Math Task 1: Addition Algorithms

Problem

1. For each of the problems below, use both Left-to-Right and partial sums algorithms to add.

a.
$$\begin{array}{r} 56 \\ +\ 78 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 16 \\ +48 \\ \hline \end{array}$$

c.
$$\begin{array}{r} 35 \\ +46 \\ \hline \end{array}$$

2. Explain how these two algorithms would be applied when adding numbers in base 6.
3. Use your explanation in part 2 to add $345_{six} + 531_{six}$ using each algorithm (without converting the base 10).

Math Task 2: Subtraction Algorithms

Task

1. Subtract in the following three problems, explaining every step you take.

a.
$$\begin{array}{r} 84 \\ -36 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 52 \\ -38 \\ \hline \end{array}$$

c.
$$\begin{array}{r} 94 \\ -37 \\ \hline \end{array}$$

2. Explain how you would modify your process in part one if you were subtracting in base 6.
3. Use your explanation in part 2 to subtract: $531_{six} - 233_{six}$ without converting to base 10.

Math Task 3: Addition and Subtraction properties

Task

1. Discuss different ways to solve the problem below, using the fact (and the terms in your explanation) that addition is commutative and associative.
    a. Jessica had 10 beads, Monica had 13 beads and Amy had 22 beads. How many beads do they have all together?
2. Is subtraction commutative? Why or why not?
3. Is the set of even numbers closed for addition? Why or why not?
4. Is subtraction associative? Why or why not?
5. Is the set of odd numbers closed for addition? Why or why not?