**Solving Equations – A Balance!**

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| **The golden rule of algebra!Do unto one side of the equation, what you do to the other!** |

An equation is like a balanced scale. If we **put something on**, or **take something off** of one side, the scale (or equation) is **unbalanced**. When solving math equations, **we must always keep the ‘scale’ (or equation) balanced** so that both sides are ALWAYS equal.

To solve how many marbles are in each pouch, algebraically, we let ‘x’ represent each pouch and each marble will have a value of 1.

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| Example 1 | Example 2 |
| x = 6 | 2x = 10 |
| Example 3 | Example 4 |
| 6 = 3x | x + 2 = 7 |
| Example 5 | Example 6 |
| 2x + 3 = 13 | x + 4 = 2x + 1 (we will explore these trickier problems later in the unit) |

**Practice: Solving Equations - One and Two-Step**

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| a. w – 4 = 9 | b. y + 2 = 8 | c. 4m = –48 |
| d.  = –3 | e. k – 6 = –11 | f. 3p + 5 = 2 |
| g. 3a + 7 = 13 | h. – b + 7 = 5 | i. 8 – c = –2 |
| j. –3 = 5x + 2**APPLICATION** | k. 17 + 2d = 1 | l. 24 = 19 – 10h |
| Mike is currently 8 years older than his sister Janet. The sum of their ages is 30. The following equation represents this scenario, 2m - 8 = 30, where m is Mike’s age. How old is Mike? How old is Janet? |
| A triangle has a perimeter of 250cm. The three side lengths are x, 2x + 40, and x + 60. The equation 4x + 100 = 250 represents this scenario. What are the side lengths of this triangle?**THINKING**Lee is the older brother of Sue and the age difference between them is 10. In 5 years, the sum of their ages will be 80. Calculate their age now algebraically. |
| ANSWERS: a) w=13, b) y=6, c) m=-12, d) x=-21, e) k=-5, f) p=-1, g) a=2, h) b=2, i) c=10, j)x=-1, k) d=-8, l)h=-0.5, m) 19&11, n) 37.5cm, 97.5cm, 115cm…THINKING: 40 & 30 |