About the Mathematics: Informal Notation – Splitting & Sharing

Alternative informal representation of student thinking
For splitting & sharing

Splitting & Sharing

This activity develops an understanding of partitive division/equal sharing. As with the use of the informal *branching representation* used with doubling, tripling, etc. in multiplication, the goal is not to have students worry about how the mathematics *should* formally look. Rather, the intent is to merely have students respond to the number sense. Formal representation will come later.

The additional benefit of initially using this informal representation with division is that students gain the understanding that each share is an equal portion. The example below – How would three share 54 equally – the solution of 18 is seen three times. In formal representations, as in 54 ÷ 3 = 18, students need to *infer* that the 18 needs to be interpreted as *three groups of 18.*

The *"Branching Recording Method"*

- *Splitting & Sharing* – Even distribution, no remainders
  - Represent using branching format
  - Example One: "Share 54 equally with three people" – How would you share 54 cookies equally into three plates?
  - Example Two: "Share 76 equally with four people" (Compensation strategy)

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Example One:       54                    Example Two:        76
                  / | \                                    / |  |  \
               10 10 10 ←→ 30                           20  20 20  20 ←→ 80
                5   5   5 ←→ 15                          -1  -1  -1  -1  ←→ -4
                3   3   3 ←→   9                         19  19 19  19
               18  18  18        54
```

Note: The level of efficiency used by any particular student is dependent upon the strength of that individual's number sense. Smaller increments may be used to solve this. Over time, as number sense matures, fewer increments will be needed to solve such an activity

Extending to working with remainders

- Bring the numbers down to quantities below 20
- Initially have only a single remainder, then extend to additional remainders
- Intentionally explore equivalent answers

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Example One:       10                    Example Two:        10
                  / | \                                    / |   |   \
                3   3   3  ←→ 9                          2  2    2    2   ←→ 8
               ⅓   ⅓   ⅓  ←→ 1                       -2/4 -2/4 -2/4 -2/4  ←→ 2
              3⅓  3⅓  3⅓                          22/4 22/4  22/4  22/4
```

Assessment:

- *Listen* for and record observational notes
  - *Consistently uses the language of values rather than single digits*
  - *Demonstrates fluid recall of the single-digit combinations while multiplying*
  - *Using more and more efficient number combinations to partition the original quantity into equal groups*