Grade 9 Mathematics Worksheet

Solution of equation and inequalities

Questions:

Solve for *x* in each of the following:

a) $x = \frac{3}{0,25} + 3\frac{2}{5} \times \left(5^2\right)^3$

b) $3(x+6) - 2(x-4) > 2x + 11$

c) $\frac{\left(x^3\right)^4}{\left(x^6\right)\left(x^2\right)} = 4096$

d) $-4 < 3x + 5 < 5$ where *x* is a real number

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Solution

a) $x = \dfrac{3}{0,25} + 3\frac{2}{5} \times \left(5^2\right)^3$

$\therefore x = \dfrac{3 \times 100}{25} + \dfrac{17}{5} \times 5^6$

$\therefore x = 12 + 17 \times 5^5$

$\therefore x = 53137$

b) $3(x+6) - 2(x-4) > 2x + 11$

$\therefore 3x + 18 - 2x + 8 > 2x + 11$

$\therefore x - 2x > 11 - 26$

$\therefore -x > -15$

$\therefore x < 15$

c) $\dfrac{\left(x^3\right)^4}{\left(x^6\right)\left(x^2\right)} = 4096$

$\therefore \dfrac{x^{12}}{x^8} = 4096$

$\therefore x^4 = 4096$

$\therefore x = \pm 8$

d) $-4 < 3x + 5 < 5$

$\therefore -4 - 5 < 3x < 5 - 5$

$\therefore -9 < 3x < 0$

$\therefore -3 < x < 0$

These types of questions (b and d) can be explored graphically as well.