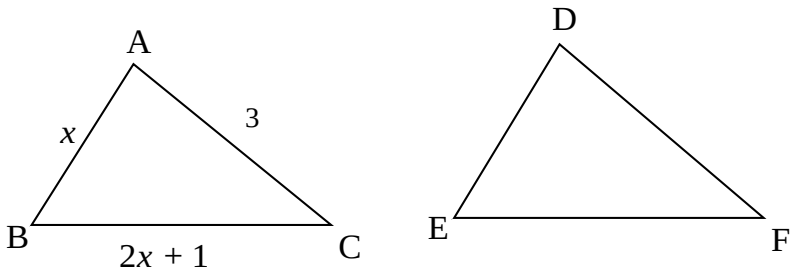
Grade 8 Mathematics Worksheet

Problem solving of equations and ratios

Questions:

1.



a) If the perimeter of ΔDEF = 30 and the two shapes are congruent, find the value of *x*.

b) If AB:BC = DE:EF = 2:5, find the length of BC.

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Solution

1. a) $x+3+2x+1=30$ (Forming the equation for perimeter)

$\therefore 3x+4=30$ (Collecting like terms)

$\therefore 3x=26$

$\therefore x=\frac{26}{3}$

b) $AB:BC=DE:DF=2:5$

$\therefore \frac{AB}{BC}=\frac{DE}{EF}=\frac{2}{5}$

$\therefore \frac{x}{2x+1}=\frac{2}{5}$

$\therefore 5x=4x+2$

$\therefore x=2$

So BC = 5 units long

Learners are given two completely separate conditions that apply to a geometric shape. They must work on various layers to solve the problem.

Here the structure of the algebraic expression is important. What does it say about possible answers?

Educators must always check against algebraic habits of mind. Will this always work for all cases? Are there exclusions due to context? What are my assumptions, and are these valid?