

**Order of Operations (involving the four arithmetic operations, parentheses and exponents)**

Grade 6 Expressions & Equations Worksheet

Date: _____

Name: _____

Evaluate each expression using order of operations (**PEMDAS**).**Note:** **MD** (Multiplication and Division is from Left to Right); **AS** (Addition and Subtraction is from Left to Right)

1. $(2 \times 5^2 \div 10) - (8 - 2^3) = \boxed{}$

Workings:

2. $(2 \times 4^3 - 28) + (2^2 - 5) = \boxed{}$

Workings:

3. $6^2 \div 18 - (4^3 + 2^2 \times 1) = \boxed{}$

Workings:

4. $(5^3 \div 25 \times 2) - (7 - 2^2) = \boxed{}$

Workings:

5. $(40 + 3^2 - 13) \div 9 \times 14 = \boxed{}$

Workings:



Order of Operations (involving the four arithmetic operations, parentheses and exponents)

Grade 6 Expressions & Equations Answer Sheet

1. $(2 \times 5^2 \div 10) - (8 - 2^3) = \boxed{5}$

Workings:

$$\begin{aligned} &(2 \times 5^2 \div 10) - (8 - 2^3) \\ &= (2 \times 25 \div 10) - (8 - 8) \\ &= (50 \div 10) - (8 - 8) \\ &= 5 - (8 - 8) \\ &= 5 - 0 \\ &= 5 \quad \checkmark \end{aligned}$$

First, evaluate the exponents $5^2 = 25$; $2^3 = 8$

Next, simplify the parenthesis $2 \times 25 = 50$

Again, simplify the parenthesis $50 \div 10 = 5$

Then, simplify the parenthesis $8 - 8 = 0$

Finally, subtract $5 - 0 = 5$

2. $(2 \times 4^3 - 28) + (2^2 - 5) = \boxed{99}$

Workings:

$$\begin{aligned} &(2 \times 4^3 - 28) + (2^2 - 5) \\ &= (2 \times 64 - 28) + (4 - 5) \\ &= (128 - 28) + (4 - 5) \\ &= 100 + (4 - 5) \\ &= 100 + (-1) \\ &= 100 - 1 \\ &= 99 \quad \checkmark \end{aligned}$$

First, evaluate the exponents $4^3 = 64$; $2^2 = 4$

Next, simplify the parenthesis $2 \times 64 = 128$

Again, simplify the parenthesis $128 - 28 = 100$

Simplify the parenthesis $4 - 5 = -1$

Then, multiply $100 + (-1) = 100 - 1$

Finally, subtract $100 - 1 = 99$

3. $6^2 \div 18 - (4^3 + 2^2 \times 1) = \boxed{-66}$

Workings:

$$\begin{aligned} &6^2 \div 18 - (4^3 + 2^2 \times 1) \\ &= 36 \div 18 - (64 + 4 \times 1) \\ &= 36 \div 18 - (64 + 4) \\ &= 36 \div 18 - 68 \\ &= 2 - 68 \\ &= -66 \quad \checkmark \end{aligned}$$

First, evaluate the exponent $6^2 = 36$; $4^3 = 64$; $2^2 = 4$

Next, simplify the parenthesis $4 \times 1 = 4$

Again, simplify the parenthesis $64 + 4 = 68$

Now, divide $36 \div 18 = 2$

Finally, subtract $2 - 68 = -66$

4. $(5^3 \div 25 \times 2) - (7 - 2^2) = \boxed{7}$

Workings:

$$\begin{aligned} &(5^3 \div 25 \times 2) - (7 - 2^2) \\ &= (125 \div 25 \times 2) - (7 - 4) \\ &= (5 \times 2) - (7 - 4) \\ &= 10 - (7 - 4) \\ &= 10 - 3 \\ &= 7 \quad \checkmark \end{aligned}$$

First, evaluate the exponents $5^3 = 125$; $2^2 = 4$

Next, simplify the parenthesis $125 \div 25 = 5$

Simplify the parenthesis $5 \times 2 = 10$

Simplify the parenthesis $7 - 4 = 3$

Finally, subtract $10 - 3 = 7$

5. $(40 + 3^2 - 13) \div 9 \times 14 = \boxed{56}$

Workings:

$$\begin{aligned} &(40 + 3^2 - 13) \div 9 \times 14 \\ &= (40 + 9 - 13) \div 9 \times 14 \\ &= (49 - 13) \div 9 \times 14 \\ &= 36 \div 9 \times 14 \\ &= 4 \times 14 \\ &= 56 \quad \checkmark \end{aligned}$$

First, evaluate the exponent $3^2 = 9$

Next, simplify the parenthesis $40 + 9 = 49$

Again, simplify the parenthesis $49 - 13 = 36$

Now, divide $36 \div 9 = 4$

Finally, multiply $4 \times 14 = 56$