Mathematical Operations

. 'BODMAS' Rule:

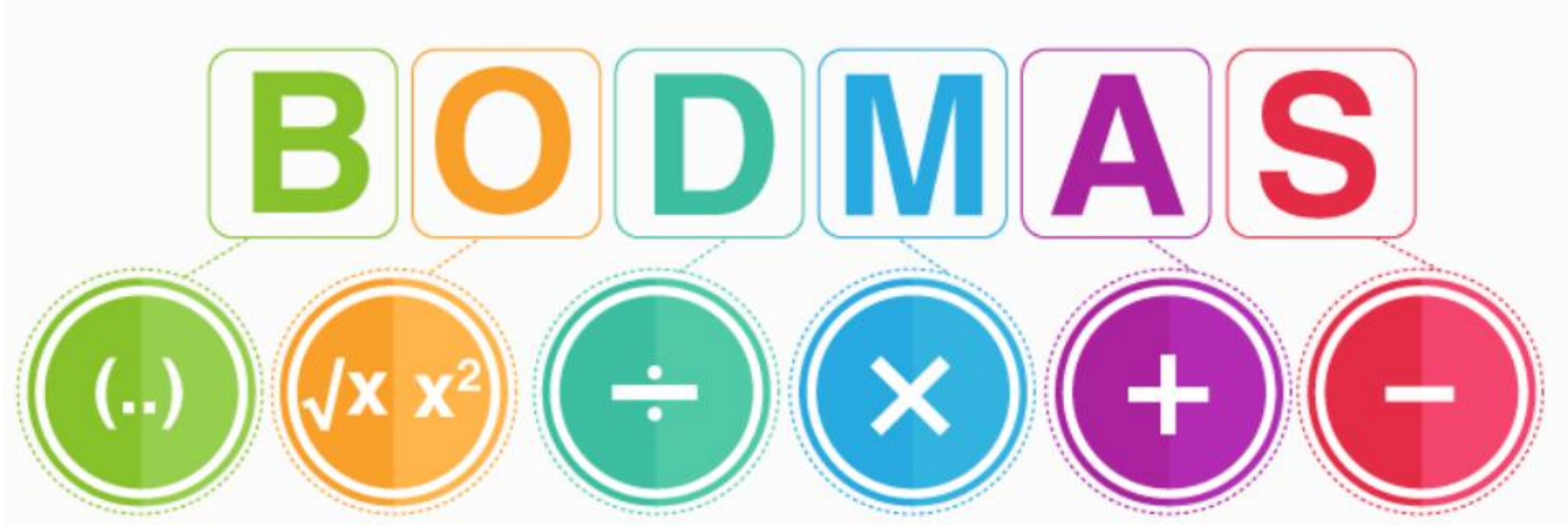
This rule depicts the correct sequence in which the operations are to be executed, so as to find out the value of given expression.

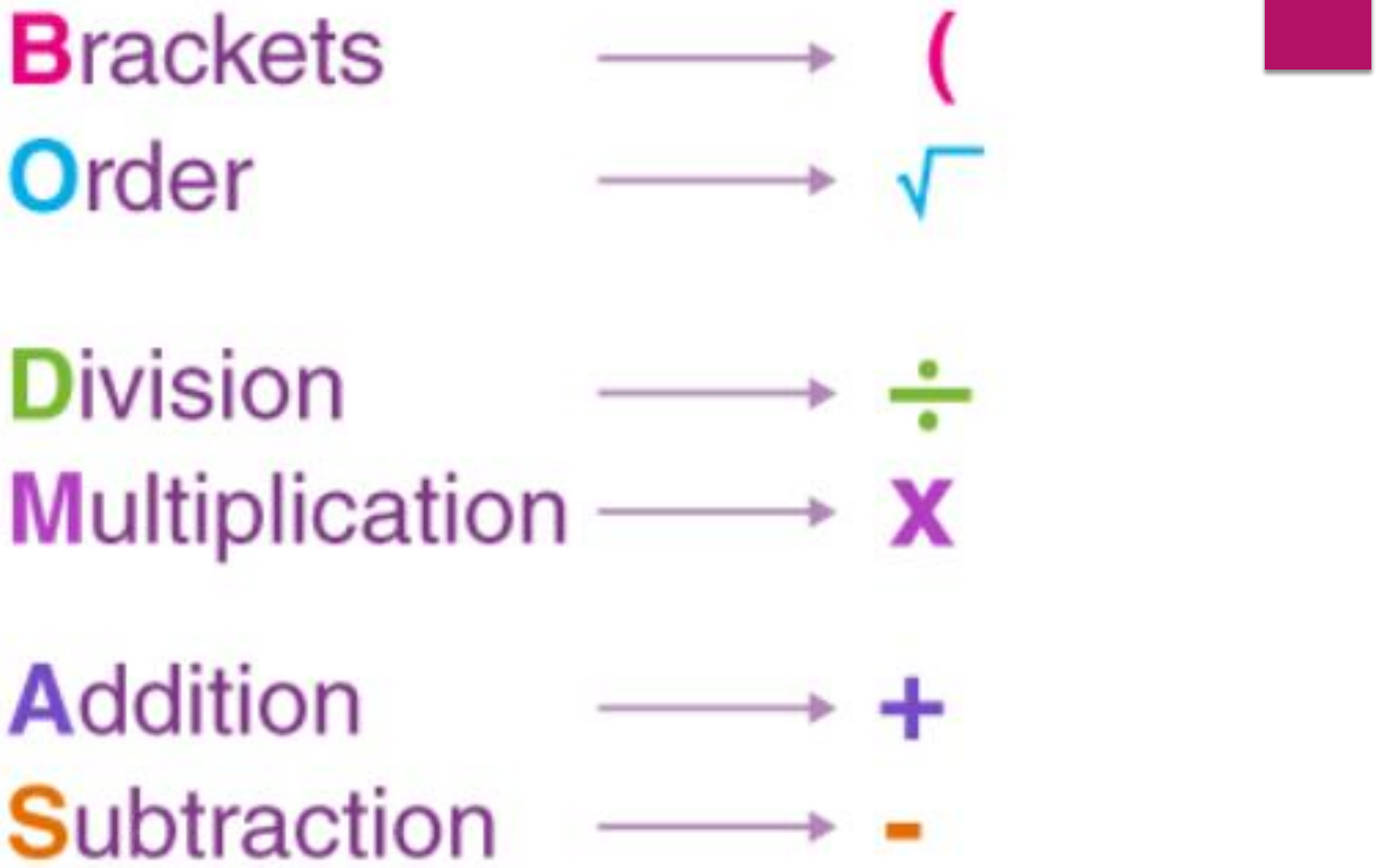
Here B - Bracket,
O - of,
D - Division,
M - Multiplication,
A - Addition and
S - Subtraction

Thus, in simplifying an expression, first of all the brackets must be removed, strictly in the order (), {} and ||.

After removing the brackets, we must use the following operations strictly in the order:

(i) of (ii) Division (iii) Multiplication (iv) Addition (v) Subtraction.


BODMAS
(..)
√x x²
÷
×
+
−


Brackets
(
Order
√
Division
÷
Multiplication
X
Addition
+
Subtraction
-

Evaluate: $2 + 4 \div (22 + 6) \times 2$.

Solution:

We have

$2 + 4 \div (22 + 6) \times 2$

First, we solve the parentheses, and we get

$= 2 + 4 \div 28 \times 2$

Now, perform the division 4/28

$= 2 + 1/7 \times 2$

Now, we do the multiplication $1/7 \times 2$

$= 2 + 2/7$

$= (14 + 2)/7$

$= 16/7 = 2\ ^{2}/_{7}$.

Evaluate: $\{15 \times 32 \div 2 \times 5\} \div 75$

Solution:

Now, $\{15 \times 32 \div 2 \times 5\} \div 75 = \{15 \times (32 \div 2) \times 5\} \div 75$

$= \{15 \times 16 \times 5\} \div 75$

$= 16$

Evaluate: $5 \times (2 \times 3^4) \div 6 + 7 - 8$

Solution:

$5 \times (2 \times 3^4) \div 6 + 7 - 8$

$= 5 \times (2 \times 81) \div 6 + 7 - 8$

$= 5 \times 162 \div 6 + 7 - 8$

$= 5 \times 27 + 7 - 8$

$= 135 + 7 - 8$

$= 142 - 8 = 134.$

If A % B = A + B - 1, what is 10 % 2?

Given : A % B = A + B - 1

Equation : 10 % 2

After replacing the signs, we get:

⇒ **10 + 2** - 1

⇒ 12 - 1

⇒ 11

If '+' represents '÷', '÷' represents '-', '-' represents '×' and '×' represents '+', then what is the value of '30 +10 ÷ 6 - 5 × 6' ?

Symbol	**+**	**÷**	**-**	**×**
Meaning	÷	-	×	+

Now replacing the signs and solving using BODMAS Rule, we get:

⇒ **30 ÷ 10** - 6 × 5 + 6

⇒ 3 - **6 × 5** + 6

⇒ **3** - 30 **+ 6**

⇒ **9 - 30** = **-21.**

Simplify the following expression using the given code language, where '+' represents '×', '×' represents '-', '-' represents '÷, and '÷' represents '+'.

16 × 4 ÷ 4 + 14 - 2

Code	+	×	-	÷
Sign	×	-	÷	+

After replacing the signs, we get:

16 × 4 ÷ 4 + 14 - 2 ⇒ 16 - 4 + 4 × 14 ÷ 2

⇒ 16 - 4 + 4 × **14 ÷ 2**

⇒ 16 - 4 + **4 × 7**

⇒ **16 + 28** - 4

⇒ **44 - 4**

⇒ **40**

Evaluate:

$$\frac{1}{2} \times \frac{2}{3} \div \frac{7}{3} + \frac{1}{2}$$

Solution:

$$\frac{1}{2} \times \frac{2}{3} \div \frac{7}{3} + \frac{1}{2}$$

$$= \frac{1}{2} \times \left(\frac{2}{3} \div \frac{7}{3}\right) + \frac{1}{2} = \frac{1}{2} \times \left(\frac{2}{3} \times \frac{3}{7}\right) + \frac{1}{2}$$

$$= \frac{1}{2} \times \frac{2}{7} + \frac{1}{2} = \frac{1}{7} + \frac{1}{2} = \frac{9}{14}$$

$$1800 \div [10\{(12-6)+(24-12)\}]$$

$$1800 \div [10\{(12-6)+(24-12)\}]$$
$$= 1800 \div [10\{6+12\}]$$
$$= 1800 \div [10\{18\}]$$
$$= 1800 \div 180$$
$$= 10$$