

Just-in-Time Maths



Vignette

8

Mental computation

Scope and sequence to Level 4

Number strategies				
	Up to at least 100	Up to at least 1000	Up to at least 100 000 and 0.1, 0.01	Up to 1 000 000 and < 0.01
Place Value Addition & Subtraction	<p>The students see 10 as a complete count composed of 10 ones.</p> <p>The student solves addition and subtraction tasks by incrementing by tens - 13,23,43...</p>	<p>Standard Partitioning</p> $43 + 25 =$ $(40+20) + (3+5) =$ $60 + 8 = 68$	<p>Rounding and Compensating</p> $630 - 390 = 630 - (390 + 10) =$ $630 - 400 = 230$ $230 + 10 = 240$	<p>Estimate calculations</p> $37 + 41 + 40 + 38$ is about 4×40
		<p>Rounding and Compensation</p> $39 + 26 =$ $(39+1) + (26-1)$ $40 + 25 = 65$	<p>$923 - 587 = 923 - 600 + 13$</p> <p>Standard Place Value Partitioning</p> $604 - 388 = 60 \text{ tens} - 38 \text{ tens} - 1 \text{ one}$	<p>Standard PV Partitioning</p> $4.2 - 2.68$ is decomposed to difference between 420 hundredths and 268 hundredths
		<p>Back through Ten</p> $84 - 8$ as $84 - 4 - 4$ $84 - 4 = 80$ $80 - 4 = 76$	<p>Know sequences</p> $4.7, 4.8, 4.9, _ _$ with no calculation	
Place Value Multiplication & Division	<p>The students:</p> <ul style="list-style-type: none"> - use skip counting (in 10's) to solve multiplication tasks. 	<p>The students:</p> <ul style="list-style-type: none"> - can skip count in 100s - recall 10x multiplication facts and corresponding division facts 	<p>Understands Base 10 – 10 of these is one of these as digits move right or left</p> <p>4200 is 420×10 with no calculating 4.3 is $43 \div 10$ with no calculating</p> <p>Rounding and Compensating</p> 9×6 is $(10 \times 6) = 60$ $60 - (1 \times 6) = 54$ <p>The students:</p> <ul style="list-style-type: none"> - recall basic facts up to 10 times tables and corresponding division facts <p>Know multiples of 10,100,1000</p> $1250, 2250, 3250, _ _ _$ with no calculation $701\ 000$ is $691\ 000$ if $10\ 000$ is taken from it.	<p>Linking place value understanding to distributive law</p> $6 \times 13 = 6(10 + 3) = 6 \times 10 + 6 \times 3 = 78$ <p>Use multiplicative understanding of pv</p> $1.6 \times 0.4 = 16 \times 4 \div 100 = 0.64$ $24 \div 3 \times 10 = 80$ <p>Link to percentages/fractions</p> $40\% \text{ of } 56 = 56 \div 10 \times 4$ $125/1000 = 0.125$

A link to mental computation- PVP

$$\begin{array}{r} 31 \\ \cancel{4}2\cancel{3}5 = \cancel{4000} + \cancel{200} + 30 + 5 \\ - 1672 = 1000 + 600 + 70 + 2 \\ \hline 2563 \quad 2000 + 500 + 60 + 3 \end{array}$$

1100



A link to mental computation- PVP

$603 - 384 = [\quad]$	as 60 tens – 38 tens less one (219)
$2004 - 700 = [\quad]$	as 20 hundred – 7 hundred. Add the 4
$923 - 587 = [\quad]$	as 923 – 600 and add back the 13
$4.2 - 2.68 = [\quad]$	as 420 hundredths – 268 hundredths

Know, with reasoning and without calculating

- 701 000 results in 691 000 if 10 000 is taken from it.
- 4.7, 4.8, 4.9, ???
- 1250, 2250, 3250, ???
- 4.3 is $43 \div 10$
- 1.8×0.4 is equivalent to $18 \times 4 \div 100$

A link to mental computation- PVP

1 000 000				
200 000	200 000	200 000	200 000	200 000

$$1\ 000\ 000 \div 5 = 200\ 000$$

$$200\ 000 \times 5 = 1\ 000\ 000$$

$$1\ 000\ 000 \div 200\ 000 = 5$$

$$200\ 000 \times 5 = 1\ 000\ 000$$

$$\frac{1}{5} \times 1\ 000\ 000 = 200\ 000$$

$$200\ 000 \div \frac{1}{5} = 1\ 000\ 000$$

Create your own place value bar model and then

- 1) Investigate how many equations you can create
- 2) Represent one of these with a real life situation
- 3) Create a bar, but leave in some missing integers or incorrect integers

A link to mental computation- PVP

What is the difference between 10^3 and 10^2 ?

10

100

90

900

Thousands			Ones		
H	T	O	H	T	O

$$\begin{array}{r} 1000 \\ - 100 \\ \hline 900 \end{array}$$

A deep understanding of PV is essential

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