**Solving Two-Step Equations**

In the equation 4*x* –5 = 23, the “story of *x”* contains the operations done to *x* to get 23 (following the order of operations). In this activity, you will work backwards to solve each equation. When working backwards, you will perform an inverse operation to undo each operation in the story of *x*. The operation done first in the story of *x* gets undone last. Remember that what you do to one side of the equation must be done to the other side!

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Equation** | **Story of x** | **Work it backwards** | **Solution** | **Check** |
| 4*x* – 5 = 23 | Multiply by 4, then subtract 5. | Add 5, then divide by 4. | 4*x* – 5 + 5 = 23 + 5  4*x* = 28    *x* = 7 | 4(7) – 5 = 23  28 – 5 = 23  23 = 23 |
|  | Divide by 3, then add 8. | Subtract 8, then multiply by 3. | *x* = –30 | -10 + 8 = –2  –2 = –2 |
| –3*x* + 6 = 24 |  |  |  |  |
| **Equation** | **Story of x** | **Work it backwards** | **Solution** | **Check** |
|  |  |  |  |  |
|  |  |  |  |  |
| –14 + 5*x* = 31  Rearrange: |  |  |  |  |
| Rearrange: |  |  |  |  |

Complete the following chart, filling-in the missing steps in the process of solving two-step equations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Equation** | **Story of x** | **Work it backwards** | **Solution** | **Check** |
| –2*x* + 5 = 37 |  |  |  |  |
|  | Divide by 4, then add 7, to get 12 |  |  |  |
|  |  |  |  |  |
|  | Multiply by -5, then add 6, to get -9 |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Equation** | **Story of x** | **Work it backwards** | **Solution** | **Check** |
|  |  |  | x – 3 = -18  x – 3 + 3 = -18 + 3  *x* = –15 |  |
| 7.5 + 3.1*x* = 32.3  Rearrange: |  |  |  |  |
| Rearrange: |  |  |  |  |