

Circle on the Road 2013. Julia Robinson Festival
Problems on Word Arithmetic (Encrypted Puzzles)

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Problem 1. Replace all the asterisks with integer numbers ranging from 0 to 9 in such a way as to get the correct equality:

- (a) $1 * \times * 1 = 1 * 1$
 (b) $***7 - *** = 8$

Problem 2. Decrypt the puzzles. (The same letters stand for the same digits, and different letters stand for different digits.)

$$\begin{array}{r}
 \text{a)} \\
 + \text{ A H A} \\
 \quad \text{H} \\
 \hline
 \text{B E E}
 \end{array}
 \qquad
 \begin{array}{r}
 \text{b)} \\
 \text{B B} \\
 + \text{ A} \\
 \hline
 \text{A} \\
 \text{C C C}
 \end{array}
 \qquad
 \begin{array}{r}
 \text{c)} \\
 + \text{ O D D} \\
 \quad \text{O D D} \\
 \hline
 \text{U N D O}
 \end{array}$$

Problem 3. Little Bella came up with two encrypted problems. However, no matter how hard she tried, she couldn't solve them. Explain why. (The same letters stand for the same digits, and different letters stand for different digits.)

$$\begin{array}{r}
 \text{a)} \\
 + \text{ C O K E} \\
 \quad \text{C A K E} \\
 \hline
 \text{S O C I A L}
 \end{array}
 \qquad
 \begin{array}{r}
 \text{b)} \\
 + \text{ T E E} \\
 \quad \text{I C E} \\
 \hline
 \text{N I C E}
 \end{array}$$

Problem 4. Decrypt the puzzles. (The same letters stand for the same digits, and different letters stand for different digits.)

$$\begin{array}{r}
 \text{a)} \\
 + \text{ A H A} \\
 \quad \text{E H E} \\
 \hline
 \text{A H A H}
 \end{array}
 \qquad
 \begin{array}{r}
 \text{b)} \\
 + \text{ R O S A} \\
 \quad \text{R O S A} \\
 \hline
 \text{O A S I S}
 \end{array}$$

Problem 5. Replace all the asterisks with numbers from 0 to 9 in such a way as to get the correct equality.

$$\begin{array}{r}
 \times \quad * * \\
 \quad \text{8} * \\
 \hline
 \quad * * * \\
 \quad * * \\
 \hline
 * * * *
 \end{array}$$