Math 9: Exponents and BEDMAS Quiz

Full credit will only be awarded for all work shown in a neat and organized manner.

1. Evaluate. (If the answer is undefined, answer using $\varnothing$)

   a) -4^4 $\quad = -4 \times 4 \times 4 \times 4$

   -256

   b) $-9^0 + (-9)^0$

   $-1 + 1 = 0$

   c) $(7^0 + 3^1)^0 = (1 + 3)^0$

   $= 4^0 = 1$

   d) $(15^0 - 10^0)^0 = (1 - 1)^0$

   $= 0^0 = \varnothing$ undefined

2. The side length for a cube is made 5 times longer. How many times bigger does the volume of the cube become?

   $V = L \times L \times L$
   $\quad = L^3$

   $V = 5L \times 5L \times 5L$
   $\quad = 125L^3$

   125 times more Volume!

3. Fill in a value for the missing power to make the following inequalities true.

   a) $(6)^{10} < (6)^{\square}$

   $\square = $ _Any number > 10_

   b) $\left(\frac{3}{4}\right)^5 < \left(\frac{3}{4}\right)^{\square}$

   $\square = $ _Any number < 5_

   c) $\left(-\frac{6}{5}\right)^4 < \left(-\frac{6}{5}\right)^{\square}$

   $\oplus$ $\quad$ $\oplus$ must be to be larger

   $\square = $ _Any even number < 4_

   d) $(-5)^7 > (-5)^{\square}$

   $\ominus$ $\quad$ $\ominus$ must be to be Smaller AND be a bigger number

   $\square = $ _Any odd number > 7_

4. Simplify. **Show your work.**

a) $16 - 8 \div 4 - 2$

$16 - 2 - 2$

$= \boxed{12}$

b) $-8 \times 3 - (9 - 7)^2$

$= -8 \times 3 - (2)^2 = -8 \times 3 - 4$

$= -24 - 4 = \boxed{-28}$

b) $\dfrac{(-6)^2 - 4 + 3}{2^3 + 3 \cdot (2-5)}$

$= \dfrac{(-6)^2 - 4 + 3}{2^3 + 3 \cdot (-3)} = \dfrac{36 - 4 + 3}{8 + 3(-3)}$

$= \dfrac{36 - 4 + 3}{8 + (-9)} = \dfrac{35}{-1}$

$= \boxed{-35}$

d) $\dfrac{(4-(-2))^2}{3 \times 4 - 6} + [8 + 8 \div 2^2]$

$= \dfrac{(6)^2}{3 \times 4 - 6} + [8 + 8 \div 4]$

$= \dfrac{36}{3 \times 4 - 6} + [8 + 2] = \dfrac{36}{12 - 6} + [10]$

$= \dfrac{36}{6} + 10 = 6 + 10$

$= \boxed{16}$

5. Mr. G is trying to solve a BREDMAS problem, but *Mr. G made a mistake in his calculation*. The mistake happened somewhere between step 1 and step 3.

a) **FIND** the mistake Mr. G made and **EXPLAIN** why it is a mistake.
b) Fix the mistake and find the right answer.

$24 \div [5 + 3 - 2 \cdot (3 - 5)] \cdot 2$

1) $= 24 \div [5 + 3 - 2 \cdot (-2)] \cdot 2$

2) $= 24 \div [5 + 1 \cdot (-2)] \cdot 2$

3) $= 24 \div [5 + (-2)] \cdot 2$

a) Subtraction before multiplication during step 2) doesn't follow BEDMAS

b) $24 \div [5 + 3 - 2 \cdot (-2)] \cdot 2 = 24 \div [5 + 3 - (-4)] \cdot 2$

$= 24 \div [8 - (-4)] \cdot 2 = 24 \div (12) \cdot 2 = 2 \cdot 2 = \boxed{4}$