

Students' Strategies for Addition: Using Place Value

Yesterday there were 57 penguins sitting on the iceberg. Later 34 penguins joined them. How many penguins are now on the iceberg?

$$50 + 30 = 80$$

$$80 + 7 = 87$$

$$87 + 4 = \underline{91}$$

$$\begin{array}{r} 50 \\ + 30 \\ \hline 80 \\ + 13 \\ \hline 93 \end{array}$$

$$50 + 30 = 80$$

$$80 + 7 = 87$$

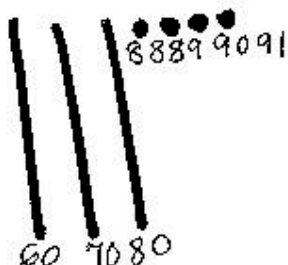
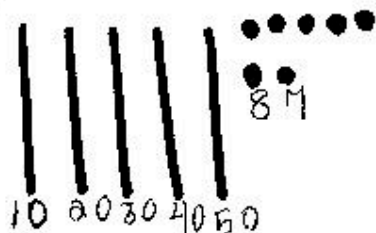
$$87 + 4 = 92$$

$$57 + 20 = 77$$

$$77 + 10 = 87$$

$$87 + 4 = 91$$

91



Students' Strategies for Addition: Keeping a Number Whole

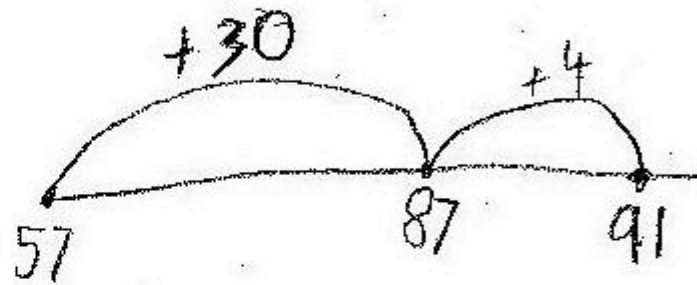
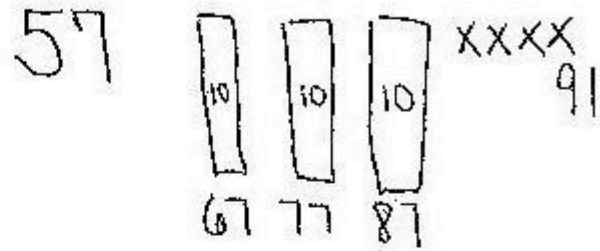
Yesterday there were 57 penguins sitting on the iceberg. Later 34 penguins joined them. How many penguins are now on the iceberg?

$$57 + 10 = 67$$

$$67 + 10 = 77$$

$$77 + 10 = 87$$

$$87 + 4 = 91$$



$$57 + 30 = 87$$

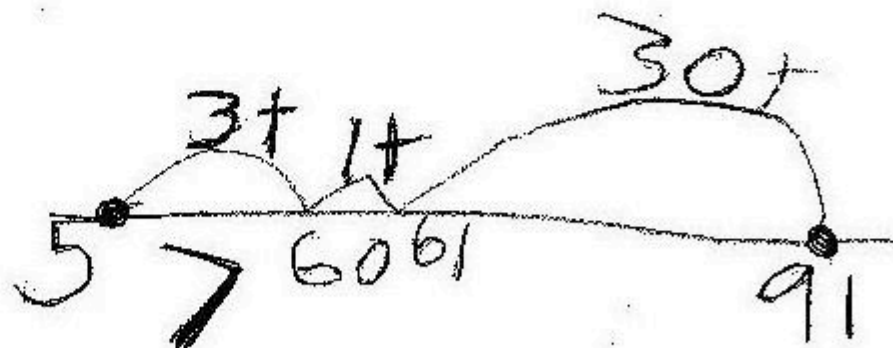
$$87 + 3 = 90$$

$$90 + 1 = 91$$

$$57 + 30 = 87$$

$$87 + 3 = 90$$

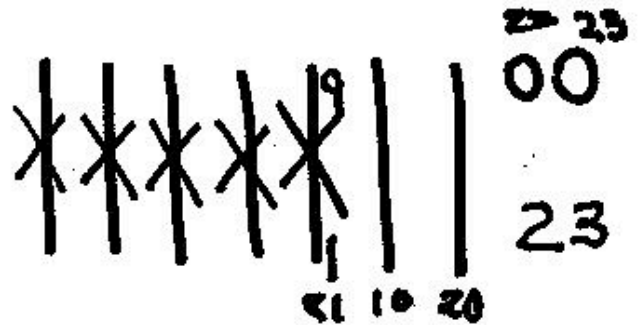
$$90 + 1 = 91$$



Students' Strategies for Subtraction: Using Place Value

There were 72 penguins sitting on the iceberg. 49 penguins jumped into the icy water. How many penguins are still on the iceberg?

$$\begin{array}{r} 72 \\ - 49 \\ \hline 30 \\ - 7 \\ \hline 23 \end{array}$$

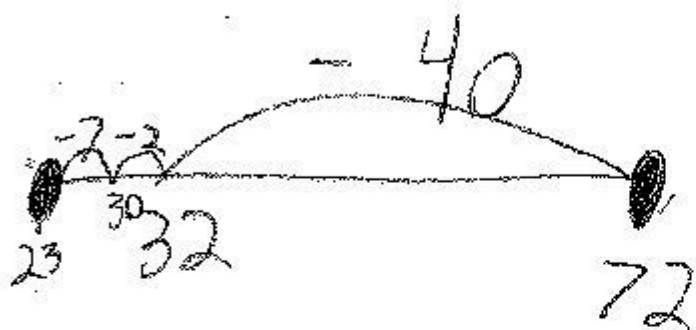


$$\begin{array}{l} 72 - 49 \\ 70 - 40 = 30 \\ 2 - 9 = 7 \\ 30 - 7 = 23 \end{array}$$

$$\begin{array}{l} 72 - 49 = 23 \\ \swarrow \searrow \\ 30 - 7 = 23 \end{array}$$

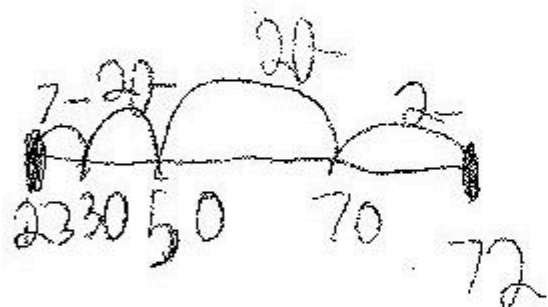
Students' Strategies for Subtraction: Keeping a Number Whole

There were 72 penguins sitting on the iceberg. 49 penguins jumped into the icy water. How many penguins are still on the iceberg?



$$72 - 40 = 32$$

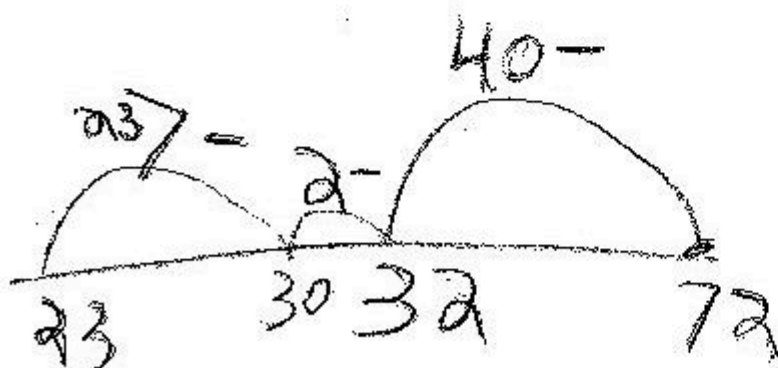
$$32 - 9 = \underline{23}$$



$$72 - 2 = 70$$

$$70 - 40 = 30$$

$$70 - 7 = 23$$



$$72 - 40 = 32$$

$$32 - 2 = 30$$

$$30 - 7 = 23$$