Facilitator Introduction to the Framework Using Video Clips

It is suggested that a facilitator shows a clip of each stage in order then hands out a copy the next two pages to each teacher.

The facilitator then selects clips to show appropriate for ENP, ANP, INP or SNP and shows these in random order.

In the harder questions it is suggested that the facilitator stop the DVD after the question has been asked and invites teachers to solve the problem in small groups. This is very useful because it allows the teachers to watch what the student does when the DVD is restarted without being distracted by finding the solution for themselves.

After each clip has been shown teachers discuss in small groups which stage descriptor is best, then the facilitator brings the groups' thinking together for the whole staff.

As this process will take considerable time the facilitator may hand out and use the Framework (Book 1) for use in the next session.

National Numeracy Project
Years 0 to 10
Identifying Strategy Stages from Video Clips

	Stage & Behavioural Indicator
0	**Emergent** **Add/Sub:** The student has no reliable strategy to count an unstructured collection of items.
1	**One to One Counting** **Add/Sub:** The student has a reliable strategy to count an unstructured collection of items.
2	**Counting from One on Materials** **Add/Sub:** The student's most advanced strategy is counting from one on materials to solve addition problems. **Mult/Div:** The student's most advanced strategy is counting from one on materials to solve multiplication problems. **Fractions:** The student is able to divide a region or set into equal parts using materials.
3	**Counting from One by Imaging** **Add/Sub:** The student's most advanced strategy is counting from one without the use of materials to solve multiplication problems. **Mult/Div:** The student's most advanced strategy is counting from one without the use of materials to solve addition problems. **Fractions:** The student is able to divide a region or set into equal parts using imaging.
4	**Advanced Counting** **Add/Sub:** The student's the most advanced strategy is counting-on, or counting-back to solve addition or subtraction tasks. **Mult/Div:** On multiplication tasks the student uses skip counting. **Fractions:** The student is able to use symmetry to create halves, quarters, eighths etc. of a set.

5	## Early Additive Part-Whole Thinking **Add/Sub:** The student shows any part-whole strategy to solve addition or subtraction problems mentally by reasoning the answer from basic facts and/or place value knowledge. Numbers are typically both one digit, or one is one digit and the other is two digits. **Mult/Div:** On multiplication tasks the student uses a combination known multiplication facts and repeated addition. Example: $4 \times 6 = (6 + 6) + (6 + 6) = 12 + 12 = 24$ **Fractions:** The student finds a unit fraction of a number by trial and improvement. Example: $\frac{1}{3}$ of $12 \neq 3$ because $12 \div 3 \neq 3$ as $3 + 3 + 3 = 9$, but $\frac{1}{3}$ of $12 = 4$ because $4 + 4 + 4 = 12$.
6	## Advanced Additive Part-Whole Thinking **Add/Sub:** The student is able to use at least two different mental strategies to solve addition or subtraction problems. Both numbers are typically two digit or more. **Mult/Div:** The student uses known facts to derive answers to multiplication and division problems. Example: $4 \times 6 = 2 \times 12 = 24$. Example: $9 \times 6 = 10 \times 6 - 6 = 54$. **Fractions:** The student uses known multiplication facts to find fractions of a set. Example: $\frac{1}{3} \times 36 : \frac{1}{3} \times 30 = 10, \frac{1}{3} \times 6 = 2, 10 + 2 = 12$. Example: $\frac{16}{5} : 3 \times 5 = 15$, remainder 1, So $\frac{16}{5} = 5\frac{1}{3}$.
7	## Advanced Multiplicative Part-Whole **Add/Sub:** The student is able solve addition and subtraction problems for integers and decimals. **Mult/Div:** The student is able to use at least two different mental strategies to solve multiplication and division problems with whole numbers. **Fractions/Ratios:** The student uses known multiplication facts to solve problems with fractions, proportions and ratios. Example: $\frac{5}{6}$ of $24 : 24 \div 6 = 4$, $4 \times 5 = 20$. Example: $3 : 5 = ? : 40$, So $? = 8 \times 3 = 24$. Example: $\frac{3}{4} = \frac{75}{100} = 75\% = 0.75$.
8	## Advanced Proportional Part-Whole **Add/Sub:** The student can add and subtract mixed fractions with unlike denominators. Example: $2\frac{3}{4} - 1\frac{2}{3} = 1 + (\frac{3}{4} - \frac{2}{3}) = 1 + (\frac{9}{12} - \frac{8}{12}) = 1\frac{1}{12}$. **Mult/Div:** The student uses at least two different strategies to solve problems that involve equivalence with and between fractions, ratios and proportions. Example: $7.2 \div 0.4$: Because $7.2 \div 0.8 = 9$, $2 \times 9 = 18$ is the answer. Example: $3.6 \times 0.75 = \frac{3}{4} \times 36 = 3 \times 9 = 27$. **Fractions/Ratios:** The student uses a broad range of strategies to solve problems with fractions, proportions and ratios. Example: 65% of 24: 50% of $24 = 12$, 10% of $24 = 2.4$, so 5% of $24 = 1.2$, so the answer is $12 + 2.4 + 1.2 = 15.6$. Example: $6 : 9 = ? : 24$. So $? = \frac{2}{3} \times 24 = 2 \times 8 = 16$