

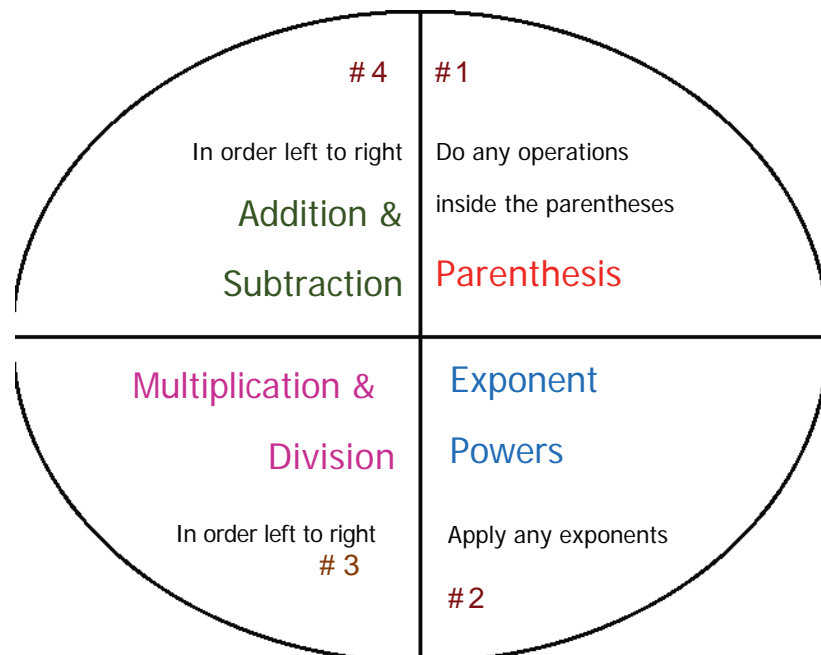
Quality Overview 100: Order of Operations

A very important aspect in looking at Quality is the process, if the process is faulty—the outcome may not be the quality required by the customer. The math used in these processes must be held to the same quality in its use as well.

A great example of a process that requires consistence is what we call the “Order of Operations.” That is, what operation is completed first to simplify in a math expression. The operations used are addition, subtraction, multiplication, division, exponents and parenthesis. The question is, what is the order of this process and does it change the outcome if the process is changed?

The answer is yes! The process must be done correctly if a consistent outcome is required—and it is! Look at $10 - 2 \times 4$, we could **SUBTRACT** $10 - 2 = 8$, then **MULTIPLY** 8×4 which is **32**. The problem is that it is not the correct answer. The correct order of this process is to **MULTIPLY** $2 \times 4 = 8$, then **SUBTRACT** $10 - 8 = 2$.

Here is the “Order of Operations”



ORDER OF OPERATIONS WORD PROBLEMS

1. A certain small factory employs 98 workers. Of these, 10 receive a wage of \$150 per day and the rest receive \$85.50 per day. To the management, a week is equal to 6 working days. How much does the factory pay out for each week?
2. If the same factory has supply expenses of \$1135.78 per day, in addition to the wages above and makes \$60,128.72 in a week, what is the factory's total profit or loss in one week?
3. A certain Math Club makes 35 bars of laundry soap a week and sells these at \$20 each. Before the soap can all be sold, the pupils found out that 6 bars were destroyed by mice. How much will be the total sale at the end of a four-week month? Write an expression and show your work and answer.
4. Emily had 30 cookies to bring to school for her birthday. Three students wanted two cookies each. Then, a new student came to the school that day and he wanted three cookies. Then, one of the three kids gave their two cookies back. Emily was still passing out cookies. How many cookies did Emily have left to pass out after the students gave theirs back?

5. Lilia scores 15 points fewer than Bob, who scores 35 points. Carol scores half as many points as Lilia. How many points does Carol score? Write an expression and evaluate it.
6. The middle school team scored three field goals worth three points each and two touchdowns worth six points each, with a single extra point for each touchdown. Write a numerical expression to find the team's score. Evaluate the expression.
7. Use the order of operations and the digits 2, 4, 6, and 8 to create an expression with a value of 2. Tip: You may add exponents and/or negatives at your will.



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