Finding Equivalent Equations

Equations are equivalent when the corresponding expressions in the equations can be reduced to the same simplified forms. In addition, equivalent expressions have the same solution set.

1 Juno created a set of equivalent equations by generating equivalent expressions.
For each new equation, describe what Juno did.

Original
Equation: $4y + 6 + 4 = 8(1 + y)$

Step 1: $4y + 10 = 8(1 + y)$ _____

Step 2: $4y + 10 = 8 + 8y$ _____

In Problems 2–5, combine like terms to find an equivalent equation that is simpler than the original.

2 $5h + 13h = 20 - 2$ Equivalent equation: _____

3 $2 + x + 2x + 4 = 2 * 16 + 10$ Equivalent equation: _____

4 $3(y + 2) = 4(y + 3) - 8$ Equivalent equation: _____

5 $5(z + 3) - 2.5z = 35 + z + 10$ Equivalent equation: _____

6 In Problems 2–5, solve the equations by finding the value of the variable.
Bar models or pan balances may help. Use the space below to show your work.

$h =$ _____ $x =$ _____ $y =$ _____ $z =$ _____

7 Explain why it might be easier to use the simplified equations you wrote for Problems 2–5 to find the solutions in Problem 6.

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