

Grade 7 Maths Worksheet

Expressions and like terms

Questions:

1. Manini makes up two numbers x and y and then says that $x + x - y$ and $2x - y$ are equivalent expressions. Do you agree? Explain your answer.
2. Consider the following two algebraic expressions and explain whether they are equivalent or not:

$$[(3 + a) + (a - 2)] + (a + 5) - (a - 1 + 6)$$

and

$$(a + 3) + (a - 2) + a + 5 - a - 5$$

Show all your working.

3. Sipho wrote that $75 - (25 + 15) = 75 - 25 + 15$. Mary tells him that this is wrong. Explain to Sipho why you agree with Mary.
4. Complete the following by filling in the blanks:
 - a) $15 \times 2 \times 3 = 15 \times (2 \square 3)$
 - b) $15 - 2 - 3 = 15 - (2 \square 3)$
 - c) $15 \div 3 \div 2 = 15 \div (3 \square 2)$

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Solution

1. Yes since $x + x - y = (x + x) - y = 2x - y$

2.
$$\begin{aligned} & [(3 + a) + (a - 2)] + (a + 5) - (a - 1 + 6) \\ &= 3 + a + a - 2 + a + 5 - a + 1 - 6 \\ &= 3 + 5 + 1 - 2 - 6 + a + a + a - a \\ &= 9 - 8 + 3a - a \\ &= 1 + 2a \end{aligned}$$

and

$$\begin{aligned} & (a + 3) + (a - 2) + a + 5 - a - 5 \\ &= a + 3 + a - 2 + a + 5 - a - 5 \\ &= 3a - a + 8 - 7 \\ &= 2a + 1 \\ &\text{Now: } 2a + 1 = 1 + 2a \end{aligned}$$

3.
$$\begin{aligned} & 75 - (25 + 15) \\ &= 75 - 25 - 15 \text{ (the negative sign distributes into the bracket)} \end{aligned}$$

4. a) $15 \times 2 \times 3 = 15 \times (2 \times 3)$

b) $15 - 2 - 3 = 15 - (2 + 3)$

c) $15 \div 3 \div 2 = 15 \div (3 \times 2)$

Learners need to work with these rules, but not necessarily know their names.

This question focuses on the distribution of the negative sign and the use of brackets in arithmetic and algebraic expressions.

The issue in this question is not to get to the answer of 35, but to focus on the distribution into the brackets.

For Question 4 the focus is not on obtaining the correct answer. The process is the focus – and the solution merely a tool to check that different processes give different solutions.

Appendix of Assignment Tools

Identifying and collecting like terms in an algebraic expression

Distributive law, Equivalence, Congruence

Distributing a negative sign

Brackets and their effect on operations