

GLOW PowWow 30th Jan 2019

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During the session...

- engage in maths activities
- explore practical resources, models and images to support calculating
- confirm the development of written methods – with practical resources



16 $30 \times 40 =$	4 $505 \div 1 =$
17 $581 \div 7 =$	5 $345 - 60 =$
18 $0.04 \div 10 =$	6 $2.7 + 3.014 =$

Efficient methods

1 $40 + 1,000 =$	1 $987 + 100 =$
15 $3,050,020 = 3,000,000 + \square + 20$	
7 $89,994 + 7,643 =$	14 $3.005 + 6.12 =$



Understanding addition



Augmentation or aggregation
Counting on or Combining



How shall I add?

- 0.8 + 0.7, 45 + 45**: Use known facts, Number facts, Single digit decimals, Doubles, Bonds of 1 and 100.
- 7 + 8**: Use known facts. If I know 7 + 8 = 15, then I know 17 + 12 = 29.
- 12,408 + 5,020**: Use place value to add.
- 0.016 + 0.007**: Bridge through boundaries by counting in efficient steps.
- 25,748 + 46,374**: Formal written method.
- 35,040 + 22,070**: Partition and recombine.
- 32,356 + 14,988**: Round then adjust.
- 25,748 + 46,374**: Exchange ten of tens for one of hundreds.
- 35,040 + 22,070**: $30,000 + 5,000 + 40 + 20,000 + 2,000 + 70 = 50,000 + 7,000 + 110 = 57,110$
- 32,356 + 14,988**: Add 20,000 then subtract 2.



Let's play!

$$\begin{array}{r} \quad 6 \\ + 3 \quad 7 \\ \hline \\ \hline \end{array}$$

How close to 800 can you get?



Reasoning with understanding

$$\begin{array}{r} 6472 \square \\ + 261 \square \\ \hline 6734 \square \end{array}$$

$$\begin{array}{r} COL \\ + COC \\ \hline LLNO \end{array}$$

Write the three missing digits to make this addition correct

$$\begin{array}{r} 532 \square 9 \\ + 742 \square \\ \hline \square 0876 \end{array}$$



$$\begin{array}{r} 35242 \\ + 722 \square \\ \hline 4 \square 4 \square 1 \end{array}$$

$$\begin{array}{r} 6472 \square \\ + 261 \square \\ \hline 6734 \square \end{array}$$

$$\begin{array}{r} 481 \square 8 \\ + \square 2 \square 1 \\ \hline 534 \square 9 \end{array}$$



Let's play!

$$\begin{array}{r} 8 \quad 2 \\ - \quad 7 \quad \square \\ \hline \\ \hline \end{array}$$

How close to 300 can you get?



Understanding Subtraction

- Partitioning structure – 12 birds on a fence. 3 fly away. How many are left?
- Comparison structure – 12 blue cubes, 3 red cubes, how many more blue than red? (less, difference?)
- Complement of a set structure – 12 eggs, 3 hatched. How many had **not** hatched? (Very similar to partitioning structure)
- Reduction structure – Price was £12, reduced by £3. What is the price now?
- Inverse of addition structure – I have £3 and want to buy a toy for £12. How much more do I need?

What does it look like?

- Put out set of 12 cubes, take away 3
- Put out set of 12 and set of 3 to compare
- Put out a set of 12 cubes, 3 of which are red
- Put out a set of 12 cubes, reduce it by 3
- Put out set of 3 cubes and count on to reach 12

Make sense of:

- $6 - (-3) = 9$



Verbal miscues

Does 'less' mean subtract?

What does it mean?

What does it look like?



Towards a written method

Make 43
Subtract 8

Describe what happens



Reasoning with understanding

$$\begin{array}{r} 6 \square 2 \\ - 2 6 \square \\ \hline 4 \square 4 \end{array}$$

It can't be...
because...

If ...
then...
because...



Understanding multiplication

Repeated addition and arrays

Ten times greater



Towards a written method

How many squares in a grid:

4 by 3?

14 by 3?

34 by 23?



19

$$33,630 = 354 \times 95$$

Use this multiplication to complete the calculations below.

$$354 \times 9.5 = \square$$

$$3,540 \times 95 = \square$$

$$3,363 \div 95 = \square$$

19/20



Understanding division

$$15 \div 3 = ?$$

What does it mean?

What does it look like?

Sharing or grouping?



Using reasoning

$$\begin{array}{r} 8 \square \square \\ 3 \overline{) 2 \square 4 3} \end{array}$$



21

$$5,542 \div 17 = 326$$

Explain how you can use this fact to find the answer to 18×326

A large, empty, cloud-shaped box with a scalloped border, intended for the student to write their explanation.

1 mark

