

Spot the mistake

Question 1	Your corrections
Solve $x + 4 = 12$	Solve $x + 4 = 12$
$ \begin{array}{r} x + 4 = 12 \\ + 4 \quad + 4 \\ \hline x = 16 \end{array} $	$ \begin{array}{r} x + 4 = 12 \\ - 4 \quad - 4 \\ \hline x = 8 \end{array} $
What mistakes were made?	Added 4 to each side. Should have subtracted 4 from each side.
Why do you think these mistakes were made?	The learner did not know they should use the inverse operation.

Question 2	Your corrections
Solve $4x = 20$	Solve $4x = 20$
$ \begin{array}{r} 4x = 20 \\ - 4 \quad - 4 \\ \hline x = 16 \end{array} $	$ \begin{array}{r} 4x = 20 \\ \div 4 \quad \div 4 \\ \hline x = 5 \end{array} $
What mistakes were made?	Subtracted 4 from each side. Should have divided each side by 4.
Why do you think these mistakes were made?	The learner thought “ $4x$ ” means $4 + x$; they thought that subtracting 4 will leave x on its own.

Question 3	Your corrections
Solve $\frac{x}{4} = 12$	Solve $\frac{x}{4} = 12$
$\begin{array}{ccc} \frac{x}{4} & = & 12 \\ \div 4 & & \div 4 \\ x & = & 3 \end{array}$	$\begin{array}{ccc} \frac{x}{4} & = & 12 \\ \times 4 & & \times 4 \\ x & = & 48 \end{array}$
What mistakes were made?	Divided each side by 4. Should have multiplied each side by 4.
Why do you think these mistakes were made?	The learner is not sure what $\frac{x}{4}$ means.

Question 4	Your corrections
Solve $4x + 2 = 12$	Solve $4x + 2 = 12$
$\begin{array}{ccc} 4x + 2 & = & 12 \\ \div 4 & & \div 4 \\ x + 2 & = & 3 \\ - 2 & & - 2 \\ x & = & 1 \end{array}$	$\begin{array}{ccc} 4x + 2 & = & 12 \\ - 2 & & - 2 \\ 4x & = & 10 \\ \div 4 & & \div 4 \\ x & = & 2.5 \end{array}$
What mistakes were made?	Divided each side by 4 first. Should have subtracted 2 from each side first.
Why do you think these mistakes were made?	The learner did not know that the order of the steps is important.

Question 5	Your corrections
Solve $4(x + 2) = 12$	Solve $4(x + 2) = 12$
$ \begin{array}{r} 4(x + 2) = 12 \\ 4x + 2 = 12 \\ -2 \quad -2 \\ 4x = 10 \\ \div 4 \quad \div 4 \\ x = 2.5 \end{array} $	$ \begin{array}{r} 4(x + 2) = 12 \\ 4x + 8 = 12 \\ -8 \quad -8 \\ 4x = 4 \\ \div 4 \quad \div 4 \\ x = 1 \end{array} $
What mistakes were made?	The brackets were not expanded correctly.
Why do you think these mistakes were made?	The learner did not understand that each term inside the bracket needs to be multiplied by 4.

Question 6	Your corrections
Solve $4 - 2x = 12$	Solve $4 - 2x = 12$
$ \begin{array}{r} 4 - 2x = 12 \\ -4 \quad -4 \\ 2x = 8 \\ \div 2 \quad \div 2 \\ x = 4 \end{array} $	$ \begin{array}{r} 4 - 2x = 12 \\ -4 \quad -4 \\ -2x = 8 \\ \div (-2) \quad \div (-2) \\ x = -4 \end{array} $
What mistakes were made?	Need to divide both sides by (-2)
Why do you think these mistakes were made?	The learner forgot about the negative sign.

Question 7	Your corrections
Solve $2x + 8 = 4x + 2$	Solve $2x + 8 = 4x + 2$
$ \begin{array}{r} 2x + 8 = 4x + 2 \\ - 2x \\ 8 = 4x + 2 \\ - 2 \quad - 2 \\ 6 = 4x \\ \div 4 \quad \div 4 \\ 1.5 \text{ or } 1\frac{1}{2} = x \end{array} $	$ \begin{array}{r} 2x + 8 = 4x + 2 \\ - 2x \quad - 2x \\ 8 = 2x + 2 \\ - 2 \quad - 2 \\ 6 = 2x \\ \div 2 \quad \div 2 \\ 3 = x \text{ or } x = 3 \end{array} $
What mistakes were made?	Only subtracted $2x$ from one side. Should have subtracted $2x$ from both sides.
Why do you think these mistakes were made?	Forgot to keep the equation 'balanced'.

Question 8	Your corrections
Solve $12 - 4x = 5x - 6$	Solve $12 - 4x = 5x - 6$
$ \begin{array}{rcl} 12 - 4x & = & 5x - 6 \\ - 4x & - & - 4x \\ 12 & = & x - 6 \\ + 6 & + & + 6 \\ 18 & = & x \text{ or } x = 18 \end{array} $	$ \begin{array}{rcl} 12 - 4x & = & 5x - 6 \\ + 4x & + & + 4x \\ 12 & = & 9x - 6 \\ + 6 & + & + 6 \\ 18 & = & 9x \\ \div 9 & \div & \div 9 \\ 2 & = & x \text{ or } x = 2 \end{array} $
What mistakes were made?	Subtracted $4x$ from both sides instead of adding.
Why do you think these mistakes were made?	The learner did not notice the negative sign or forgot to use the inverse operation.