Examples of Questions Assessing Different Cognitive Levels

Knowledge

- Teaching of Fraction
e.g.: What is \( \frac{1}{6} \) of 30?

- Teaching of Area and Perimeter
e.g.: The figure shows an equilateral triangle. What is its perimeter?

- 8 cm

Comprehension

- Teaching of Fraction
e.g.: Mary gave \( \frac{3}{8} \) of her cake to her brother and \( \frac{1}{5} \) of the remainder to her sister. What fraction of the cake has she left?

- Teaching of Area and Perimeter
e.g.: In the figure, what is the area of the shaded part?

Application

- Teaching of Fraction
e.g.: Amy, Beny and Carol shared a sum of money. Amy’s share was half of what Beny and Carol received. Beny’s share was \( \frac{4}{7} \) of the sum of money. Carol received $15 less than Amy. What fraction of the sum of money was Amy’s share? What was the sum of money?

- Teaching of Area and Perimeter
e.g.: In the figure, the shaded part is obtained by removing two semicircles of diameter 7 cm from a square of side 10 cm. Find the perimeter of the shaded part.

(\( \pi = \frac{22}{7} \))

Examples of Non-routine / Unfamiliar Problems

Example 1

The figure is made up of 4 squares A, B, C and D. What fraction of the figure is square C?

Example 2

In the figure, find \( \angle a + \angle b + \angle c + \angle d \)

Example 3

How would you place 12 counters in 8 boxes so that there are 4 counters in each row and in each column?
Example 4
You are given a rectangular board and many identical triangular cards as shown below:

Use the cards to cover the board. You may not be able to cover the whole board. What is the most number of cards you need to use to cover the board as much as possible?

Example 5
A rectangular garden is to be fenced off using the wall as one of its sides. If the total length of fencing to be used is 60 m, what dimensions will give the largest area to be enclosed?

Example 6
Mei Mei’s age is a multiple of 3. Last year, her age was a multiple of 4. In 2 years’ time, her age will be a multiple of 5. How old is Mei Mei now?

Example 7
“4 x 5 = 20”
Tell a story sum that will use the above statement for the solution.
Explain with diagrams the answer to your story sum.

Example 8
Mr Ali wants to paint his bookshelf with different colours. He has a choice of 8 different colours. In how many ways can he choose the 2 colours to paint his bookshelf?

The following notes are provided by CPDD / MOE in 1998 in order to inform teachers on the types of sums that should be excluded in the test papers.

The ‘>’ and ‘<’ signs used in comparing numbers is deleted from the Primary Maths Syllabus 1999
The following types of sums should be excluded:

Write >, < or = in the box:
(a) \( \frac{3}{7} \) < \( \frac{4}{5} \)
(b) 40.5 \( \square \) 40.05
(c) 890 – 200 < 691
(d) 5 tens 3 ones \( \square \) 5+10+3
(e) 3 km 40m \( \square \) 3400m

(f) What is the greatest whole number that can be placed in the box to make the statements true?
\( 5 + \square \times 50 \); \( 250 \div \square > 50 \)

For comparing numbers using the terms ‘more than’ and ‘less than’,

Indirect sums should be excluded (testing language):
* 25 is 7 more than \( \square \)
  (This is equivalent to 7 + \( \square \) = 25)
* 8 less than \( \square \) is 15
  (This is equivalent to \( \square \) - 8 = 15)

The following sums could be included:
* 7 more than 18 is \( \square \)
  (This is equivalent to 18 + 7 = \( \square \))
* \( \square \) is 8 less than 23
  (This is equivalent to 23 – 8 = \( \square \))

To test the multiplication tables and place value concepts, the following type of sums could be included:

Example:
(a) \( 2 \times \square = 18 \) (Multiplication Table)
(b) \( 700 + \square + 6 = 716 \) (Place Value Concept)
(c) \( 31.25 = 30 + 1 \div \frac{2}{10} + \square \) (Place Value Concept)
Box sums which are beyond place value concepts and multiplication tables are deleted from the Pri Maths Syll 1999. the following type of sums should be excluded:

Example:
(a) \( \square \times 4 = 648 \)
(b) \( 48 \div \square = 12 \)
(c) \( 34 + \square - 3 = 4 \times 9 \)
(d) \( 31.25 = 30 + 1 + \frac{1}{2} + \square \)
(e) \( 50 \text{ thousands} + 5 \text{ tens} + 7 = \square \text{ thousands} \square \text{ hundreds} \square \text{ tens} \)

Number Notation and Place Value Concept
The following concepts are taught:
In 3468, the digit 6 is in the tens place. It stands for 60. Its value is 60.

The following sums may be included:
- Write the number “Three thousand four hundred and sixty-eight” in figures.
- Write 3468 in words.
- The digit in the hundreds place.
- The digit 4 stands for

Exclude the following sums (cause confusion between thousands and thousand, etc.):

- 3468 = \( \square \text{ thousands} \square \text{ hundreds} \square \text{ tens} \square \text{ ones} \)
- Write 3468 in thousands, hundreds, tens and ones.
- Write the following in figures:
  3 thousands 4 hundreds 6 tens 8 ones.