Expression

Questions:

1.   Peter is given the following number expression:

$150 + 85 - 54 - 16 + 38 - 3$

   a)   Using brackets, create an equivalent numerical expression.

   b)   Is the expression $165 + 30 - 3 + 8$ equivalent to the top expression? Explain your answer.

2.   Suppose you have three numbers represented by the letters x, y and z. You create two expressions: $x - y - z$ and $x - (y - z)$.

   a)   Are the two expressions equivalent? Explain your thinking.

   b)   Can you select numerical values from the set {0; 1; 2; 3; 4; 5; 6} that will make the two expressions equal to one another?

Solution

1. a) (150 + 85) – (54 + 16) + (38 -3) or 150 + (85 – 54) – (16 – 38) – 3

    b) 165 + 30 – 3 + 8 = 200
        150 + 85 – 54 – 16 + 38 – 3 = 200
        Yes they are equivalent expressions as they get to the same answer.

2. a) $\left[x - y - z = x - \left(y + z \right) \right] \neq \left[x - \left(y - z \right) = x - y + z \right]$

    b) If $z = 0$, then x and y can be any of the numbers as they will stay with the simple calculation of $x - y$.

It is essential that learners in the feedback see the multiple representations for this answer. There is more than one correct answer, and the focus here is on the reversibility of the order of operations, and the distributive law when one works with brackets.

It is very important to emphasise structures that emerge between numbers and to express those in symbolic notation. Learners should experience this in the senior phase, as these structures cement algebraic relationships.

<u>Appendix of Assignment Tools</u>
Using mathematical symbols and notation to create equivalent expressions
The focus on recognising and creating equivalent forms of the same algebraic/numerical expression, Order of operations in reverse