Questions

1. Solve for \( x \) if \(-12 + x - 3 = 15 - 18 + 9\).
2. Solve for \( x \) if \(-19 + x - 7 = 20 - 42 + 10\).
3. Is \( x = 5 \) the solution to \(-7 + x = 2\)? If not, find the correct solution.
4. Is \( x = -8 \) the solution to \(-39 = x - 47\)? If not, find the correct solution.
5. Find the value of \( x \) that satisfies \( \frac{2}{3} + x = \frac{1}{6} + \frac{1}{4} \).
6. Find the value of \( x \) that satisfies \( \frac{5}{12} - \frac{5}{6} = x - \frac{3}{2} \).
7. The Perception Toy Company wishes to cut costs and decides that improving quality control will help. It can do this by reducing the amount of rejected frisbees to 3%. In a recent week, a quality inspector found that 8 out of 413 frisbees were rejected. Did they meet the goal?
8. A 90 meter wide radar picture is taken of a swamp in Australia. The radar detects a rock outcrop that is 90 feet above sea level, and a vein of opal (a semi-precious stone) that is 27 feet below sea level. How far is the top of the rock from the location of the opal?
9. Trevor pays his monthly computer lease bill for $49.99 but forgets to look at his checking account balance before doing so. When he gets his account statement at the local ATM, his balance reads $-35.07. How much was in the account before he wrote the check?

Solutions

1. \[-12 + x - 3 = 15 - 18 + 9\]
   \[x - 15 = 6\] simplify each side by adding the numbers
   \[x - 15 + 15 = 6 + 15\] add 15 to both sides of the equation
   \[x = 21\] simplify

2. \[-19 + x - 7 = 20 - 42 + 10\]
   \[x - 26 = -12\]
   \[x - 26 + 26 = -12 + 26\]
   \[x = 14\]

3. Check if \( x = 5 \) is a solution by substitution:
   \[-7 + (5) = 2\]
   \[-2 = 2\] False, so \( x = 5 \) is not a solution.

Get correct solution:
   \[-7 + x = 2\]
   \[-7 + x + 7 = 2 + 7\]
   \[x = 9\]
4. Check if $x = -8$ is a solution by substitution:

$$-39 = (-8) - 47$$
$$-39 = -55$$ False, so $x = -8$ is not a solution.

Get correct solution:

$$-39 = x - 47$$
$$-39 + 47 = x - 47 + 47$$
$$8 = x$$

5.

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\begin{align*}
\frac{2}{3} + x &= \frac{1}{6} + \frac{1}{4} \\
\frac{2}{3} + x &= \frac{2}{12} + \frac{3}{12} \\
\frac{2}{3} + x &= \frac{5}{12} \\
\frac{2}{3} + x - \frac{2}{3} &= \frac{5}{12} - \frac{2}{3} \\
x &= \frac{5}{12} - \frac{8}{12} \\
x &= \frac{-3}{12} = -\frac{1}{4}
\end{align*}
\]

6.

\[
\begin{align*}
\frac{5}{12} - \frac{5}{6} &= x - \frac{3}{2} \\
\frac{5}{12} - \frac{10}{12} &= x - \frac{3}{2} \\
\frac{-5}{12} &= x - \frac{3}{2} \\
\frac{-5}{12} + \frac{3}{2} &= x - \frac{3}{2} + \frac{3}{2} \\
\frac{-5}{12} + \frac{18}{12} &= x \\
\frac{13}{12} &= x
\end{align*}
\]

7. \(\frac{8}{413} = 0.019 = 1.9\% < 3\%\), so they met their goal.

8. The total distance is \(90 - (-27) = 117\) feet.

9. Let \(x\) be the amount of money in the account before Trev pays his bill.

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\begin{align*}
x - $49.99 &= -$35.07 \\
x - $49.99 + $49.99 &= -$35.07 + $49.99 \\
x &= $14.92
\end{align*}
\]