5

How shall I add?

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

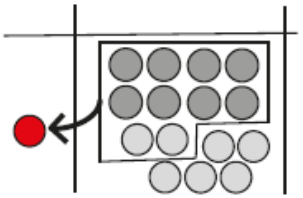
I just knew it!

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

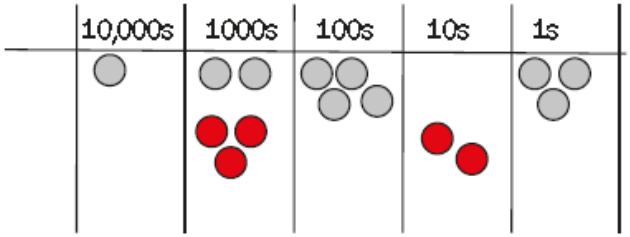
7,000 + 8,000 = 15,000
70,000 + 80,000 = 150,000
700,000 + 800,000 = 1,500,000



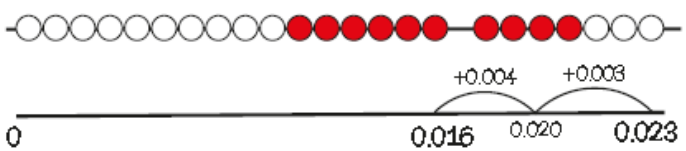
12,403 + 3,020
Use place value to add

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



0.016 + 0.007
Bridge through boundaries by counting in efficient steps



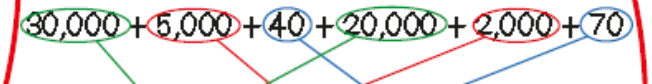
25,748 + 46,374
Formal written method

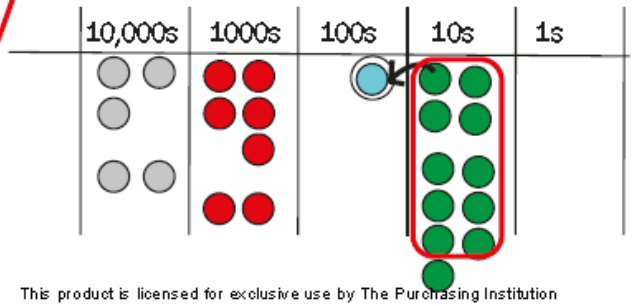
Exchange ten of these for one of those!

Regroup and rename

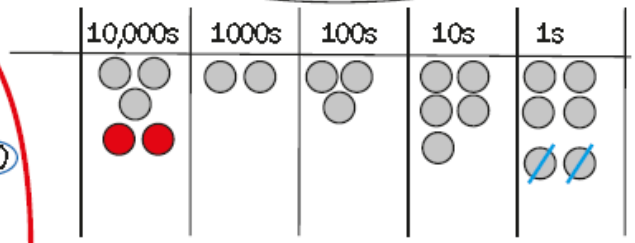
$$\begin{array}{r} 25{,}748 \\ +\ 46{,}374 \\ \hline 72{,}122 \\ 1\ 1\ 1\ 1 \end{array}$$

35,040 + 22,070
Partition and recombine

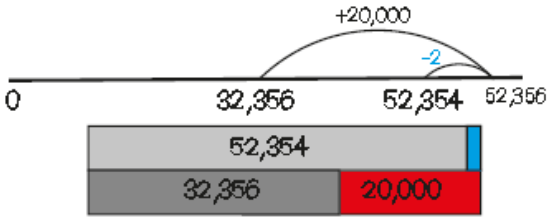




32,356 + 19,998
Round then adjust



Add 20,000 then subtract 2



5

How shall I subtract?

9 - 4, 13 - 5, 18 - 9
Number facts
Single digit decimals
Halves
Subtract from 1 and 100

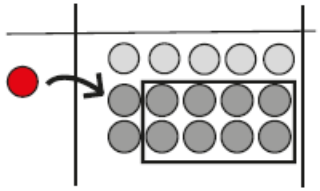
I just knew it!

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

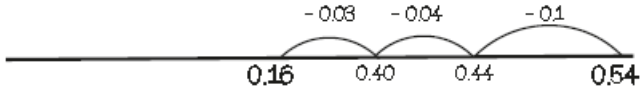
5 less than 12 is 7
Now it is easy to
take away 3000

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

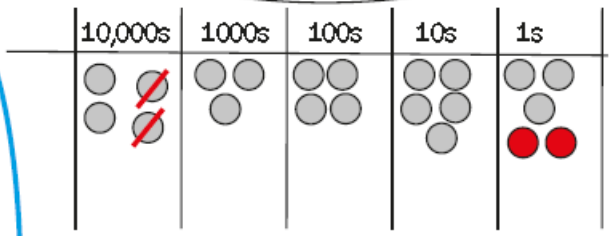
40,000 = 4 tens of thousands or 40 thousands
12 = 1 ten and 2 ones or 12 ones

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

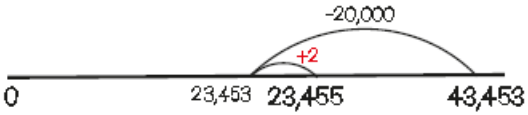
0.54 - 0.17
Bridge through boundaries
by counting in efficient steps



43,453 - 19,998
Round then adjust



Take away 20,000 then add 2

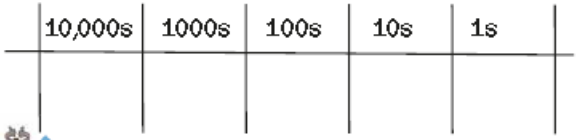


45,748 - 26,374
Formal written method

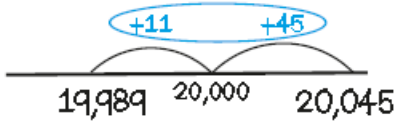
Exchange ten of these for one of those!

Regroup and rename

$$\begin{array}{r} {}^{3}\cancel{4}\,{}^{1}5,{}^{6}\cancel{7}\,{}^{1}\cancel{4}8 \\ -\ 26,374 \\ \hline 19,374 \end{array}$$



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



5

How shall I multiply?

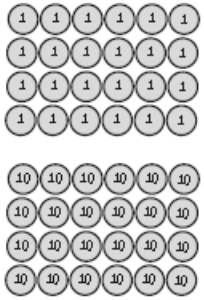
Known facts:
Rapid recall of all multiplication tables up to 12 x 12

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

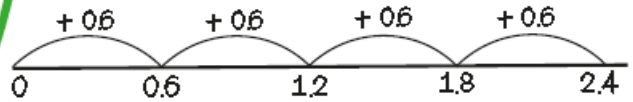
6 x 10 x 4 x 10
= 24 x 100



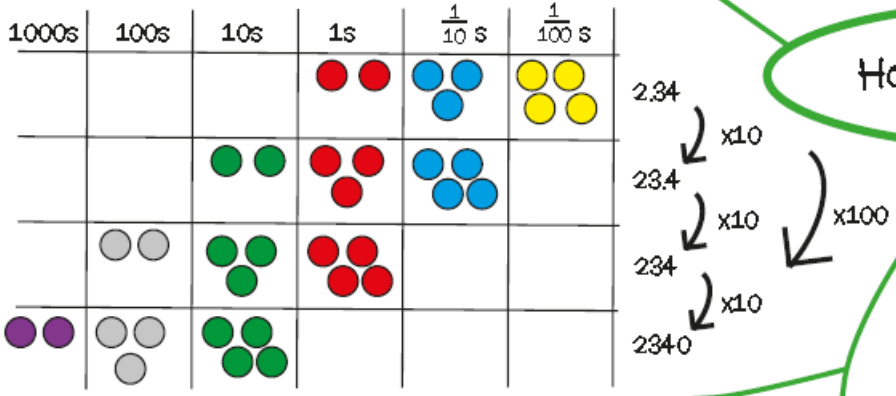
0.6 is ten times smaller than 6

6 x 4
Use known facts and place value

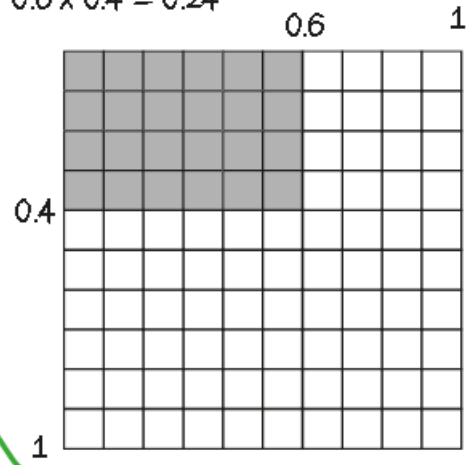
0.6 x 4 = 2.4
4 jumps of 0.6



2.34 x 1000
Multiply by 10, 100, 1000

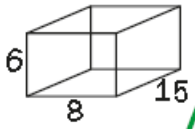


0.6 x 0.4 = 24 hundredths
0.6 x 0.4 = 0.24

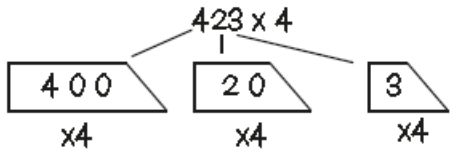


15 x 42
Using factors and distributive law

15 x 48
Factor pair
= 15 x 6 x 8
= 90 x 8
= 720

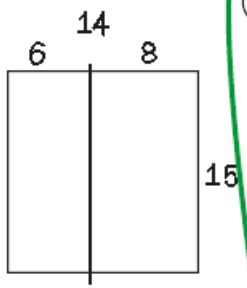


423 x 4
Partition and recombine



1600 + 80 + 12 = 1692

15 x 14
= 15 x 6 + 15 x 8
= 90 + 120
= 210



427 x 38
Formal written method

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

427
x 38
3416
12810
16226

5

How shall I divide?

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

Include calculations where remainders occur

24 ÷ 4
Use known facts and place value

24,000 is a thousand times greater than 24

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

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?

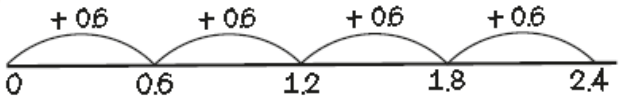
$$24{,}000 \div 400 = \frac{24 \times 1000}{4 \times 100}$$

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

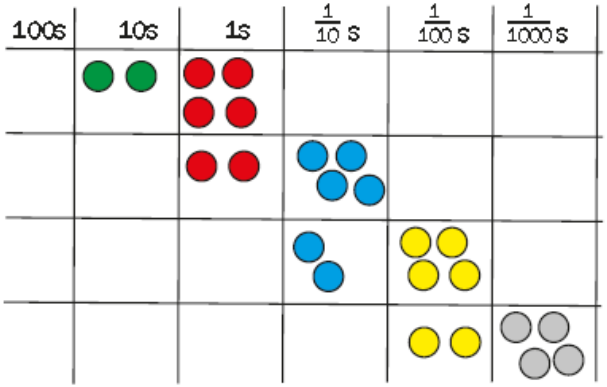
2.4 ÷ 0.6
Use known facts and place value

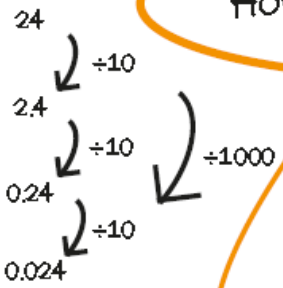
0.6 is ten times smaller than 6

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

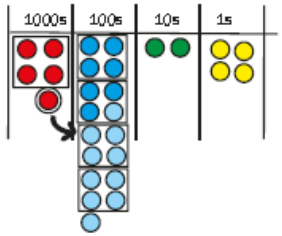


24 ÷ 1000
Divide by 10, 100, 1000



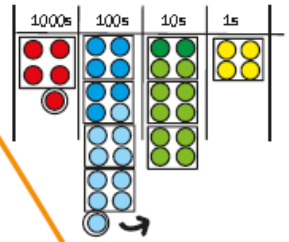


5724 ÷ 4
Formal written method



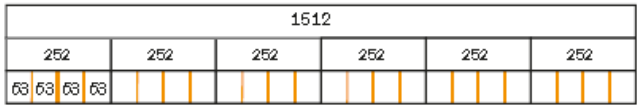
$$4\overline{)5^{1}7\,2\,4}\quad 1\,4$$

1512 ÷ 24
Using factors



$$4\overline{)5^{1}7^{1}2\,4}\quad 1\,4\,3\,1$$

1512 ÷ 6 ÷ 4



496 ÷ 8
Partition and recombine