

Decimal Skip Counting

Goals: To expose misconceptions about decimal numbers (e.g. difficulties with column overflow - errors such as "the number after 0.9 is 0.10", "the number after 0.99 is 0.100" etc...)

To encourage mental arithmetic and number sense

To provide examples of ordered lists which contradict length-based ordering.

Year level: Grade 5 to Year 8

Group size: Whole class or small groups.

Equipment: Pen and paper, possibly a calculator.
Can also be an entirely mental activity.

Time: Full activity for 15-30 minutes or 5 minutes spare at any time.

Activity Instructions:

1. Ask students to complete sequences (started on board or paper) either adding or subtracting a constant number. For example begin at 0.3 and count by 0.05 getting the sequence 0.3, 0.35, 0.4, 0.45 etc. Encourage mental work, with pen and paper or calculator addition and subtraction when students are unsure.
2. Good examples include trouble spots (where column overflow occurs) and decimal numbers of different lengths. Don't start all sequences with zero!

Examples:

0.2, 0.4, 0.6, 0.8, (first trouble spot for some students is at "zero point ten")

5.07, 5.08, 5.09, ...

48.05, 48.03, 48.01, ...

0.3, 0.35, 0.4, (note the alternating lengths as the decimals increase)

0.37, 0.48, 0.59, ...

Count from zero by 0.125 (note the variations in length of numerals 0, 0.125, 0.25, 0.375, 0.5, 0.625, ..)

Count up from 0.88 in lots of 0.02

Count up from 0.883 in lots of 0.02

Count down from 6.789 in lots of .002

Count down from 6.4591 in lots of .02

Variations:

Students could check their own (or partner's) answers using the constant addition (or subtraction) facility on their calculator.

For example, pressing $3 + 0.125 + = = =$ (or maybe $0.125 ++3===$ on other calculators) displays in turn 3, 3.125, 3.25, 3.375, 3.5, 3.625. Constant subtraction, multiplication and division work in a similar way. The constant addition facility is a very powerful support for young children learning to count.