

Five Ways to Add Multi-Digit Whole Numbers:

Find the sum: $47 + 35$

(Point to the 4 in 47)

“That’s not a 4, is it?”

“Everybody tell me, it’s...” [forty]

(Point to the 3 in 35)

“That’s not a 3 is it?”

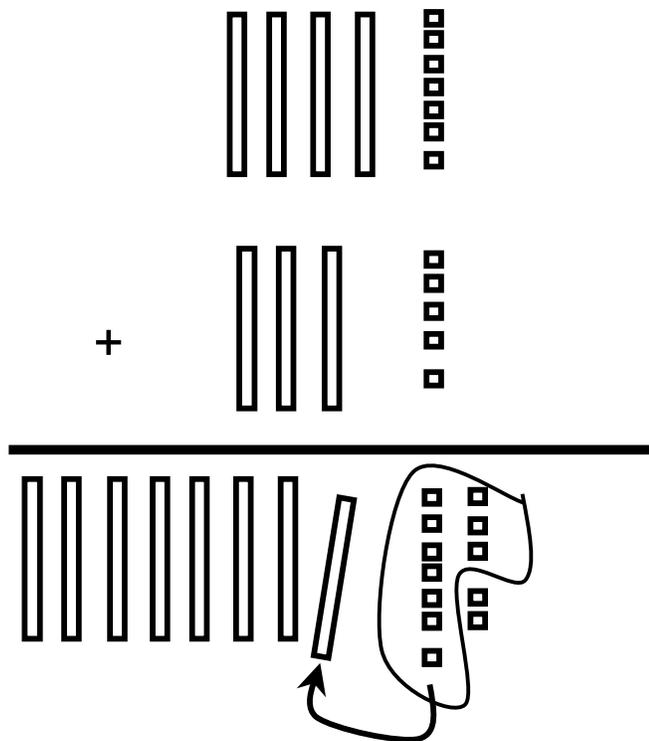
“Everybody tell me, it’s...” [thirty]

To add, we combine things that are alike, so we have to know what we’re adding. So we need to know what are “tens” and what are “ones”.

Traditional

$$\begin{array}{r} 1 \\ 47 \\ + 35 \\ \hline 82 \end{array}$$

Base Ten Blocks



“We’re making a new ten, so we can show it traditionally and using base ten blocks.”

(Point to the 1) “That’s not a 1 is it, that’s a...everybody tell me...” [10]

“So how many tens do we have in our answer?” [8]

“But there are other ways we can add these numbers.” **Now show the following Partial Sums next to the Traditional and Base Ten Blocks methods you just showed – Side-by-side comparison model.**

<p><u>Traditional</u></p> $\begin{array}{r} 1 \\ 47 \\ + 35 \\ \hline 82 \end{array}$	<p><u>Base Ten Blocks</u></p>	<p><u>Partial Sums (ones first)</u></p> $\begin{array}{r} 47 \\ + 35 \\ \hline 12 \leftarrow 7 + 5 \\ + 70 \leftarrow 40 + 30 \\ \hline 82 \end{array}$
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“This is one reason we learned expanded notation. Now we can see what we’re adding. Ones added to ones and tens added to tens.”

“And order doesn’t matter when we add. Mathematicians call that the Commutative Property of Addition. You Try adding these numbers again, now just add the tens first.”

Now next to the previous problem, showing side-by-side comparisons debrief the You Try (Partial Sums – tens first)

<p><u>Traditional</u></p> $\begin{array}{r} 1 \\ 47 \\ + 35 \\ \hline 82 \end{array}$	<p><u>Base Ten Blocks</u></p>	<p><u>Partial Sums (ones first)</u></p> $\begin{array}{r} 47 \\ + 35 \\ \hline 12 \leftarrow 7 + 5 \\ + 70 \leftarrow 40 + 30 \\ \hline 82 \end{array}$	<p><u>Partial Sums (tens first)</u></p> $\begin{array}{r} 47 \\ + 35 \\ \hline 70 \leftarrow 40 + 30 \\ + 12 \leftarrow 7 + 5 \\ \hline 82 \end{array}$
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“Instead of writing it vertically, we can write it horizontally. This is not really another way of doing the problem – just another way of writing down what we are doing.”

Traditional

$$\begin{array}{r} 1 \\ 47 \\ + 35 \\ \hline 82 \end{array}$$

Decomposition one way

$$\begin{aligned} &47 + 35 \\ &= 47 + 3 + 32 \\ &= 50 + 30 + 2 \\ &= 80 + 2 \\ &= 82 \end{aligned}$$

Decomposition another way – You Try

$$\begin{aligned} &47 + 35 \\ &= 40 + 5 + 2 + 35 \\ &= 40 + 5 + 35 + 2 \\ &= 40 + 40 + 2 \\ &= 82 \end{aligned}$$

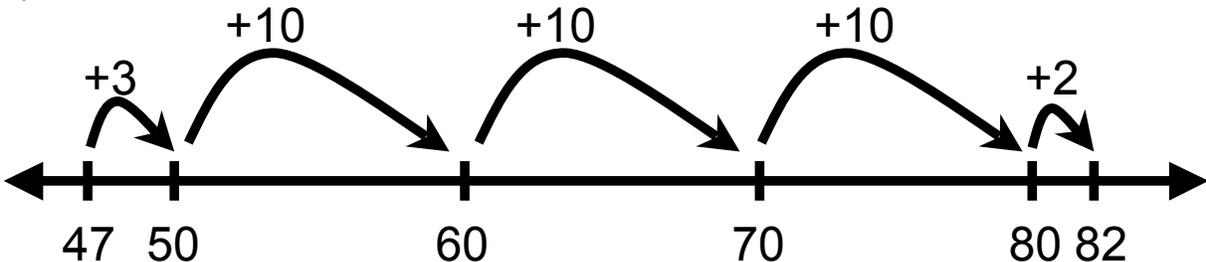
“There are many ways to break these numbers apart and put them back together. Mathematicians call this decomposition.”

“You Try another way to decompose to add.” **Have students share their alternative ways to decompose to find the sum of 47 and 35.**

“But there are even more ways!”

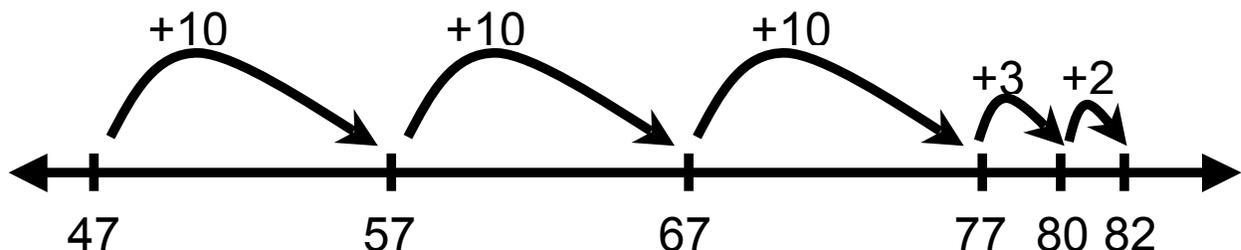
Adding on an Open Number Line – One Way

“I’m thinking, first I’ll jump 3 to get to 50. Then I’ll jump by tens. How many tens do I need to jump? [3] Then I just jump 2 more because that’s all that’s left in 35. So I added 35 to 47 and got 82.”



Adding on an Open Number Line – Another Way – You Try

“What did you add first?” “Then what did you do?” “How did you know you had that many left to add?”

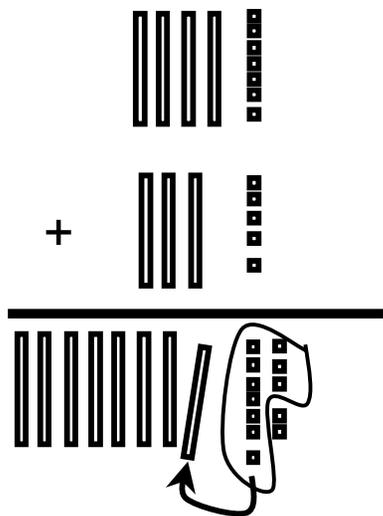


At the end of the instruction, either on the board or on chart paper, all five methods should be shown for the problem – Side-by-side comparison model as shown below:

Traditional

$$\begin{array}{r} 1 \\ 47 \\ + 35 \\ \hline 82 \end{array}$$

Base Ten Blocks



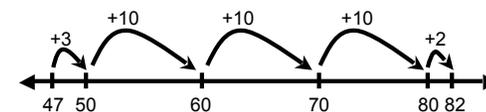
Partial Sums

$$\begin{array}{r} 47 \\ + 35 \\ \hline 12 \leftarrow 7 + 5 \\ + 70 \leftarrow 40 + 30 \\ \hline 82 \end{array}$$

Decomposition

$$\begin{aligned} &47 + 35 \\ &= 40 + 5 + 2 + 35 \\ &= 40 + 5 + 35 + 2 \\ &= 40 + 40 + 2 \\ &= 82 \end{aligned}$$

Open Number Line



You Try (Think-Pair-Share) – All Five Ways:

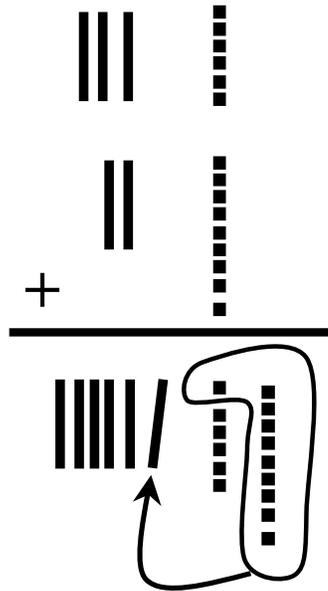
Find the sum: $36 + 29$ all five ways:

Have students work in pairs to determine the sum all five ways.

Traditional

$$\begin{array}{r} 1 \\ 36 \\ + 29 \\ \hline 65 \end{array}$$

Base Ten Blocks



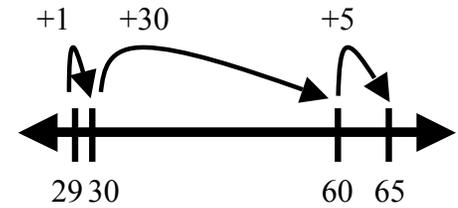
Partial Sums

$$\begin{array}{r} 36 \\ + 29 \\ \hline 15 \leftarrow 6 + 9 \\ + 50 \leftarrow 30 + 20 \\ \hline 65 \end{array}$$

Decomposition

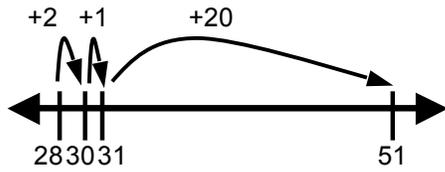
$$\begin{array}{r} 36 + 29 \\ = 30 + 5 + 1 + 29 \\ = 30 + 5 + 30 \\ = 30 + 30 + 5 \\ = 65 \end{array}$$

Open Number Line



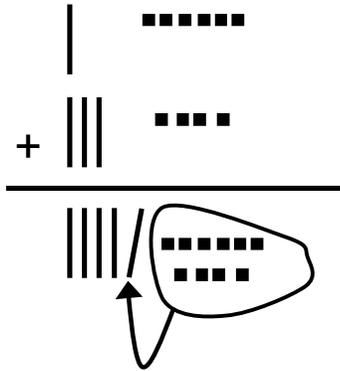
Homework– Choose two ways for each to find the sum:

1) $23 + 28$



$$\begin{aligned} 23 + 28 \\ = 20 + 3 + 20 + 8 \\ = 40 + 10 + 1 \\ = 51 \end{aligned}$$

2) $16 + 34$



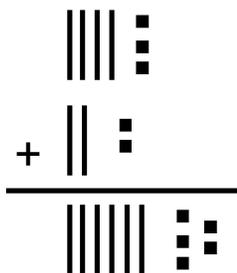
$$\begin{aligned} 16 \\ + 34 \\ \hline 10 \leftarrow 6 + 4 \\ + 40 \leftarrow 10 + 30 \\ \hline 50 \end{aligned}$$

3) $236 + 127$

$$\begin{aligned} 236 + 127 \\ = 236 + 4 + 123 \\ = 240 + 100 + 23 \\ = 340 + 23 \\ = 363 \end{aligned}$$

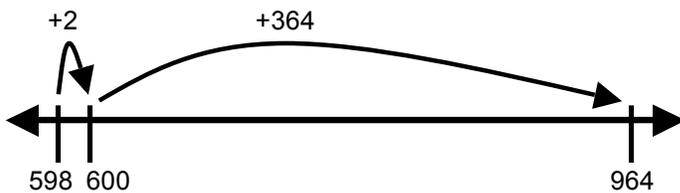
$$\begin{aligned} & 1 \\ 236 \\ + 127 \\ \hline 363 \end{aligned}$$

4) $43 + 22$



$$\begin{aligned} 43 \\ + 22 \\ \hline 65 \end{aligned}$$

5) $366 + 598$



$$\begin{aligned} 366 \\ + 598 \\ \hline 800 \leftarrow 300 + 500 \\ 150 \leftarrow 60 + 90 \\ + 14 \leftarrow 6 + 8 \\ \hline 964 \end{aligned}$$