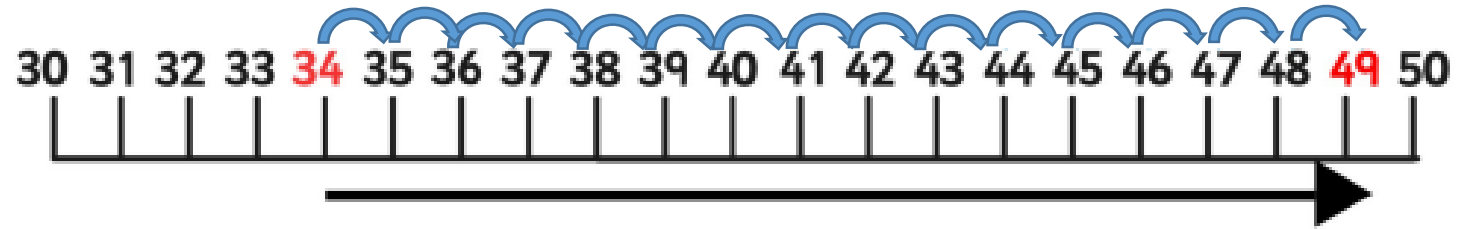


Counting on

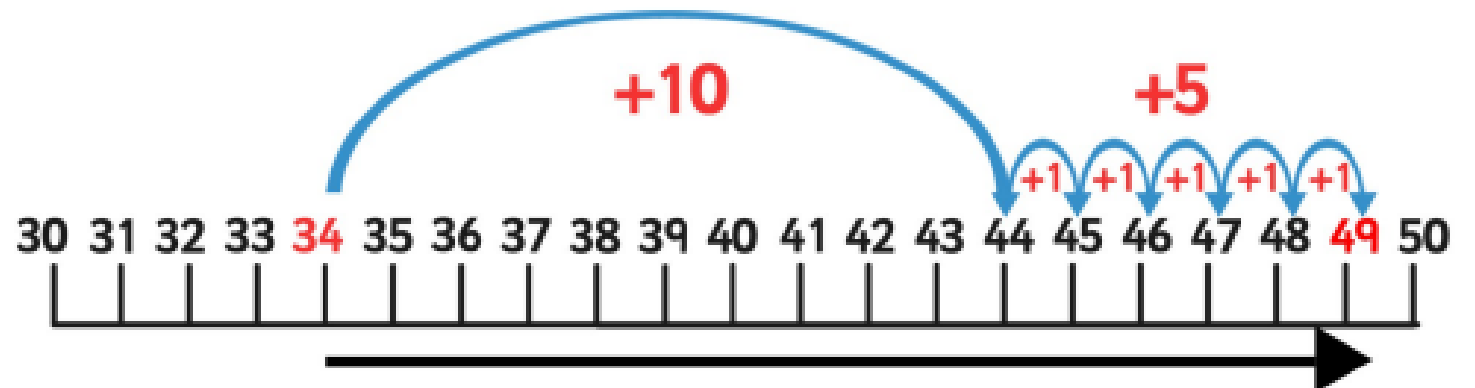
Start on the larger number and count on in ones.

$$34 + 15 =$$



This can be developed so the second number is partitioned into smaller numbers to improve fluency.

$$34 + 15 =$$

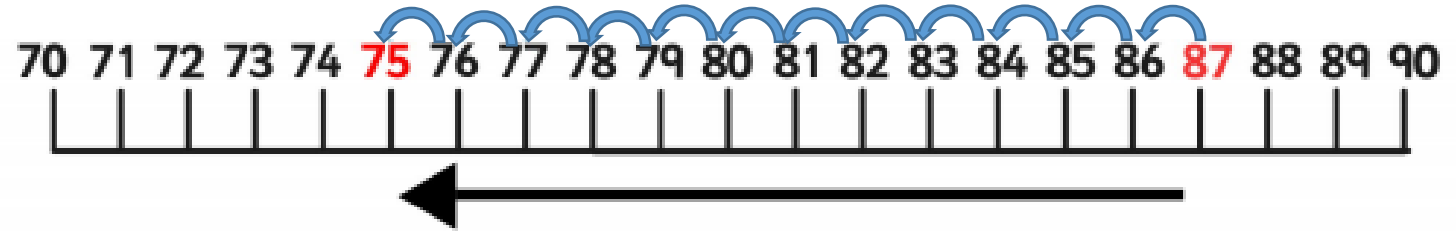


Counting back

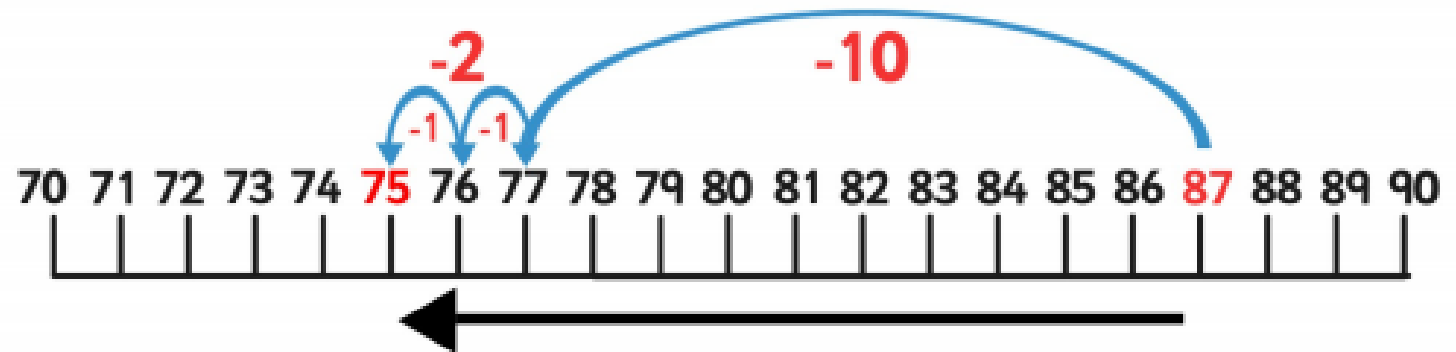
Start on the larger number and count back in ones.

This can be developed so the second number is partitioned into smaller numbers to improve fluency.

$$87 - 12 =$$



$$87 - 12 =$$



Near doubles

Look for numbers that are similar.

Double one of the numbers and adjust by adding or subtracting the difference.

$$\textcircled{26} + 25 =$$

I know double 25 is 50

$$26 + 25 =$$

1 more than double 25 = 51

Near halves

Look for numbers that are 'near half' of your starting number when you are subtracting.

$$25 - 12 =$$

I know half of 24 = 12

$$25 - 12 = 13$$

(25 is 1 more than 24, so answer is 1 more than 12 = 13)

Number bonds to 10, 100, 1000

Knowing number bonds to a 'whole ten' can be used when adding and subtracting to make mental steps more manageable.

This can be developed to support number bonds to hundreds, thousands etc.

$$\begin{aligned}230 + 670 &= \\230 + 70 &= 300 \\300 + 600 &= 900\end{aligned}$$

$$\begin{array}{c}23 + 67 = \\ \swarrow \searrow \\ 30\end{array}$$

$$30 + 60 = 90$$

$$\begin{array}{c}74 - 24 = \\ \downarrow \quad \downarrow\end{array}$$

$$74 - 4 = 70$$

$$70 - 20 = 50$$

Number facts within 20 (Part, Part, Whole)

Knowing that $8 + 9 = 17$
will help me to solve
calculations such as;



$17 - 8 = ?$

Or

$17 - ? = 9$

Or

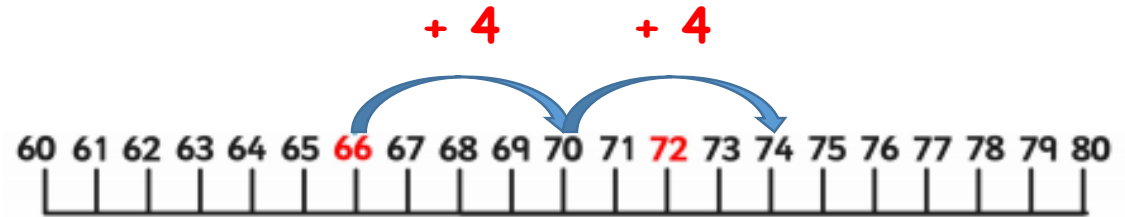
$? - 9 = 8$

Make ten...and then some

Make a 'whole ten' then add or subtract the rest.

$$66 + \textcircled{8}$$

$66 + 4 + 4 = 74$

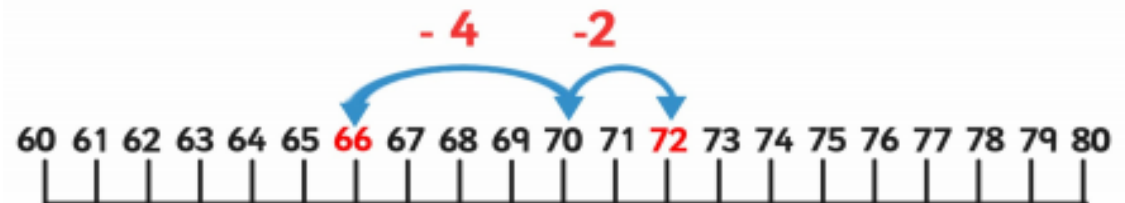


$$72 - 6 =$$

$$72 - 2 = 70 \quad \text{so} \quad 72 - 2 - 4 = 66$$

$$72 - \textcircled{6}$$

$72 - 2 - 4 = 66$



Partitioning (+/-)

Look at the calculation and split the numbers into more manageable numbers to add or subtract.

Split the numbers into tens and ones and work them out separately, then add the totals back up.

$$\begin{array}{l} 89 + 45 \\ \downarrow \quad \downarrow \\ 80 + 40 = 120 \quad \quad 9 + 5 = 14 \\ \swarrow \quad \nwarrow \\ 120 + 14 = 134 \end{array}$$

$$\begin{array}{l} 137 - 43 \\ \downarrow \quad \downarrow \\ 130 - 40 = 90 \quad \quad 7 - 3 = 4 \\ \swarrow \quad \nwarrow \\ 90 + 4 = 94 \end{array}$$

Partitioning (x)

Look at the calculation and split the numbers into more manageable numbers to multiply

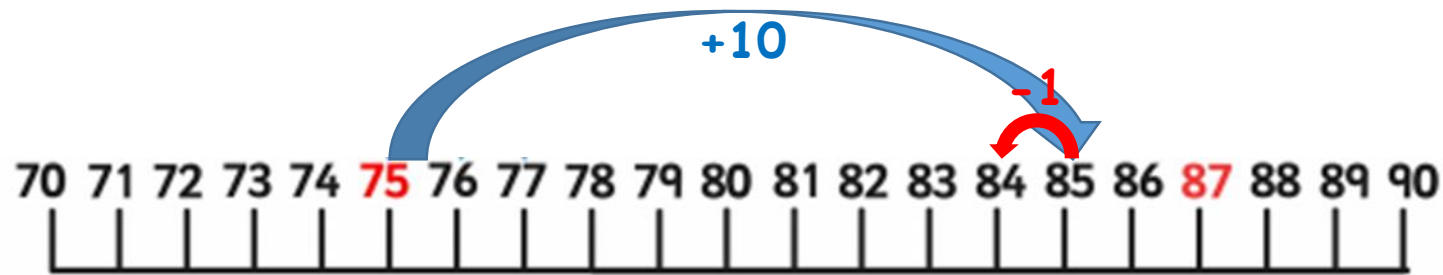
Split the numbers into tens and ones and work them out separately, then add the totals back up.

The diagram illustrates the partitioning method for multiplication. It shows the equation 24×12 at the top. Two vertical arrows point down from the '4' and '2' in '24' to the equations $20 \times 12 = 240$ and $4 \times 12 = 48$ respectively. Two blue arrows originate from the '24' in the top equation: one points to the '20' in the first equation, and the other points to the '4' in the second equation. Below these, two orange arrows point from the '240' and '48' to the equation $240 + 48 = 288$.

$$24 \times 12$$
$$20 \times 12 = 240$$
$$4 \times 12 = 48$$
$$240 + 48 = 288$$

Compensating (+/-)

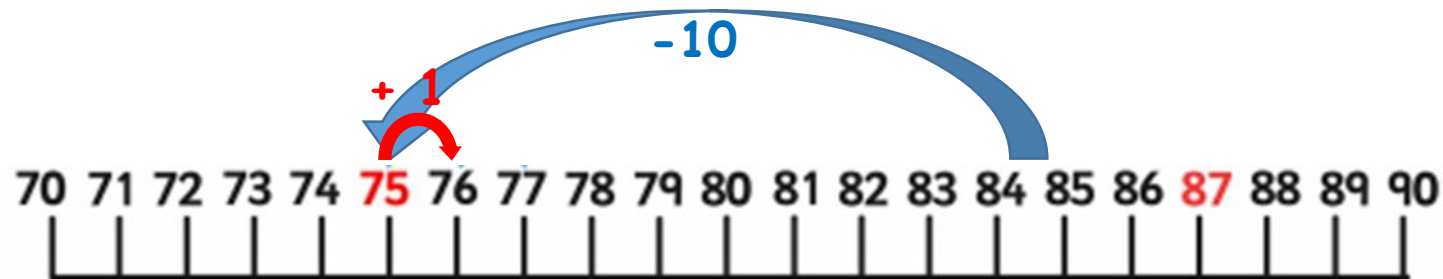
When adding a number ending in 9 round to nearest 'whole ten' then subtract 1.



$$75 + 9 = 84$$

$$75 + 10 - 1 = 84$$

When subtracting 9 round to nearest 'whole ten' then add 1.



$$85 - 9 = 76$$

$$85 - 10 + 1 = 76$$

Compensating (x)

Compensating can be used to multiply looking for numbers within the times tables that they know.

For example,

$$399 \times 6$$

(400 is near and easy to solve)

$$(400 \times 6) - 6 = 2400$$

$$2400 - 6 = 2394$$

One 'lot of' 6 was added to make 400 therefore it needs to be subtracted to bring the total back to 399.

Known facts/looking for patterns

If I know that $7 + 6 = 13$ therefore...

I know that $70 + 60 = 130$

If I know that $15 + 7 = 8$ therefore...

I know that $150 + 70 = 80$

If I know that $4 \times 8 = 32$ therefore...

I know that $40 \times 8 = 320$

If I know that $56 \div 8 = 7$ therefore...

I know that $560 \div 8 = 70$

Multiplication using doubles and halves

Multiplying by 4 is the same as doing double then double again.

Dividing by 4 is the same as doing half then half again.

$200 \times 4 =$ Double 200, then doubled again.

$200 \div 4 =$ Half of 200, then half again.

Knowing times tables can be used to support doubling and halving.

$$\underline{27 \times 4}$$

Double $\longrightarrow 27 \times 2 = 54$

Double again $\longrightarrow 54 \times 2 = 108$

$$\underline{96 \div 4}$$

Half $\longrightarrow 96 \div 2 = 48$

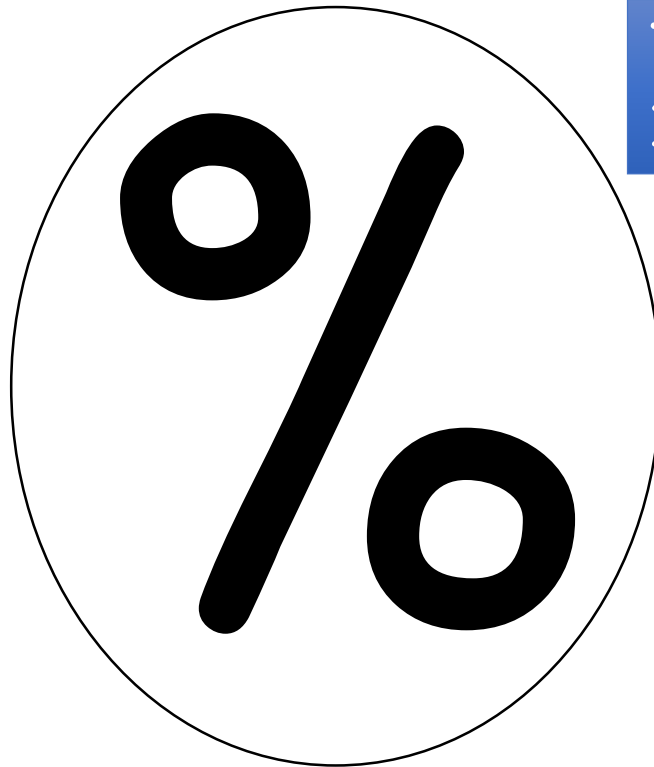
Half again $\longrightarrow 48 \div 2 = 24$

Percentages

To find 50%, divide it by 2.
 $50\% \text{ of } 40 = 20$

To find 25%, divide it by 4.
 $25\% \text{ of } 40 = 10$

To find 75%, find 50%
and then 25%. Then add
them together!
 $75\% \text{ of } 40$
 $50\% \text{ of } 40 = 20$
 $25\% \text{ of } 40 = 10$
 $20 \text{ and } 10 = 30$



To find 1%, divide it by 100

To find 10%, divide it by 10.
 $10\% \text{ of } 500 = 50$

These strategies can be
combined to find any
percentage. E.g

11% of a number...
85% of a number...