

Investigation guide – Fay’s nines

Challenge:

Place 9 tiles on the squares below to total 999.

Rules:

- You are only allowed to use each number twice.

Your Task:

1. Use the number blocks and create an equation that totals 999.
2. Try to work out 3 **different** sets of numbers that total 999.
3. Record and discuss your arrangements below.

Example Recording:

$$\begin{array}{ccc} \square & \square & \square \\ \square & \square & \square \\ \square & \square & \square \end{array} +$$

9 9 9

Your Turn:

1.

2.

+

+

+

9

9

9

9

9

9

Discuss the following with your partner:

1. What patterns have you found?
2. How are the numbers arranged (largest to smallest, smallest to largest, mixed)?
3. What does the last column equal in your sums? Must it always be the same number? Why?
4. Can you do it without carrying?

Challenge:

5. How many different solutions are there?
6. How will you know when you have found them all?

Use any materials you need and all the working out paper you need to show how many different solutions there are.

Is there an easy way to find this answer?

Hint: Use the patterns you found previously to help you!