### Rubric for identifying counting and addition/subtraction strategies

Observe students during activity, tally or tick in the strategy box as you see it being used.

<table>
<thead>
<tr>
<th>Class name:</th>
<th>Observer:</th>
<th>Date:</th>
</tr>
</thead>
</table>

#### Counts on using ones
Student counts on by ones for numbers of any size (including two-digit numbers) will use fingers or draw fence posts

- **Student counts on by ones for numbers of any size (including two-digit numbers) will use fingers or draw fence posts**

#### Bridging to the decade
Students bridge to ten by breaking up the second number

- **Students bridge to ten by breaking up the second number**

#### Friends of and to ten
Students combine numbers that add to 10

- **Students combine numbers that add to 10**

#### Using doubles
Students use known facts like doubles and near doubles

- **Students use known facts like doubles and near doubles**

#### Split Strategy
Students separate the tens from the units and add or subtract each separately before combining to obtain the final answer

- **Students separate the tens from the units and add or subtract each separately before combining to obtain the final answer**

#### Compensation strategy
Students ‘round up’ a number that is close to the decade to make the calculation simpler.

- **Students ‘round up’ a number that is close to the decade to make the calculation simpler**

#### Using patterns to extend number facts
Students see the similarity between calculations of smaller and larger numbers, using an easier sum as a starting place for finding a solution.

- **Students see the similarity between calculations of smaller and larger numbers, using an easier sum as a starting place for finding a solution**

#### Bridging the decades
This strategy is similar to using a split strategy, instead of splitting both numbers, students keep one number whole and bridge to the decade first.

- **This strategy is similar to using a split strategy, instead of splitting both numbers, students keep one number whole and bridge to the decade first**

#### Forming multiples
Student change the order of addends (numbers) to form multiples of ten or other decades.

- **Student change the order of addends (numbers) to form multiples of ten or other decades**

#### Formal algorithm
Students use a formal algorithm to record their calculations.

- **Students use a formal algorithm to record their calculations**

#### Partitioning numbers
Students can expand numbers into standard and non-standard forms to make addition or subtraction easier.

- **Students can expand numbers into standard and non-standard forms to make addition or subtraction easier**

#### Inverse operations
Students check solutions by using inverse operations.

- **Students check solutions by using inverse operations**
### Rubric for identifying multiplication and division strategies

Observe students during activity, tally or tick in the strategy box as you see it being used.

<table>
<thead>
<tr>
<th>Class name:</th>
<th>Observer:</th>
<th>Date:</th>
</tr>
</thead>
</table>

#### Model equal groups
- **Perceptual counting and sharing**
  - Uses visual markers to represent items and groups
  - 'two groups of three'
  - Examples:
    - 3 x 5 = 15
    - 3 + 3 is 6, 6 + 3 is 9, 9 + 3 is 12

#### Forms arrays of equal rows
- **Figurative- multiple count**
  - Uses visual markers to represent groups
  - Model equal groups
    - 7 x 8 is double 7 (14), double again (28) then double again (56)
    - 36÷ 4: halve 36 (gives 18) then halve again (equals 9)
    - 25 ÷ 5 = 2 + 5 = 20 (one)
    - 5 ÷ 5 = 15 (two)
    - 5 ÷ 5 = 10 (three)
    - 5 ÷ 5 = 5 (four)
    - 5 ÷ 5 = 0 (five)

#### Uses a double count to coordinate composite units
- **Uses doubling and repeated doubling**
  - Counts by the number in each group while counting the number of groups e.g. “How many three in 18?” 3 is 1, 6 is 2, 9 is 3...18 is 6

#### Uses known facts to work out unknown
- **Uses place value concepts**
  - Factorises the multiple of 10
  - 5 x 7 = 35 so 6 x 7 is 7 more than 35
  - 5 x 20 is the same as 3 x 2 tens = 6 tens = 60
  - 3 x 20 is the same as 3 x 2 tens = 60

#### Model commutative property
- **Multiplying the tens then the units**
  - 3 x 19 is the same as 7 tens plus 7 nines is 70 + 63 = 133
  - 2 x 3 x 5 = 2 x 5 x 3 = 10 x 3 = 30
  - 18 x 5 = 9 x 2 x 5 = 9 x 10 = 90

#### Uses an area model
- **Uses a formal algorithm** (Stage 3 M&D 1)
  - Solving 27 x 8
    - 27 x 8 = 216
    - 432 x 5
    - 1042
    - 11462
  - 32 x 253 will be about, but more than 30 x 250

#### Recognises grouping symbols (Stage 3 M&D 2)
- **Applies order of operations** (Stage 3 M&D 2)
  - 5 + (2 x 3) = 5 + 6 = 11
  - 32 ÷ (2 x 4) = 32 ÷ 8 = 4
    - (grouping symbols first)