Exercise 1.1.3 - BODMAS Problems Solutions

BODMAS is an acronym that stands for:

- **B**rackets
- **O**rders (powers, square roots, etc.)
- **D**ivision
- **M**ultiplication
- **A**ddition
- **S**ubtraction

This acronym helps us remember the correct order of operations when solving mathematical expressions.

1. $7 + (6 \times 4^2 - 3)$

Let's solve this step-by-step following the BODMAS rule:

1. First, solve the expression inside the brackets $(6 \times 4^2 - 3)$:
   - Calculate the power: $4^2 = 16$
   - Multiply: $6 \times 16 = 96$
   - Subtract: $96 - 3 = 93$
2. Now, add 7 to the result:
   - $7 + 93 = 100$

Therefore, $7 + (6 \times 4^2 - 3) = 100$

2. $9 \div 3 \times 2 \div 6$

According to BODMAS, division and multiplication have equal precedence and are evaluated from left to right:

1. $9 \div 3 = 3$
2. $3 \times 2 = 6$
3. $6 \div 6 = 1$

Therefore, $9 \div 3 \times 2 \div 6 = 1$

3. $5(3 + 2) + 5^2$

1. First, solve the expression inside the brackets:
   - $3 + 2 = 5$
2. Calculate the power:
   - $5^2 = 25$
3. Multiply:
   - $5 \times 5 = 25$
4. Add:
   - $25 + 25 = 50$

Therefore, $5(3 + 2) + 5^2 = 50$

4. $(105 + 206) - 550 \div 5^2 + 10$

1. First, solve the expression inside the brackets:
   - $105 + 206 = 311$
2. Calculate the power:
   - $5^2 = 25$
3. Division:
   - $550 \div 25 = 22$
4. Now solve from left to right (subtraction and addition):
   - $311 - 22 = 289$
   - $289 + 10 = 299$

Therefore, $(105 + 206) - 550 \div 5^2 + 10 = 299$

5. $8 + 8 \div 8 + 8 \times 8 - 7$

Following BODMAS:

1. Division first:
   - $8 \div 8 = 1$
2. Multiplication:
   - $8 \times 8 = 64$
3. Now solve addition and subtraction from left to right:
   - $8 + 1 = 9$
   - $9 + 64 = 73$
   - $73 - 7 = 66$

Therefore, 8 + 8 ÷ 8 + 8 × 8 - 7 = 66

6. 8 ÷ 2(2 + 2)

1. First, solve the expression inside the brackets:
   - 2 + 2 = 4
2. Multiplication (implied by the brackets):
   - 2 × 4 = 8
3. Division:
   - 8 ÷ 8 = 1

Therefore, 8 ÷ 2(2 + 2) = 1