

Grade 7 Maths Worksheet

Algebraic expressions – perimeter

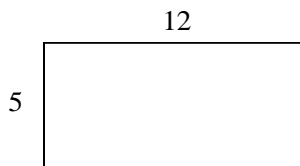
Questions:

1. Sandra claims that the two algebraic expressions $2 \div x \div y$ and $2 \times x \times y$ is the same. She shows that if $x = 1$ and $y = 1$, then:

$$\begin{aligned} 2 \div x \div y & \quad 2 \times x \times y \\ = 2 \div 1 \div 1 & \quad \text{and} \quad = 2 \times 1 \times 1 \\ = 2 & \quad \quad = 2 \end{aligned}$$

Do you agree with her statement? Explain.

2. Determine the perimeter of the rectangle in two different ways.



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Solution

1. No. It appears to be the same since she chose the value of 1 for both of the variables. If we change the x value to 2 and the y value to 4, then doing the calculations shows that:

$$\begin{aligned}2 \div x \div y \\&= 2 \div 3 \div 4 \\&= \frac{2}{3} \div 4 \\&= \frac{1}{6}\end{aligned}$$

and

$$\begin{aligned}2 \times x \times y \\&= 2 \times 3 \times 4 \\&= 24\end{aligned}$$

These are clearly different

2. Perimeter of the rectangle = $2(\text{length}) + 2(\text{width})$
 $= 2(12) + 2(5)$
 $= 24 + 10$
 $= 34$
or
Perimeter of the rectangle = $2(\text{length} + \text{width})$
 $= 2(12) + 5$
 $= 2(17)$
 $= 34$

We can simplify the first statement:

$$\begin{aligned}2 \div x \div y \\&= \frac{2}{x} \div y \\&= \frac{2}{x} \div \frac{y}{1} \\&= \frac{2}{x} \times \frac{1}{y} \\&= \frac{2}{xy}\end{aligned}$$

To find equivalent expressions for the same thing is one of the skills that help learners understand algebraic structures.