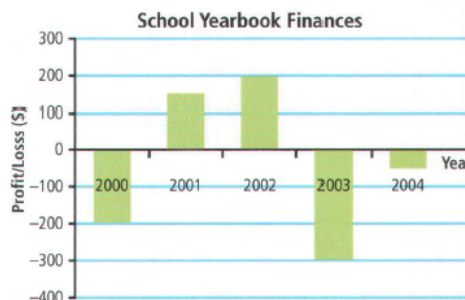


# Order of Operations with Integers

The bar graph shows the profit or loss each year to publish the school yearbook.

How would you find the average yearly profit or loss?



$$\begin{aligned}
 & (-200) + (150) + (200) + (-300) + (-50) \\
 & = -\$200 \\
 & \frac{-\$200}{5} = -\$40 \\
 & \text{average loss of } \$40 \text{ per year}
 \end{aligned}$$

## Example 1: Use the Order of Operations

Evaluate.

- a)  $6 - 10 + (-2)$
- b)  $-6 + 5 \times 9 - 50$
- c)  $-2 + 3(5^2 - 30)$

The order of operations works the same way with integers as it does with whole numbers.

**Solution**

$$\begin{aligned}
 \text{a)} \quad & 6 - 10 + (-2) = (-6) \\
 \text{b)} \quad & -6 + \underline{5 \times 9} - 50 \\
 & = -6 + 45 - 50 \\
 & = 39 - 50 \\
 & = -11 \\
 \text{c)} \quad & -2 + 3(5^2 - 30) \\
 & = -2 + 3(25 - 30) \\
 & = -2 + 3(-5) \\
 & = -2 + (-15) \\
 & = -17
 \end{aligned}$$

**Example 2: Stock Prices**

Stock prices increase and decrease daily. A particular stock showed the following daily changes in price, in cents, over a five-day period: +20, -15, -23, +15, -12. What was the mean daily change in price?

$$\begin{aligned} \text{Mean} &= \frac{\text{Total}}{\# \text{ of } \#s} \\ &= \frac{20 + (-15) + (-23) + 15 + (-12)}{5} \\ &= \frac{-15}{5} = -3 \\ &\text{loss of 3 per day} \end{aligned}$$

1. The following skill-testing question was given in a contest:

Add 5 and 7.  
Multiply by 4.  
Subtract 50.

Anna provided this solution:

$$\begin{aligned} &5 + 7 \times 4 - 50 \\ &= 5 + 28 - 50 \\ &= 33 - 50 \\ &= -17 \end{aligned}$$

The contest manager gave this solution:

$$\begin{aligned} &5 + 7 = 12 \\ &12 \times 4 = 48 \\ &48 - 50 = -2 \end{aligned}$$

Which solution do you think is correct? Or are they both correct?

Justify your response.

Anna has used BEDMAS.  
However, the manager has the correct solution. The periods in the question are VERY important.

## Key Ideas

- The order of operations is the same for integers:

B Brackets

E Exponents

D } Division and Multiplication, in order from *left to right*A } Addition and Subtraction, in order from *left to right*

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Note

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$$\begin{aligned}
 & -5 \cdot 3 \quad \text{means} \\
 & \quad \quad \quad \text{multiply} \\
 & = -5 \times 3 = -15 \\
 & \quad \quad \quad \frac{(-3 + 5)}{2}
 \end{aligned}$$