

$0.8 + 0.7, 45 + 45$

Number facts

Single digit decimals

Doubles

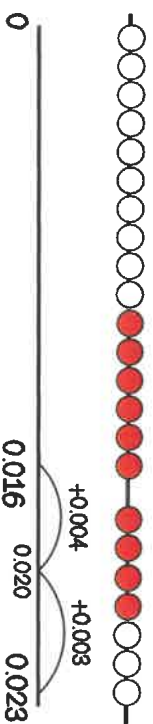
Bonds of 1 and 100

I just knew it!

Rapid fluency of
2 digit add 2 digit numbers

$0.016 + 0.007$

Bridge through boundaries
by counting in efficient steps



$25,748 + 46,374$
Formal written method

Exchange ten of
these for one of
those!

$25,748$
 $+ 46,374$

 $72,122$

Regroup and rename

1 1 1 1

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

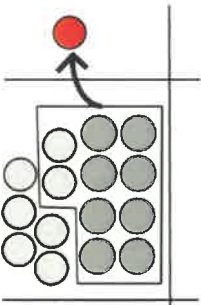
$7 + 8$
Use known facts

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

$7,000 + 8,000 = 15,000$

$70,000 + 80,000 = 150,000$

$700,000 + 800,000 = 1,500,000$



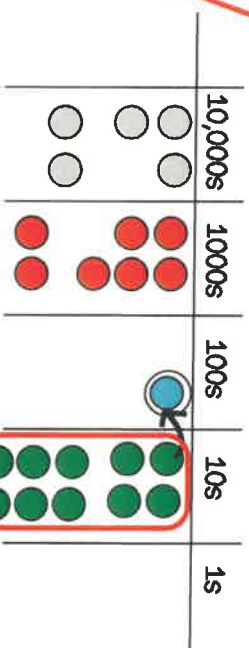
How shall I add?



$35,040 + 22,070$
Partition and recombine

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

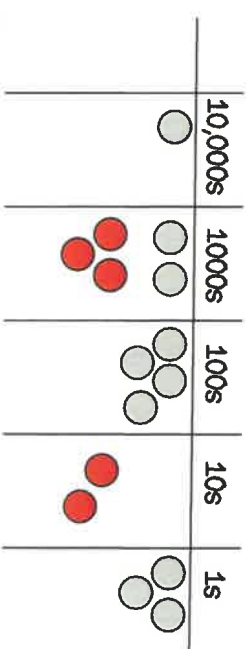
$50,000 + 7,000 + 110 = 57,110$



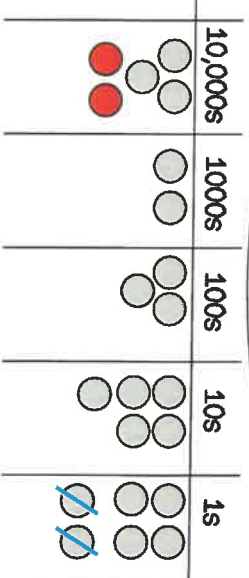
$12,403 + 3,020$
Use place value to add

If I know $2 + 3 = 5$
then I know
 $2000 + 3000 = 5000$

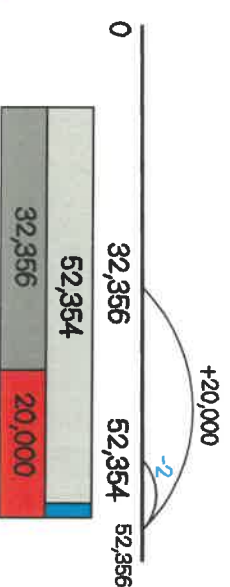
I have noticed,
one number has no
hundreds or ones, the
other has no tens



$32,356 + 19,998$
Round then adjust



Add $20,000$ then subtract 2



9 - 4, 13 - 5, 18 - 9

Number facts

Single digit decimals

Halves

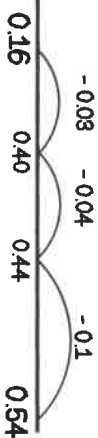
Subtract from 1 and 100

I just knew it!

Rapid fluency of 2 digit subtract

$$0.54 - 0.17$$

Bridge through boundaries by counting in efficient steps



15 - 8 = 7

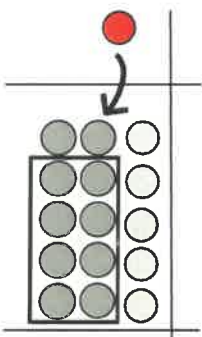
Use known facts

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

$$15,000 - 8,000 = 7,000$$

$$150,000 - 80,000 = 70,000$$

$$1,500,000 - 800,000 = 700,000$$



How shall I subtract?



40,012 - 3,005

Use place value to subtract

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

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

40,000 = 4 tens of thousands or 40 thousands

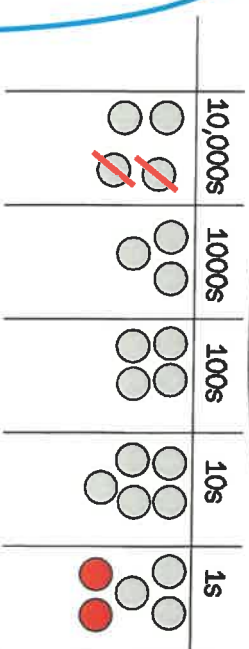
12 = 1 ten and 2 ones or 12 ones

40,012 = 40 thousands and 12 ones

take away 3 thousands and 5 ones equals 37 thousands and 7 ones.

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!

$$\begin{array}{r} 45,748 \\ - 26,374 \\ \hline 19,374 \end{array}$$

Regroup and rename

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



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

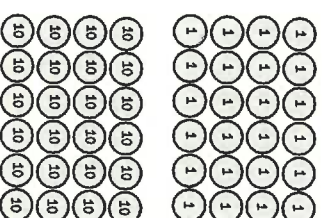
2.34×1000
Multiply by 10, 100, 1000

6×4
Use known facts
and place value

40 is ten times
greater than 4

$$\begin{aligned} 6 \times 4 &= 24 \\ 60 \times 4 &= 240 \\ 60 \times 40 &= 2400 \end{aligned}$$

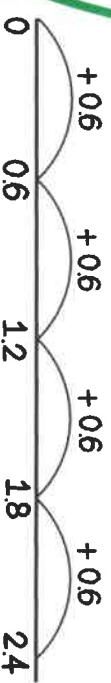
$$\begin{aligned} 6 \times 10 \times 4 \times 10 \\ = 24 \times 100 \end{aligned}$$



0.6 is ten times
smaller than 6

6×4
Use known facts
and place value

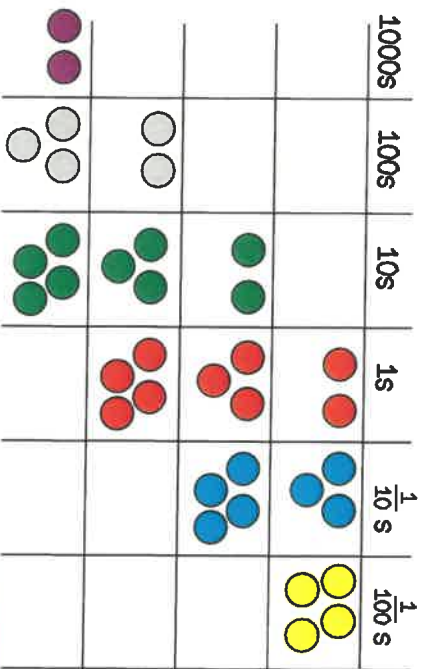
$$\begin{aligned} 0.6 \times 4 &= 2.4 \\ 4 \text{ jumps of } 0.6 \end{aligned}$$



$$0.6 \times 0.4 = 24 \text{ hundredths}$$

$$0.6 \times 0.4 = 0.24$$

0.6 1



$$\begin{aligned} 2.34 &\times 10 = 23.4 \\ 23.4 &\times 10 = 234 \\ 234 &\times 10 = 2340 \end{aligned}$$

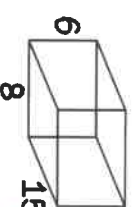
How shall I multiply?



15×42
Using factors and
distributive law

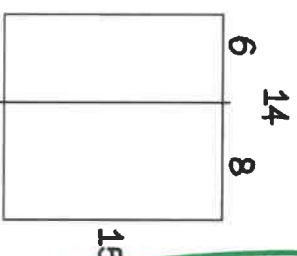
$$\begin{aligned} 15 \times 48 \\ = 15 \times 6 \times 8 \\ = 90 \times 8 \\ = 720 \end{aligned}$$

Factor pair



$$15 \times 14$$

$$\begin{aligned} &= 15 \times 6 + 15 \times 8 \\ &= 90 + 120 \\ &= 210 \end{aligned}$$



427×38
Formal written method

400	20	7
30	12,000	600
8	3,200	160
		56
427	$\times 38$	
	3416	
	12810	
	16226	

423×4
Partition and recombine

$$\begin{aligned} 400 &\times 4 = 1600 \\ 20 &\times 4 = 80 \\ 3 &\times 4 = 12 \\ 1600 + 80 + 12 &= 1692 \end{aligned}$$



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

Include calculations where remainders occur

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

24,000 is a thousand times greater than 24

0.6 is ten times smaller than 6

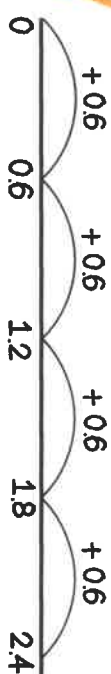
$2.4 \div 0.6$
Use known facts and place value

$$\begin{aligned} 24 \div 4 &= 6 \\ 240 \div 40 &= 6 \\ 2400 \div 400 &= 6 \\ 24,000 \div 4000 &= 6 \end{aligned}$$

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?

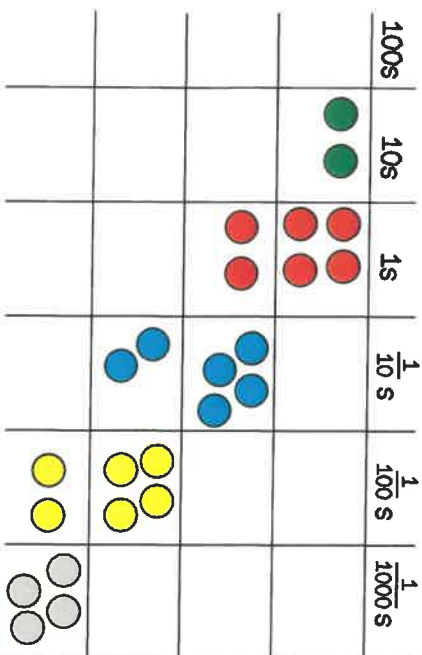
$$24 \div 0.6 = 4$$

How many steps of 0.6 make 2.4?



$$24 \div 1000$$

Divide by 10, 100, 1000



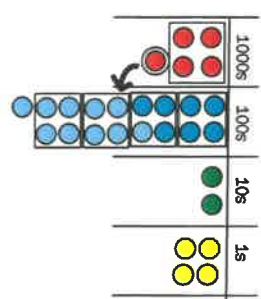
$$\begin{aligned} 24 &\div 10 = 2.4 \\ 2.4 &\div 10 = 0.24 \\ 0.24 &\div 10 = 0.024 \end{aligned}$$

How shall I divide?



$5724 \div 4$
Formal written method

$$\begin{array}{r} 14 \\ 4 \overline{) 5724} \\ \underline{4} \\ 17 \\ \underline{16} \\ 12 \\ \underline{12} \\ 4 \\ \underline{4} \\ 0 \end{array}$$

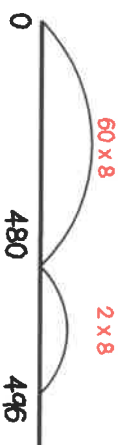


$$\begin{array}{r} 1431 \\ 4 \overline{) 5712} \\ \underline{4} \\ 17 \\ \underline{16} \\ 12 \\ \underline{12} \\ 0 \end{array}$$

$1512 \div 24$
Using factors

$$1512 \div 6 \div 4$$

$496 \div 8$
Partition and recombine



$$\begin{aligned} 496 &\div 8 \\ 480 &\div 8 = 60 \\ 16 &\div 8 = 2 \\ 60 + 2 &= 62 \end{aligned}$$

1512					
252	252	252	252	252	252
63	63	63	63	63	63

