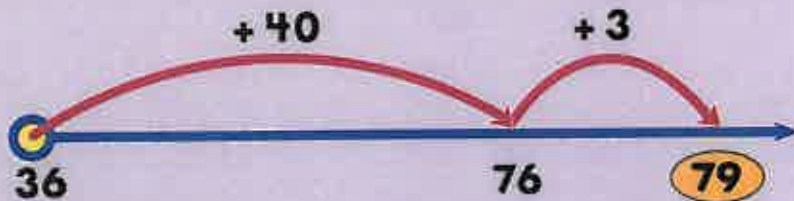


OPEN NUMBER LINE FOR ADDITION

Start the number line at 36.

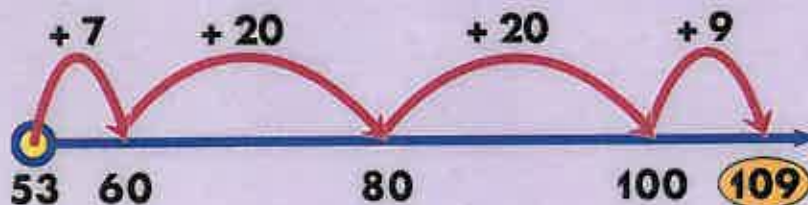
You can show $36 + 43$ on an open number line as two jumps.

Then split 43 into $40 + 3$ and add the 40 first.

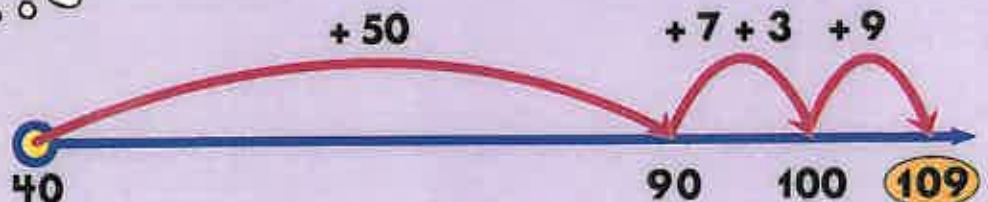


The open number line is also a great way to show different addition strategies. What strategies were used for these different ways of finding $27 + 53 + 29$?

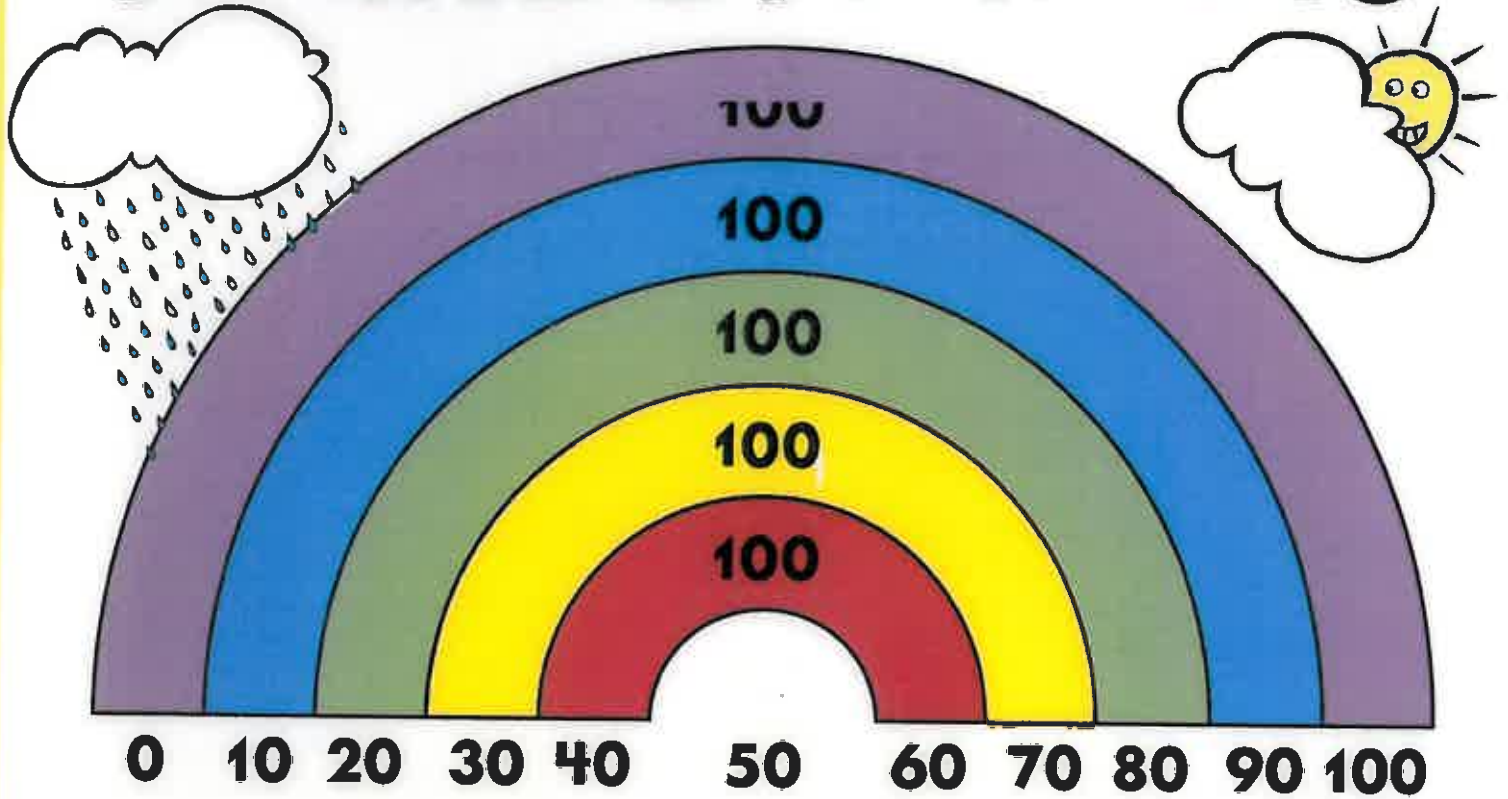
I could use rainbow facts...



...and friendly numbers, **or** I could change the order.



RAINBOW FACTS



To add 30 and 70, think of rainbow facts.

$$30 + 70$$

If you know your rainbow facts to 10, you can use them with the friendly numbers.



To add a list of numbers, start by looking for rainbow pairs.

$$28 + 65 + 83 + 47$$



NUMBER SPLITTING

Splitting a number into two parts can make addition much easier!

YIPES!

37



To add $26 + 37$, you could split 37 into 2 parts to find the partner that makes 26 into a friendly number.

Split the 7 into 4 and 3.

$$26 + 37 = ?$$

6 + 4 is a rainbow fact.

$$26 + 4 + 33 = ?$$

$$30 + 33 = 63$$

Or you could find the partner that makes 37 into a friendly number.

Split the 6 into 3 and 3.

$$26 + 37 = ?$$

3 + 7 is a rainbow fact.

$$23 + 3 + 37 = ?$$

$$23 + 40 = 63$$

Remember: Split one number to make the other number into a friendly number.

ESTIMATING

You often need to know roughly how much the answer should be. Estimating is a quick way of finding out.

$$53 + 26 + 72 + 19 + 22 = ?$$

First, round these numbers to the nearest friendly number

$$53 + 26 + 72 + 19 + 22 = ?$$

$$\begin{array}{ccccccccc} \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & & & & \\ 50 & + & 30 & + & 70 & + & 20 & + & 20 & = & ? \end{array}$$

$$\begin{array}{ccccccc} & & \text{rf} & & \text{d} & & \\ & \swarrow & & \searrow & \swarrow & \searrow & \\ 50 & + & 100 & + & 40 & = & ? \end{array}$$

The estimate is 190.

The actual answer is 192, so the estimate was close.

Rounding and estimating also work well with money amounts.

$$\$3.65 + \$1.25 + \$7.40 = ?$$

Round these to the nearest 50 cents before adding. You'll never be far out!

CHUNKING FOR ADDITION

When you break an addition into chunks, it is easy to add the parts and then put them back together again.

Use chunking for addition to add 46 and 35.

Start with the 10s.
• 40 + 30 is 70.

$$46 + 35$$

$$70 + 11$$

$$81$$

Next, add 5 and 6.

Finish off by adding 70 and 11.

There are other ways of chunking 46 + 35.

It's easy to add 46 to the friendly number, 30.
46 + 30 is 76.

$$46 + 35$$

$$76 + 5$$

$$81$$

Split 35 into 30 + 5.

76 + 5 is 81.

This one has one less step – it saves brain space!

COMPENSATING

When you see that a number is near to a friendly number, you can add by compensating.

51 rounds to 50, a friendly number, so add 50 instead.

$$51 + 17 = ?$$

$$50 + 17 = 67$$

$$50 + 17 + 1 = 68$$

Now compensate by adding the missing 1.

Compensating works really well for subtraction too!

29 rounds to 30, a friendly number, so subtract 30 instead.

$$72 - 29 = ?$$

$$72 - 30 = 42$$

$$72 - 30 + 1 = 43$$

This time, compensate by adding the extra 1.

LANDMARK NUMBERS



Landmark numbers make adding much easier.
All you need to know is that:

$$25 + 25 = 50$$


$$25 + 50 = 75$$

$$25 + 75 = 100$$

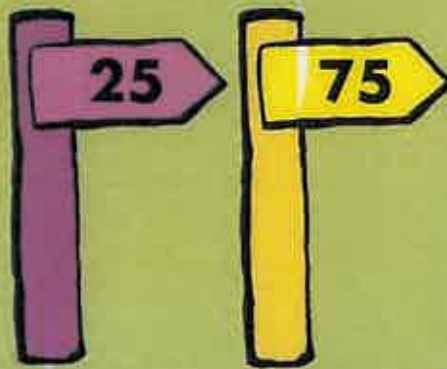
$$50 + 50 = 100$$

$$25 + 25 + 25 + 25 = 100$$


Use landmark numbers to add 26 and 76.



The two nearest landmark numbers are 25 and 75.



We know that $25 + 75$ is 100.
So $26 + 76$ is 102.



Landmark numbers can be used with larger numbers too...



ROUNDING

Adding with friendly numbers is easy. That is why it is a good strategy to round up or down to the nearest 10.

2 is less than 5, so round down to 30.

Look at the 1s and decide how to round.

$$32 \longrightarrow 30$$

7 is more than 5, so round up to 80.

$$77 \longrightarrow 80$$

$$20 \longleftarrow 24$$

Here are some more examples.

20 21 22 23 24 25 26 27 28 29 30

$$26 \longrightarrow 30$$

$$50 \longleftarrow 53$$

50 51 52 53 54 55 56 57 58 59 60

$$55 \longrightarrow 60$$

When the number ends in a 5, round up to the friendly number above.