Filling in Knowledge Gaps:
Critical lessons across grade levels 1-3 for students in grades 3-5
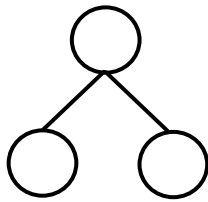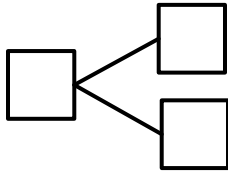SDE Las Vegas July 2017

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Key lessons and concepts from Addition and Subtraction

Grade 1

- Number Bonds

- Addition and Subtraction: Numbers to 40 and 120
    a. Counting on by tens and by ones

    b. Composing a ten

    c. Adding by place value (no regrouping) $32 + 16 = 32 + 10 + 6$

    d. Decompose, add tens, add ones $26 + 12 = 20 + 10 + 6 + 2$

    e. Subtracting from tens: $82 - 6 = (10 - 6) + 72$

    f. Decomposing with regrouping ones: $82-6 =$ into 70, 12 - 6

    g. Subtracting by place value $56 - 14 = 56 - 10 - 4 =$

Grade 2

- Addition and Subtraction Vertical Algorithms to 1000
    a. Addition with renaming
    b. Subtraction with renaming

Grade 3

- Addition and Subtraction Vertical Algorithms to 10,000
- Addition + Subtraction Bar Models
  a. Sum and difference (Drawing bar models)
  b. 2-step word problems

Key lessons and concepts from Multiplication & Division

Grade 2

- Understand multiplication and division as related operations
- Learn multiplication and division facts for 2, 3, 4, 5 and 10

Grade 3

- Multiplication and division
  a. Multiply 2 digit x 1 digit
  b. Quotient & remainder
  c. Division - vertical algorithm
- Learn multiplication and division facts for 6, 7, 8, and 9
- Area & Perimeter

Grade 4

- The four operations of whole numbers
  a. Multiplication by a 2-digit number
  b. Factors and Multiples
- Area, Perimeter & Volume
  a. Find area, perimeter, unknown sides of rectangles and composite figures of rectangles
  b. Find volume of rectangular prisms

Key lessons and concepts from Fractions and Decimals

Grade 2

- Name and illustrate fractions as parts of a whole to twelfths.

- Order unit fractions

Grade 3

- Comparing and ordering

- Finding equivalent fractions

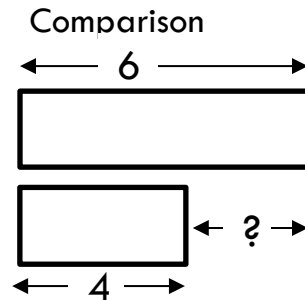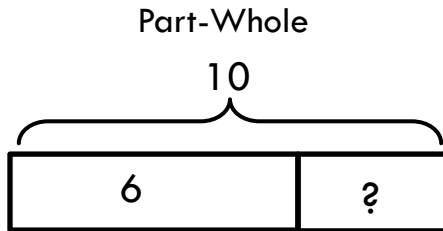- Simplest form

- Fraction of a set

Grade 4

- Add/Subtract like fractions

- Find a fraction of a set

- Mixed numbers and improper fractions

- Multiply a fraction by a whole number

- Fractions and Division

- Decimals

    a. Four operations to 2 decimal places

    b. Division by a whole number

    *These units are particularly hard if fractions have not been mastered

Key lessons and concepts from Bar Modeling

Grade 3

- Part-whole and comparison models for four operations
- Two-Step word problems
- Explain equivalent fractions

Part-Whole

10

6	?

Comparison

← 6 →

← 4 →   ← ? →

Ian says that $\frac{4}{12}$ is greater than $\frac{1}{3}$ because both the numerators and denominators are larger. Is Ian correct? Explain your answer using drawings.