Inequality systems: overlap and feasible choices — Further practice

Year 7, lower volume • text pp. 79–88 • textbook lessons 40–44

Further practice 11

Solve the system of inequalities; require every condition to hold.

$$\begin{cases} x \geq 1 \\ x > -2 \end{cases}$$

Further practice 12

An item costs 80 dollars. Let x be its selling price. The profit must be at least 15% of cost. Form an inequality and find the minimum price.

Further practice 13

A container has capacity 11 L, initially 3 L. Each full bottle adds 2 L. Let x be a nonnegative integer bottle count. Find all counts that fit.

Further practice 14

Solve the system of inequalities; require every condition to hold.

$$\begin{cases} x < 3 \\ x \geq 3 \end{cases}$$

Extension 15

Find the integer solutions of $2 < x < 4$. Explain why its real solution set is not a single point.

$$\begin{cases} x > 2 \\ x < 4 \end{cases}$$

Extension 16

There are 29 toys and x children. Giving 3 each leaves at least 8 toys; giving 5 each would be short by 1 to 4 toys inclusive. Find the positive integer child count.