10s	1s

$$4 \overline{| 5^1 7\ 2\ 4}$$ (1 4)

1512 ÷ 24
Using factors

$1512 ÷ 6 ÷ 4$

1000s	100s	10s	1s

$$4 \overline{| 5^1 7^1 2\ 4}$$ (1 4 3 1)

496 ÷ 8
Partition and recombine

$496 ÷ 8$

480   16

÷ 8   ÷ 8

60   +   2   =   62

60 x 8   2 x 8

0   480   496

1512					
252	252	252	252	252	252
63 63 63 63					

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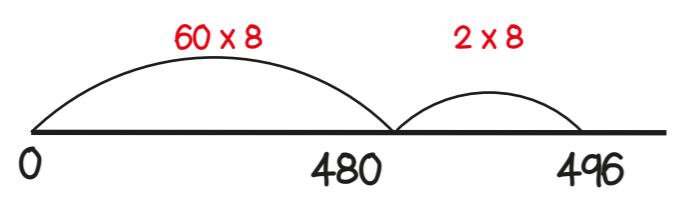
44 + 56, 27 + 27
Number facts
Single digit decimals
Doubles
Bonds of 1 and 100

I just knew it!

Rapid fluency of
2 digit add 2 digit numbers

17 + 17
Use known facts

If I know 17 + 17 = 34
then I know
1.7 + 1.7 = 3.4

17,000 + 17,000 = 34,000
170,000 + 170,000 = 340,000
1,700,000 + 1,700,000 = 3,400,000
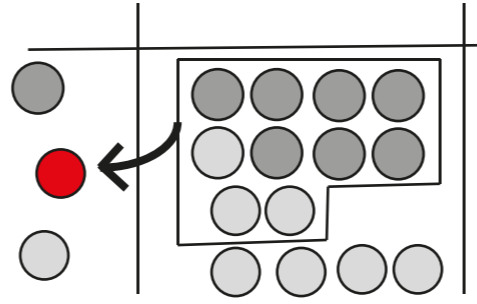
1,102,403 + 50,020
Use place value to add

I have noticed,
one number has no
hundreds or ones, the
other has no tens.

1,000,000s	100,000s	10,000s	1000s	100s	10s	1s
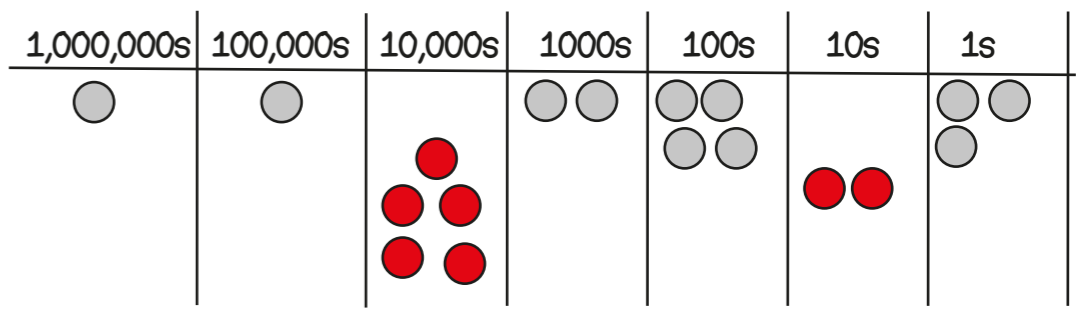
0.028 + 0.015
Bridge through boundaries
by counting in efficient steps

+0.01   +0.002   +0.003

0   0.028   0.038 0.040   0.043

How shall I add?

432,356 + 99,000
Round then adjust

100,000s	10,000s	1000s	100s	10s	1s
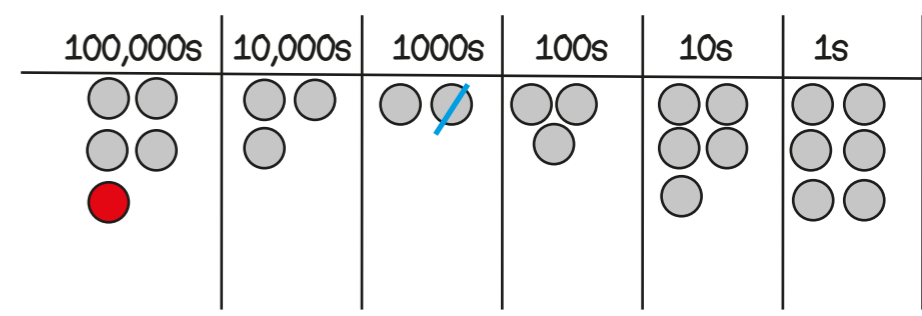
Add 100,000 then take away 1,000

+100,000
−1000

0   432,356   531,356   532,356

531,356
432,356   100,000

307,040 + 206,070
Partition and recombine

300,000 + 7,000 + 40 + 200,000 + 6,000 + 70

500,000 + 13,000 + 110 = 513,110

100,000s	10,000s	1000s	100s	10s	1s

325,748 + 246,374
Formal written method

Exchange ten of
these for one of
those!

Regroup and rename

325,748
+ 246,374
572,122
1 1 1 1

100,000s	10,000s	1000s	100s	10s	1s

How shall I subtract?
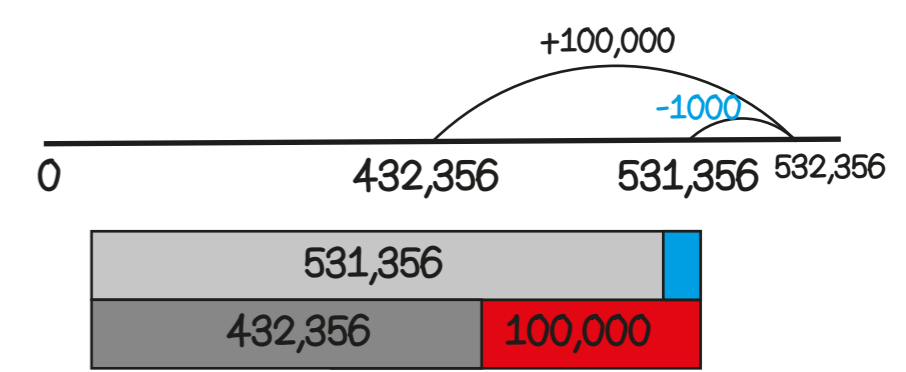
0.9 – 0.4, 100 – 65
Number facts
Single digit decimals
Halves
Bonds of 1 and 100

I just knew it!

Rapid fluency of 2 digit subtract 2 digit numbers

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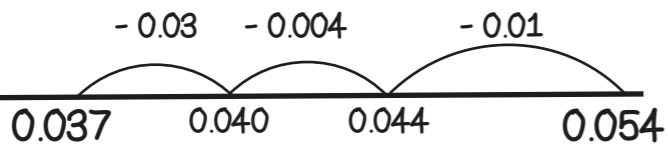
36 – 18 = 18
Use known facts

If I know 36 – 18 = 18 then I know 3.6 – 1.8 = 1.8

36,000 – 18,000 = 18,000
360,000 – 180,000 = 180,000
3,600,000 – 1,800,000 = 1,800,000
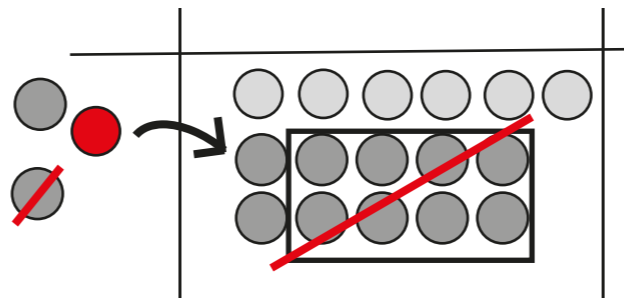
400,032 – 30,005
Use place value to subtract

5 less than 32 is 27

400,000 = 4 hundreds of thousands
or 400 thousands
400 – 30 = 370 so 400,000 – 3,000 = 370,000

400,032 = 400 thousands and 32 ones
take away 30 thousands and 5 ones
= 370,027

0.054 – 0.017
Bridge through boundaries
by counting in efficient steps

– 0.03   – 0.004   – 0.01
0.037   0.040   0.044   0.054

445,748 – 126,374
Formal written method

Exchange ten of these for one of those!

Regroup and rename

$$\begin{array}{r} 4\,4\,5,\!\overset{3\;\;1\;\;6\;\;1}{7\,4\,8} \\ +\ 1\,2\,6,\!3\,7\,4 \\ \hline 3\,1\,9,\!3\,7\,4 \end{array}$$

100,000s	10,000s	1000s	100s	10s	1s

200,450 – 199,989
Find the difference between two numbers

+11   +450
199,989   200,000   200,450
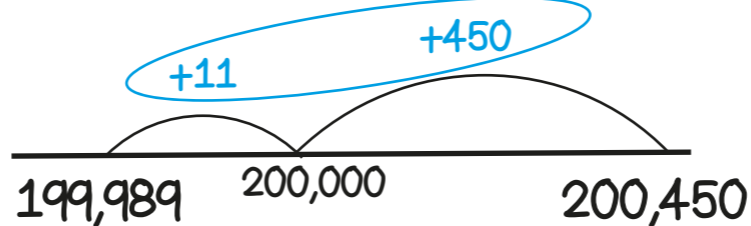
200,450	
199,989	461

243,453 – 99,900
Round then adjust

100,000s	10,000s	1000s	100s	10s	1s

Take away 100,000 then add 100

-100,000
+100
0   143,453   143,553   243,453
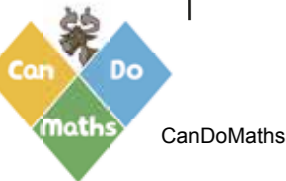
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Known facts: Rapid recall of all multiplication tables up to 12 x 12

6 x 4 Use known facts and place value

40 is ten times greater than 4

$60 \times 40 = 2400$
$600 \times 400 = 240,000$
$6000 \times 4000 = 24,000,000$

$6 \times 10 \times 4 \times 10$
$= 24 \times 100$

0.6 is ten times smaller than 6

6 x 4 Use known facts and place value

$0.06 \times 4 = 0.24$
4 jumps of 0.06

$+ 0.06 \quad + 0.06 \quad + 0.06 \quad + 0.06$

0   0.06   0.12   0.18   0.24

$0.6 \times 0.4 = 24$ hundredths
$0.6 \times 0.4 = 0.24$

0.6   1

0.4

1

2.34 x 1000 Multiply by 10, 100, 1000

1000s	100s	10s	1s	$\frac{1}{10}$ s	$\frac{1}{100}$ s

2.34
23.4   x10
234   x10   x100
2340   x10

How shall I multiply?

15 x 42 Using factors and distributive law

15×48
Factor pair
$= 15 \times 6 \times 8$
$= 90 \times 8$
$= 720$

6
8   15

4203 x 4 Partition and recombine

4203×4

4 0 0 0	2 0 0	3

x4   x4   x4

$16,000 \quad + \quad 800 \quad + \quad 12 \quad = \quad 16,812$

15×14
$= 15 \times 6 + 15 \times 8$
$= 90 + 120$
$= 210$

14
6   8

15
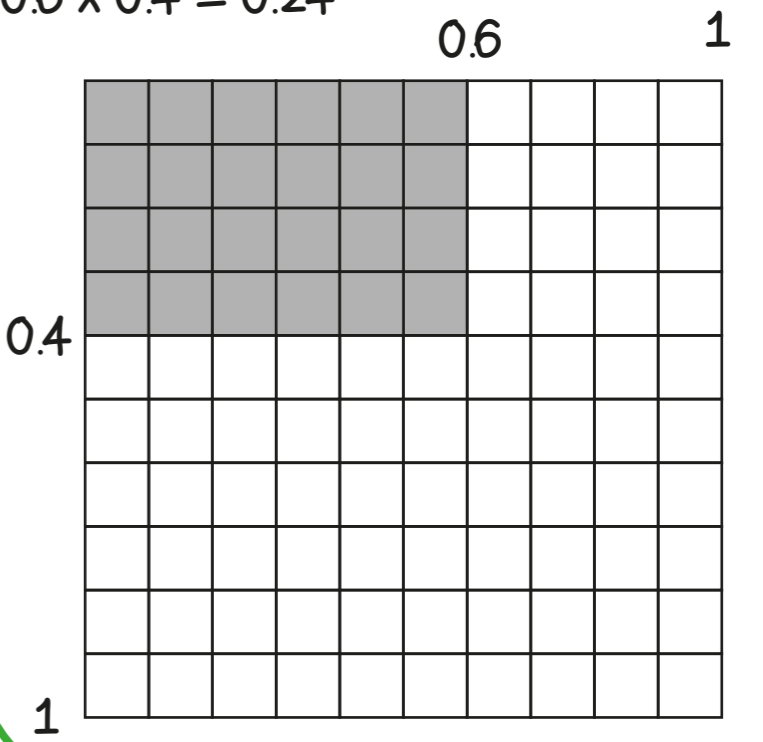
2427 x 38 Formal written method

$$\begin{array}{r} 2427 \\ \times \ 38 \\ \hline 19416 \\ 72810 \\ \hline 92226 \\ \hline \end{array}$$

How shall I divide?

Known facts:
Use recall of all multiplication tables up to 12 x 12 to derive division facts

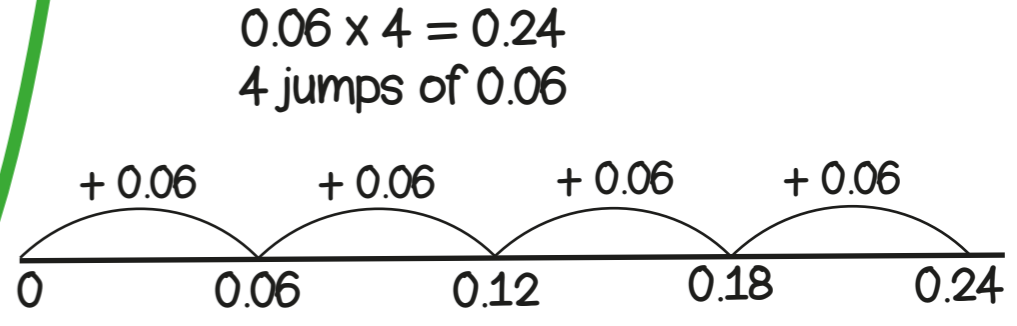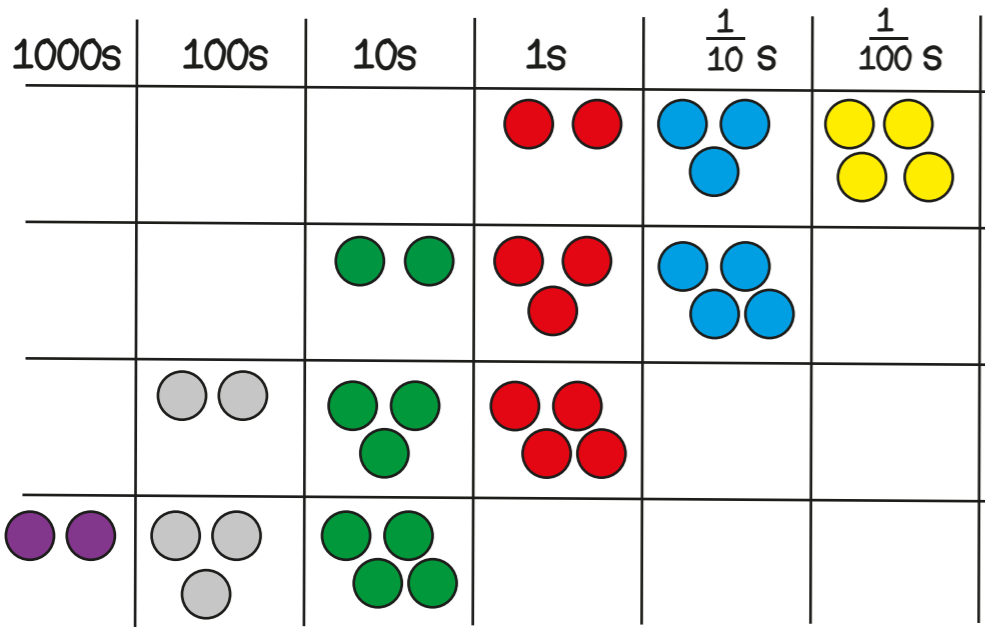Include calcuations where remainders occur

24 ÷ 4
Use known facts and place value

240 is ten times greater than 24

0.6 is ten times smaller than 6

2.4 ÷ 0.6
Use known facts and place value

$240 ÷ 40 = 6$
$2400 ÷ 400 = 6$
$24,000 ÷ 4000 = 6$
$240,000 ÷ 40,000 = 6$
$2,400,000 ÷ 400,000 = 6$

$240,000 ÷ 400 = \dfrac{24 \times 10,000}{4 \times 100}$

$\dfrac{2400}{4} = 600$

24 biscuits shared between 4 people means they will get 6 biscuits each.
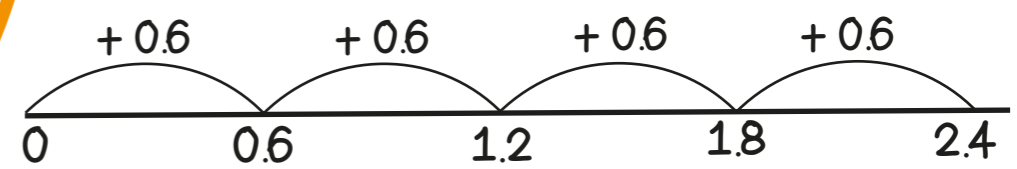If there are 10 times as many people and 10 times as many biscuits, how many biscuits each now?

$2.4 ÷ 0.6 = 4$
How many steps of 0.6 make 2.4?

+ 0.6   + 0.6   + 0.6   + 0.6

0   0.6   1.2   1.8   2.4

24 ÷ 1000
Divide by 10, 100, 1000

100s	10s	1s	$\frac{1}{10}$ s	$\frac{1}{100}$ s	$\frac{1}{1000}$ s

24
÷10
2.4
÷10
0.24
÷10
0.024
÷1000
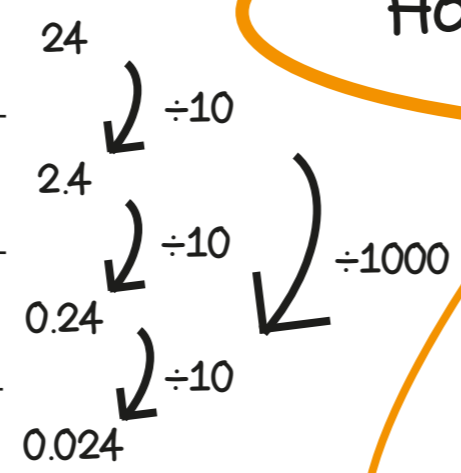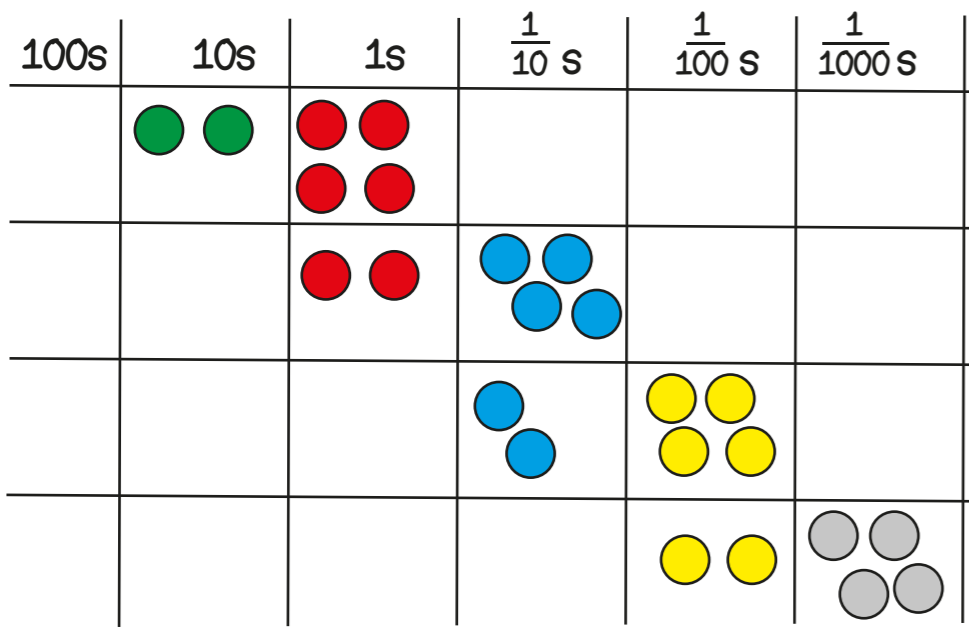
7182 ÷ 21
Formal written method

1000s	100s	10s	1s

$$4\overline{)5^17^12\,4}$$
1 4 3 1

1512 ÷ 24
Using factors

4960 ÷ 8
Partition and recombine

$4960 ÷ 8$

4800 , 160
÷ 8 , ÷ 8
600 + 20 = 620

600 x 8   20 x 8

0   4800   4960
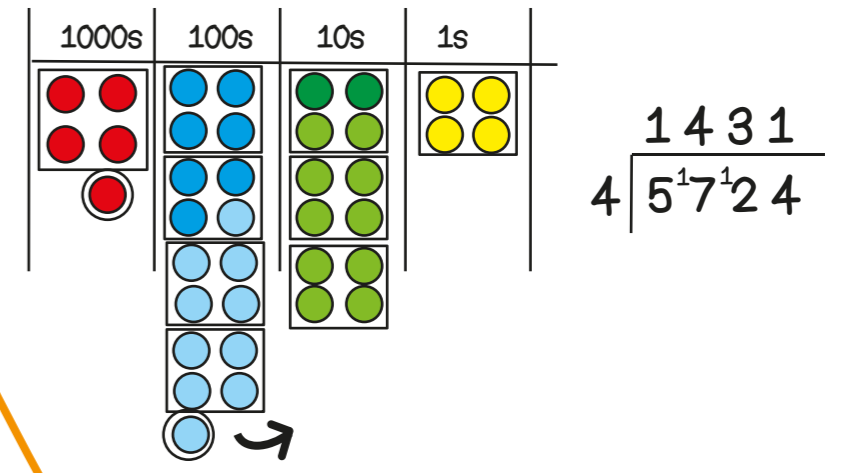
$1512 ÷ 6 ÷ 4$

1512					
252	252	252	252	252	252
63 63 63 63					

$$21\overline{)7\,1\,8\,2}$$
3 4 2
6 3
8 8
8 4
4 2
4 2
0

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