

# Reverse the Order

Junior high school

## Objective

Develop a variety of mental methods of computation.  
Estimate and approximate solutions to problems.

## Explanation of the activity

Enter any 2-digit number into the calculator.  
Reverse the order of the digits through simple calculator operations.

While working on this activity, students should develop their skills of mental mathematics.  
They should also be interpreting and generalizing their answers.

## Using the calculator

Calculator functions used: Addition, subtraction

Press the following buttons and then start operation.

**ON/C** **MODE** **0**

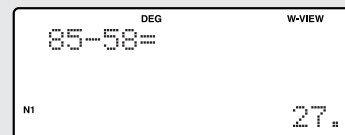
### Example A:

To reverse the order of 58:

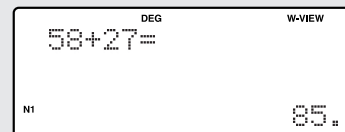
85 **-** 58 **=**

58 **+** 27 **=**

Solution: Add 27 to 58 to get 85.



DEG W-VIEW  
85-58=  
N1 27.



DEG W-VIEW  
58+27=  
N1 85.

Now try using a 3-digit number.

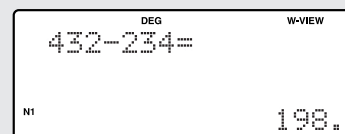
### Example B:

Enter 432 into the calculator


**ON/C** 432 **-** 234 **=**

234 **+** 198 **=**

Solution: Add 198 to 234 to get 432.



DEG W-VIEW  
432-234=  
N1 198.



DEG W-VIEW  
234+198=  
N1 432.

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## ••••• Using the activity in the classroom •••••

This activity is probably best introduced orally to a group of students. Ask the students to enter any two digit number into their calculators. Then, ask them to find a simple way to reverse the order of the digits of these numbers. Students may do this by using inverse operations.

## ••••• Points for students to discuss •••••

After trying an example, the students can talk about the operations and numbers that they used. This discussion should lead to the generalization that one way to reverse the order of the digits is to add or subtract a multiple of 9. More able students could be asked to try and prove this generalization:

$$(10a + b) + N = (10b + a)$$

$$N = (10b + a) - (10a + b)$$

$$N = 9b - 9a = 9(b - a)$$

### **Further Ideas**

Try using the activity with 3-digit numbers, 4-digit numbers, etc.

Choose any 2-digit number, reverse it, and then add the reversed number to the original.

What happens? Try this with 3-digit numbers or 4-digit numbers, etc.