



Orders of Operations

Follow this order:

Please Excuse My Dear Aunt Sally.

1. **Parentheses** Inner to outer
2. **Exponents** You will learn exponents in 6th grade.
Examples: $3^2 = 3 \times 3 = 9$, $5^3 = 5 \times 5 \times 5 = 125$.
3. **Multiplication or Division** 
4. **Addition or Subtraction** 

| | | |
|---|--|---|
| $21 - 6 \div 3 \times 2$ $= 21 - 6 \div 3 \times 2$ $= 21 - 2 \times 2$ $= 21 - 4$ $= 17$ | $(21 - 6) \div 3 \times 2$ $= (21 - 6) \div 3 \times 2$ $= 15 \div 3 \times 2$ $= 5 \times 2$ $= 10$ | $21 - 6 \div (3 \times 2)$ $= 21 - 6 \div (3 \times 2)$ $= 21 - 6 \div 6$ $= 21 - 1$ $= 20$ |
|---|--|---|

| | | |
|--|---|--|
| $\frac{1}{3} + \frac{2}{3} \times 2$ $= \frac{1}{3} + \frac{2}{3} \times 2$ $= \frac{1}{3} + \frac{4}{3}$ $= \frac{5}{3}$ | $(\frac{1}{3} + \frac{2}{3}) \times 2$ $= (\frac{1}{3} + \frac{2}{3}) \times 2$ $= 1 \times 2$ $= 2$ | $270 \div ((4 + 2) \times (6 - 3)) \times 3$ $= 270 \div ((4 + 2) \times (6 - 3)) \times 3$ $= 270 \div (6 \times 3) \times 3$ $= 270 \div 18 \times 3$ $= 15 \times 3$ $= 5$ |
|--|---|--|

Constructing Expressions

Addition: more than, plus, increase, add, sum, total
 Subtraction: less than, minus, decrease, difference, fewer

Multiplication: double, twice, triple, times, product
 Division: half, each, divide, quotient

Inputs & Outputs Formats

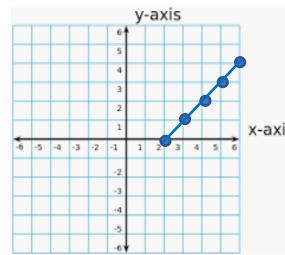
$y = x + 3.3$

| y | x |
|------|------|
| 3 | 6.3 |
| 5 | 8.3 |
| 7.5 | 10.8 |
| 11.5 | 14.8 |

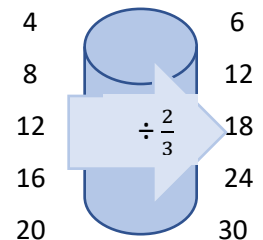
$m \times \frac{1}{3} = n$

| | | | | | |
|---|---------------|---|---------------|---------------|---|
| m | 1 | 3 | 5 | 7 | 9 |
| n | $\frac{1}{3}$ | 1 | $\frac{5}{3}$ | $\frac{7}{3}$ | 3 |

$y = x - 2$



$x \div \frac{2}{3} = y$



Exercises: Evaluate the following expressions.

1. $2 \times 24.1 - 12.8 \div 16$

2. $(8 \div \frac{1}{4} - 4) \times (9 + 15)$

3. $4 + (3 \times (10 \div 2) + 24) \times 6$

4. $(259 + 459 \div 27) \div 12 \times 2$

Construct and evaluate the expressions.

| | | | | | | | | | | | | | |
|---|--|----------------------------|---|---|----|---|----|----------------------|--|--|--|--|--|
| <p>5. Chocolates cost \$2.50 per lb and candy costs \$4.00 per lb. Michelle bought x pounds of chocolates. How much would Michele pay for the chocolates?</p> <p>Expression for how much Michele paid for the chocolates: _____ \$</p> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="text-align: center; margin-right: 10px;"> <p>1 _____</p> <p>1.5 _____</p> <p>2 _____</p> <p>2.5 _____</p> </div> </div> | <p>6. Chocolates cost \$2.50 per lb and candy costs \$4.00 per lb. Michele spent \$30 in total. Michelle bought x pounds of chocolates. How many pounds of candy did Michele buy if she spent \$40 in total?</p> <p>Expression for how many pounds of candy Michele bought: _____</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="padding: 5px;">x = pounds of chocolates</td> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px; text-align: center;">4</td> <td style="width: 20px; text-align: center;">6</td> <td style="width: 20px; text-align: center;">8</td> <td style="width: 20px; text-align: center;">10</td> </tr> <tr> <td style="padding: 5px;">weight of candy (lb)</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table> | x = pounds of chocolates | 2 | 4 | 6 | 8 | 10 | weight of candy (lb) | | | | | |
| x = pounds of chocolates | 2 | 4 | 6 | 8 | 10 | | | | | | | | |
| weight of candy (lb) | | | | | | | | | | | | | |
| <p>7. In an elementary school, a group of children will have lunch in the yard, and the rest will have lunch in the cafeteria. There are 250 children in school, and 15 tables in the cafeteria. Let x be the number of students eating outside. Write the expression for how many students for each table if the children are divided equally? If $x = 85$, evaluate the expression.</p> | <p>8. Susan bought a plant that was 4cm tall from a floral store. It grows 1.5 cm every week. Write the expression for the height of the plant by the end of week x.</p> <p>Evaluate the height of the plant by the end of the 6th week.</p> | | | | | | | | | | | | |

Answer Key

| | | | | | | | | | | | | | |
|---|---|----------------------------|------|---|------|---|----|----------------------|------|-----|------|---|------|
| <p>1. $2 \times 24.1 - 12.8 \div 16$ $= 48.2 - 0.8$ $= 47.4$</p> | <p>2. $(8 \div \frac{1}{4} - 4) \times (9 + 15)$ $= (32 - 4) \times 24$ $= 28 \times 24$ $= 672$</p> | | | | | | | | | | | | |
| <p>3. $4 + (3 \times (10 \div 2) + 24) \times 6$ $= 4 + (3 \times 5 + 24) \times 6$ $= 4 + (15 + 24) \times 6$ $= 4 + 39 \times 6$ $= 4 + 234$ $= 238$</p> | <p>4. $(259 + 459 \div 27) \div 12 \times 2$ $= (259 + 17) \div 12 \times 2$ $= 276 \div 12 \times 2$ $= 23 \times 2$ $= 46$</p> | | | | | | | | | | | | |
| <p>5. How much Michele paid for the chocolates: $2.5x$</p> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="text-align: center; margin-right: 10px;"> <p>1 <u>2.5</u></p> <p>1.5 <u>3.75</u></p> <p>2 <u>5</u></p> <p>2.5 <u>6.25</u></p> </div> </div> | <p>6. How many pounds of candy Michele bought: $(40 - 2.5x) \div 4$</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="padding: 5px;">x = pounds of chocolates</td> <td style="width: 20px; text-align: center;">2</td> <td style="width: 20px; text-align: center;">4</td> <td style="width: 20px; text-align: center;">6</td> <td style="width: 20px; text-align: center;">8</td> <td style="width: 20px; text-align: center;">10</td> </tr> <tr> <td style="padding: 5px;">weight of candy (lb)</td> <td style="text-align: center;">8.75</td> <td style="text-align: center;">7.5</td> <td style="text-align: center;">6.25</td> <td style="text-align: center;">5</td> <td style="text-align: center;">3.75</td> </tr> </table> | x = pounds of chocolates | 2 | 4 | 6 | 8 | 10 | weight of candy (lb) | 8.75 | 7.5 | 6.25 | 5 | 3.75 |
| x = pounds of chocolates | 2 | 4 | 6 | 8 | 10 | | | | | | | | |
| weight of candy (lb) | 8.75 | 7.5 | 6.25 | 5 | 3.75 | | | | | | | | |
| <p>7. Expression: $(250 - x) \div 15$</p> <p>If $x = 85$, the value = $(250 - 85) \div 15 = 165 \div 15 = 11$</p> | <p>8. Expression: $4 + 1.5x$</p> <p>If $x = 6$, the value = $4 + 1.5 \times 6 = 4 + 9 = 13$ cm</p> | | | | | | | | | | | | |