

Band 5	
Band 4	
Band 3	
Band 2	

Band 1	<b>DRUMCONDRA PRIMARY MATHEMATICS TEST - REVISED</b>
Below Band 1	
Band 5	

Band 4	
Band 3	
Band 2	
Band 1	
Below Band 1	
Band 5	
Band 4	

Band 3	<b>Progress in Mathematics: Using Class-level Performance Bands and Monitoring Progress Over Time</b>  <i>(Supplement to the Manuals for the DPMT-R, Levels 1, 2 and 3-6)</i>
Band 2	
Band 1	
Below Band 1	
Band 5	
Band 4	
Band 3	
Band 2	
Band 1	
Below Band 1	

Band 5	
Band 4	
Band 3	
Band 2	
Band 1	
Below Band 1	
Band 5	
Band 4	
Band 3	
Band 2	
Band 1	
Below Band 1	
Band 5	
Band 4	
Band 3	



**DRUMCONDRA PRIMARY MATHEMATICS  
TEST – REVISED**

**Progress in Mathematics:  
Using Class-level Performance Bands  
and Monitoring Progress Over Time**

*(Supplement to the Manuals for the DPMT-R, Levels 1, 2 and 3-6)*

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## What Are Performance Bands?

In addition to providing overall average scores and scores for mathematics content areas, recent national and international assessments have used performance bands to report on performance. Central to the notion of performance bands is that pupil scores and test items stand side-by-side on the same underlying scale. Performance bands for the *Drumcondra Primary Mathematics Test-Revised* (DPMT-R) identify the types of mathematical knowledge and skills on which pupils at different points along the achievement scale are likely to be successful. At any particular point on the scale, a student scoring at that point has a 50% chance of getting the corresponding test item correct. Normally, the distribution of scores is divided into five or six bands (in the same way as Sten scores divide a scale into 10 bands). Performance bands are useful for the following purposes:

- Teachers can use the bands to generate a criterion-referenced interpretation of pupil performance since the descriptors at each performance band provide information about the knowledge and skills on which pupils at that band are likely to succeed. Pupils towards the bottom of a band have a 50% chance of getting the easiest items in the band correct. Pupils at the middle of a band have a 50% chance of getting more complex items correct, while pupils at the top of a band have a 50% chance of getting the most difficult items in the band correct. Pupils at a particular band are likely to have acquired the skills and knowledge represented by lower bands.
- Teachers can use the bands to establish learning targets in mathematics for pupils at different achievement levels.
- Teachers can use the bands to group pupils for instruction. Pupils in the top band (Band 5) may be expected to be successful on the most complex mathematics tasks for their class level, and hence may benefit from extension activities designed to challenge them further. Pupils on the bottom bands (Band 1, and Below Band 1) may need additional support on all but the easiest mathematics tasks for their class level. Pupils at intermediate bands (i.e., Bands 2, 3 and 4) may need additional practice at their current band, as well as support to move towards higher bands.
- Teachers can use the bands to explain the performance of children to their parents. Parents who read the descriptions of the performance bands can get an idea of the types of tasks that pupils can be expected to complete successfully, and those on which they may need additional support.
- Teachers can use the bands to identify test items that are at different levels of complexity.

## Development of Performance Descriptors for the Bands

1. The curriculum objectives for the relevant grade level were listed, drawing on the Primary School Mathematics Curriculum – Content (DES/NCCA 1999). Objectives were adjusted, where necessary, so that they formed descriptions of clear and well-circumscribed assessment item domains (item descriptors). The relevant objectives may be found in Appendix A, Tables A1 to A10.
2. For each level of the test, each DPMT-R item was then linked to its curriculum-derived item descriptor, and item descriptors were repeated as required where they were linked to two or more items.
3. Student scores on the test lie along the same scale as the items. Where an item and a pupil lie at the same point on the scale, the student has a 50% chance of getting the item correct, and, by inference, a greater than 50% chance of getting easier items correct (see Figure 1).
4. At each level/form, the scale value of each item was derived<sup>1</sup> and listed (along with its item descriptor) in order from highest to lowest.
5. Scale values were examined at each level/form with a view to identifying appropriate cut-off points on the standard score scale between clusters of items. Using an iterative process, cut-points to be implemented at all 6 levels of the DPMT-R were identified as follows:

Band 5 115 +	Band 4 105 – 114	Band 3 95 – 104	Band 2 85 – 94	Band 1 65 – 84	Below Band 1 Less than 65
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6. Following this, item descriptors were collapsed across forms at each level and duplicate items/item descriptors *within* each band were eliminated. Where two items had different scale values, the item at the highest point on the scale within a band was the one retained on the basis that if pupils are likely to be able to do the upper item of the pair then they are even more likely to be able to do the lower one(s).
7. Next, duplicate items/item descriptors *across* bands were eliminated. Again, for the same reasons as in (6) above, the item at the highest point on the scale was the one retained.
8. Where two items within the same performance band were judged to belong to substantially overlapping item domains, the item descriptor was modified to include both items and the item lower on the scale was then eliminated.
9. The item descriptors within each performance level were then grouped and ordered, firstly by content area/strand (Number & Algebra; Shape & Space; Measure; and Data), and then by cognitive process skill (Recall and Procedural

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<sup>1</sup> Scale values were obtained from the item parameters that result from Item Response Theory scaling. At each level/form, both students and items were placed on the same underlying scale, which had a mean of 100 and a standard deviation of 15.

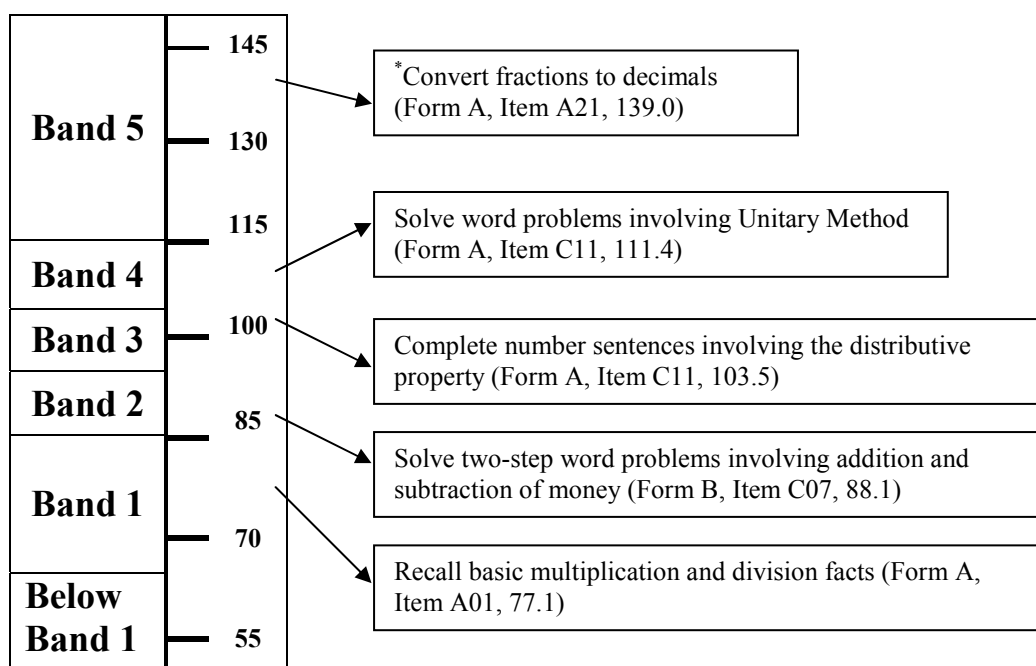


Skills; Reasoning with and Connecting Conceptual Knowledge; Problem-Solving). These groupings were then integrated into descriptive statements of the mathematical competencies pupils at each level were likely to be able to demonstrate (cf. Level 4 Band 5, for example).

10. Descriptors were appended to the performance bands as follows:

Band	Descriptor	Standard Scores
Band 5	Advanced Level	115+
Band 4	Higher Level	105-114
Band 3	Average Level	95-104
Band 2	Basic Level	85-94
Band 1	Low Level	65-84
Below Band 1	Below Band 1	Less than 65

11. Particular tasks (questions or items) corresponding to different performance bands may be found in Appendix B, Tables B1 to B6. These constitute the reduced item sets (drawn from both forms of the test in the case of tests for which there are two forms). More Form A items are shown in these tables. However, in most cases, Form A and Form B items tapped the same skills, and were of equivalent difficulty.



\*Indicates item description, item location in test booklet, and item difficulty.

Figure 1: Performance Bands and Example Items, DPMT-R, Level 4

12. Finally, short descriptions of the performance bands were prepared and may be located in Appendix C, Tables C1 to C6. Where available, each short description includes example tasks from the Number/Algebra, Shape & Space, Measures and Data content areas.

## Using the Performance Bands to Inform Teaching

In this section, examples of ways in which the performance bands can be used to inform instruction are presented.

In preparing the class reports referred to in the examples, the standard scores of pupils were converted to performance bands using the following conversion table:

Band 5 115 +	Band 4 105 – 114	Band 3 95 – 104	Band 2 85 – 94	Band 1 65 – 84	Below Band 1 Less than 65
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Care should be exercised in drawing conclusions about the performance of pupils at the border between two bands. For example, if a pupil achieves a score of 114 (Band 4), s/he may not be any different in achievement terms from a pupil who achieves a score of 115 and is assigned to Band 5.

### *Example 1: Fourth Class*

A sample class report for a Fourth class who took Level 4 of the DPMT-R at the end of the school year is given below. In addition to providing information on overall performance (Raw Scores, Percent Correct Scores, Scaled Scores and Percentile Ranks), the Report gives the performance band into which each pupil's score falls.

The report shows that two pupils are functioning at Performance Band 5, and hence can be considered to be at an advanced level of mathematics achievement. Drawing on the information in Table C4 in Appendix C, which provides a summary description of the skills that pupils at each Band in Level 4 of the DPMT-R can be expected to complete successfully, students in Band 5 would be expected to succeed (i.e., get at least 50% correct) on the following tasks:

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#### **Level 4, Band 5: Advanced Level of Achievement (115 + )**

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- **Number/Algebra:** Pupils at Band 5 can convert fractions to decimals.
  - **Shape & Space:** They can list properties of types of triangles and make informal deductions about 2-D shapes.
  - **Measures:** They can convert litres to millilitres, grams to kilograms, and order measures of length and weight. They can solve word problems involving multiplication of weights, division of capacities, and measures of time.
  - They can also do the tasks described in Bands 1, 2, 3 and 4.
- 

The teacher may consider grouping the two pupils, and perhaps one or two others at the top of Level 4 (e.g., Dylan) for reinforcement on Level 5 tasks, as well as additional enrichment activities designed to extend mathematical problem solving and reasoning skills. Indeed, some students in Band 5 (for example, James) may have mathematical skills not assessed by Level 4 of the DPMT-R.

*Sample Class Report, Fourth Class (Level 4)*

Name	Level / Form	Raw Score	Percentage Correct	Standard Score	Percentile Rank	Sten Score	Performance Band
James	4A	62	83	121	92	8	5 - Advanced
Shane	4B	56	61	115	84	8	5 - Advanced
Dylan	4B	55	73	114	82	7	4 – Higher
Katie	4A	53	71	112	79	7	4 – Higher
Seán	4B	52	69	111	77	7	4 – Higher
Adam	4A	51	68	109	73	7	4 – Higher
Ciaran	4B	51	68	110	75	7	4 – Higher
Dylan	4A	51	68	109	73	7	4 – Higher
Jordan	4B	50	67	109	73	7	4 – Higher
Chloe	4A	49	65	107	68	6	4 – Higher
Chelsea	4A	49	65	107	68	6	4 – Higher
Lauren	4A	49	65	107	68	6	4 – Higher
Hannah	4B	46	61	105	63	6	4 – Higher
Luke	4B	45	60	105	63	6	4 – Higher
Jake	4B	43	57	103	58	6	3 - Average
Cassandra	4A	43	57	103	58	6	3 - Average
Rouane	4A	41	55	101	53	6	3 – Average
Courtney	4B	41	55	101	53	6	3 – Average
Emily	4A	36	48	99	47	5	3 – Average
Niamh	4B	34	45	95	37	5	3 – Average
Ross	4A	29	39	92	30	4	2 – Basic
Richard	4A	29	39	92	30	4	2 – Basic
Katelyn	4A	26	35	89	24	4	2 – Basic
Lee	4B	26	35	88	21	4	2 – Basic
Andrew	4A	25	33	88	21	4	2 – Basic
Eoin	4B	24	32	86	18	4	2 – Basic
Devan	4B	22	29	84	14	3	1 – Low
Jessica	4B	19	25	81	10	3	1 – Low

Further information on the specific Level 5 tasks on which the pupils may need additional consolidation can be found in Table B4 in Appendix B. According to the Table, the following are the descriptors of achievement at Band 5:

Score	Form	Item	Level 4, Band 5 (115 + ) – Underlying test items / objectives
305.3	A	B16	Order measures of length
150.8	A	B13	Make informal deductions about 2-D shapes
139.0	A	A21	Convert fractions to decimals
133.4	B	B02	Convert weights in grams to kilograms
121.7	A	C23	Solve non-routine word problems involving measures of time
117.0	A	B19	Convert capacities in litres to millilitres
117.0	B	C18	Solve one-step word problems involving multiplication of weights
115.9	A	C22	Solve word problems involving division of fractions
115.7	A	B17	Order measures of weight
115.0	B	B24	List properties of 2-D shapes

The specific items represented by these descriptors may be found in the relevant DPMT-R test booklets. Hence, the test item that relates to the descriptor ‘Make informal deductions about 2-D shapes’ can be found in Level 4, Form A. The relevant item is Item 13 in Section B. The most difficult item is B16 (Form A), which asks students to order measures of length.

Twelve pupils in the class achieve scores that place them in Band 4. The following (taken from Appendix C, Table C4) is a description of the tasks that these pupils are expected to be successful on:

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**Level 4, Band 4 : Higher Level of Achievement (105 – 114)**

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- **Number/Algebra:** Pupils at Band 4 can multiply three-digit numbers by two-digit numbers, divide decimals by whole numbers, estimate products of whole numbers, and extend decimal number patterns. They can solve word problems involving division facts, Unitary Method and fractions.
  - **Shape & Space:** They can list properties of 2-D shapes, and identify examples of parallel lines.
  - **Measures:** They can solve problems involving multiplication and division of capacities and multiple operations with lengths, weights, timetables, and money.
  - **Data:** They can analyse tables of data.
  - They can also do the tasks described in Bands 1, 2 and 3.
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Again, teachers may wish to consider grouping pupils in this band for instruction. Initially, instruction can focus on consolidating performance on Band 4 objectives. Information on the specific Level 4 tasks on which the pupils may need consolidation can be found in Appendix B, Table B4. According to the Table, the following are the items on which the descriptors in Band 4 are based:

Score	Level/ Form	Item	Level 4, Band 4 (105 – 114) – Underlying test items / objectives
112.3	4B	A14	Solve routine word problems involving fractions
111.4	4A	C11	Solve word problems involving Unitary Method
111.3	4B	C21	Solve word problems involving division of capacities
110.7	4B	C03	Solve one-step word problems involving multiplication
110.3	4A	C20	Solve multi-step word problems involving weights
109.9	4A	C25	Solve multi-step word problems involving lengths
109.7	4A	B20	Identify examples of parallel lines
109.5	4A	B23	Solve problems involving timetables
109.0	4A	C19	Solve word problems involving multiplication of capacities
108.9	4A	C15	Extend decimal number patterns
108.5	4A	A15	Solve routine word problems involving division facts
108.4	4A	A13	Multiply three-digit numbers by two-digit numbers
108.1	4A	A12	Divide decimals by whole numbers
108.1	4A	A24	Estimate products of whole numbers
107.9	4B	C14	Analyse tables of data
106.3	4A	C16	Solve multi-step word problems involving money

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These descriptors focus strongly on problem solving, including one- and two-step word problems. Specific items that exemplify these processes can be found in the DPMT-R test booklets for Level 4. For example, an item designed to assess ‘Solve word problems involving Unitary Method’ may be found in Level 4, Form A. The relevant item is Number 11 in Section C.

Once the teacher is confident that pupils have consolidated the concepts and processes associated with Band 4, they can proceed to working on Band 5 activities. A decision to move from Band 4 to Band 5 objectives can be made on the basis of teacher observations of progress on Band 4 activities. Such observations can be based on performance on class work, on homework and on tests administered by the teacher.

Six pupils scored at Band 3, indicating average overall performance on the DPMT-R, Level 4. According to Table C4 in Appendix C, pupils in Band 3 can be expected to be successful on the following tasks:

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**Level 4, Band 3: Average Level of Achievement (95 – 104)**

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- **Number/Algebra:** Pupils at Band 3 can order fractions, identify place value in decimals, round four-digit numbers, and estimate products of whole numbers. They can complete number sentences involving the associative and distributive properties. They can solve word problems involving addition with multiplication of whole numbers.
  - **Shape and Space:** Pupils at this band can identify 2-D shapes, construct 2-D shapes from lists of properties, identify right angles in 2-D shapes, and use angles as rotations on a clock-face.
  - **Measures:** They can convert metres to centimetres. They can solve problems involving fractions of monies, subtraction of lengths and weights, multiplication of time, calendars, and multiplication and subtraction of money.
  - **Data:** They can read and interpret bar charts.
  - They can also do the tasks described in Bands 1 and 2.
- 

Pupils performing at Band 3 might be grouped for instruction based on these descriptors and associated objectives. In planning instructional activities, teachers may wish to examine the DPMT-R test questions associated with Band 3. These are to be found in Appendix B, Table B4 and are summarised here:

Score	Level/ Form	Item	Level 4, Band 3 (95 – 104) – Underlying test items / Objectives
104.5	4B	C17	Solve multi-step word problems involving money (fractional parts)
103.8	4A	C18	Solve one-step word problems involving subtraction of weights
103.1	4A	B25	Construct 2-D shapes from list of properties
102.8	4A	B15	Identify right angles in 2-D shapes
102.5	4A	A25	Complete number sentence involving the distributive property
102.1	4A	C10	Solve word problems involving addition and multiplication
101.5	4A	C12	Read tables of data
100.7	4A	A10	Round four-digit numbers
100.3	4B	C02	Solve word problems involving subtraction of lengths
100.0	4A	B21	Use angles as rotations on a clock-face
99.8	4A	A23	Solve word problems involving addition and multiplication
98.4	4A	C04	Convert lengths in metres to centimetres
98.1	4A	A02	Identify place value in decimals
98.0	4A	C24	Solve word problems involving multiplication and subtraction of money
96.8	4A	B14	Identify 2-D shapes
96.7	4B	A06	Order simple fractions in terms of magnitude
96.7	4B	C08	Solve one-step word problems involving multiplication of time
96.6	4B	A16	Read and interpret bar charts
95.6	4B	B23	Solve problems involving calendars

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Once teachers are satisfied that pupils have improved their performance on the types of mathematics tasks associated with Band 3, they can support pupils on the more difficult Band 4 tasks.

Seven pupils in the class performed at Band 2. These pupils are described as having a basic level of mathematics achievement. According to Table C4, in Appendix C, they are likely to succeed on tasks such as the following:

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**Level 4, Band 2: Basic Level of Achievement (85 – 94)**

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- **Number/Data:** Pupils at Band 2 can order four-digit numbers, subtract multi-digit numbers, divide three-digit numbers by one-digit numbers, order simple fractions in terms of magnitude, and identify place value in decimals. Pupils at this band can connect verbal and symbolic representations of one-step problems, and complete number sentences using the associative property.
  - **Shape & Space:** They can identify fractional areas of regular 2-D shapes, visualise 3-D shapes, construct 3-D shapes from 2-D shapes, and construct 2-D shapes with lines of symmetry.
  - **Measures:** They can measure areas of regular shapes, select appropriate units for measuring capacity, and convert analogue times to digital times. They can solve problems involving multiple operations with monies and timetables.
  - **Data:** They can order simple events in terms of likelihood of occurrence; and read tables of data. They can solve problems involving concept of chance in game contexts.
  - They can also do the tasks described in Band 1.
- 

Pupils performing at Band 2 might be grouped for instruction based on these descriptors and associated objectives. In planning instructional activities, teachers may wish to examine the DPMT-R test questions associated with Band 2. These are listed in Appendix B, Table B4, and are summarised here.

Score	Level/ Form	Item	Level 4, Band 2 (85 – 94) – Underlying test items and objectives
93.9	4A	C09	Solve multi-step word problems involving money
93.6	4A	B08	Construct 3-D shapes from 2-D shapes
93.3	4A	B11	Construct 2-D shapes with lines of symmetry
92.8	4A	B05	Order simple events in terms of likelihood of occurrence
92.8	4A	B12	Measure areas of regular shape using a grid
91.6	4B	B10	Visualise properties of 3-D shape
91.5	4A	B04	Convert analogue times to digital times
91.0	4A	B07	Select appropriate units for measuring capacity
90.9	4A	B22	Solve problems involving timetables
90.8	4B	C12	Read tables of data
90.5	4A	A04	Order four-digit numbers
89.7	4A	A05	Identify fractional areas of regular 2-D shapes
89.4	4A	A08	Divide three-digit numbers by one-digit numbers
88.9	4A	B06	Solve simple word problems on concept of chance in game contexts
88.1	4B	C07	Solve two-step word problems involving addition and subtraction of money
88.0	4A	A19	Identify place value in decimals
87.8	4A	C03	Solve one-step word problems involving multiplication
87.2	4A	A03	Subtract multi-digit numbers
86.9	4A	A07	Connect verbal and symbolic representations of one-step word problems
86.2	4A	C05	Solve one-step word problems involving subtraction of lengths
86.2	4A	C06	Solve one-step word problems involving subtraction of weights

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Once teachers are satisfied that pupils have improved their performance on the types of mathematics tasks associated with this band, they can move the pupils on to Band 3 tasks.

Finally, the Fourth class report shows two pupils at a ‘Low’ level of mathematics achievement (i.e., Band 1). According to Table C4 in Appendix C, these pupils are likely to be able to complete the following tasks:

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**Band 1 : Low Level of Achievement (65 - 84)**

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- **Number/Data:** Pupils at Band 1 can recall basic multiplication and division facts and translate simple word problems into number sentences. They can solve routine one-step word problems involving multi-digit subtraction of whole numbers.
  - **Shape & Space:** They can identify line symmetry in 2-D shapes, obtuse angles in 2-D shapes, nets of 3-D shapes, and visualise properties of 3-D shapes.
  - **Measures:** They can solve problems involving subtraction of money.
  - **Data:** They can also construct simple bar charts.
- 

The tasks and objectives associated with Band 1 may be found in Appendix B, Table B4. They are summarised here:

Score	Level/ Form	Item	Band 1 (Below 85) – Underlying test items and objectives
84.2	4B	B14	Identify 2-D shapes
83.8	4A	B09	Translate one-step word problems into number sentences
83.7	4B	B15	Identify obtuse angles in 2-D objects
83.4	4B	C13	Read tables of data
77.1	4A	A01	Recall basic multiplication/division facts
77.1	4A	A16	Construct bar charts
76.7	4A	B03	Identify line symmetry in 2-D shapes
72.0	4A	B01	Identify nets of 3-D shapes
70.6	4A	C01	Solve word problems involving multi-digit subtraction

If, after additional practice at Band 1 objectives, pupils continue to struggle or lack confidence, teachers may need to revert to the objectives associated with an earlier class level (for example, Level 3 objectives, perhaps starting at Band 3).

***Discrepancies between Performance on the DPMT-R and  
Classroom Performance***

The assignment of pupils to groups can be made on the basis of the Band into which their DPMT-R standard scores fall. However, teachers should also satisfy themselves that the standard score or band achieved by an individual pupil on the test matches his/her performance in class. Where there is a discrepancy, assignment to a particular group for mathematics instruction should be provisional, and adjustments should be made as needed.

Teachers should also bear in mind that pupils with scores close to the cut-points for the performance bands are more likely to be misclassified than pupils with scores that are not close to the cut-points. For example, a pupil with a standard score of 114 points is assigned to Band 4 while a pupil with a standard score of 115 is assigned to Band 5. In practice, the difference in performance between the two pupils is small. Hence, teachers should be alert to the possibility that such pupils may be misclassified, and should adjust their groupings if a misclassification becomes apparent.

## Example 2: First Class

### Sample Class Report, First Class (Level 1), Disadvantaged School

Name	Level / Form	Raw Score	Percentage Correct	Standard Score	Percentile Rank	Sten Score	Performance Band
Lee	1A	44	73	111	77	7	4 – Higher
Emma	1A	42	70	109	73	7	4 – Higher
Matthew	1A	41	68	108	70	7	4 – Higher
Mary	1A	41	68	108	70	7	4 – Higher
Seán	1A	39	65	106	66	6	4 – Higher
Niamh	1A	31	52	98	45	5	3 – Average
Courtney	1A	30	50	97	42	5	3 – Average
Kylie	1A	27	45	94	34	5	2 – Basic
Danielle	1A	26	43	93	32	5	2 – Basic
Jordan	1A	24	40	91	27	4	2 – Basic
Hannah	1A	23	38	90	25	4	2 – Basic
Sue	1A	22	37	89	23	4	2 – Basic
Jen	1A	21	35	88	21	4	2 – Basic
Stephen	1A	21	35	88	21	4	2 – Basic
Adam	1A	21	35	88	21	4	2 – Basic
Megan	1A	21	35	88	21	4	2 – Basic
Lauren	1A	20	33	87	19	4	2 – Basic
Kenny	1A	17	28	84	14	3	1 – Low
Richard	1A	13	22	79	8	3	1 – Low
Karl	1A	13	22	79	8	3	1 – Low
Vicky	1A	10	17	74	4	2	1 – Low
Lee	1A	10	17	74	4	2	1 – Low
James	1A	7	12	69	2	1	1 – Low

Pupils in this First class have relatively low levels of achievement. No pupils achieve Band 5 (Advanced), while 6 achieve Band 1 (Low). Based on the bands, the following groupings suggest themselves:

- Higher Level (Band 4) – 5 pupils
- Average and Basic (Bands 2 and 3) – 12 pupils
- Low (Band 1) – 6 pupils

According to Table C1 in Appendix C, pupils at Band 4 would be expected to be successful on the following tasks:

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#### Level 1, Band 4: Higher Level of Achievement (105 – 114)

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- **Number/Algebra:** Pupils at Band 4 can identify place value and order numbers up to 99, use the associative property of addition, and identify patterns in number sequences. They can solve routine word problems involving addition and subtraction of whole numbers.
  - **Shape & Space:** They can solve problems involving halves of 2-D shapes.
  - **Measures:** They can measure weight using non-standard units. They can calculate the cost of a set of shopping items. They can solve one-step problems involving subtraction of clock times, and use of a calendar.
  - They can also do the tasks described in Bands 1, 2, and 3, below.
- 

Pupils who can perform tasks described by these objectives would also be expected to do well on tasks in Bands 1, 2 and 3.



Teachers working with pupils at Band 4 may want to consolidate Band 4 objectives first. These may be found in Appendix B, Table B1. They are summarised here.

<b>Value</b>	<b>Item</b>	<b>Level 1, Band 4 (105 – 114) – Objectives and Item Numbers</b>
113.9	A27	Use the associative property of addition
112.0	B23	Calculate cost of a set of shopping items
110.7	A28	Identify place value in numbers up to 99
110.6	A19	Solve two-step word problems involving addition and subtraction
110.0	B15	Solve routine problems using calendar
109.3	B27	Measure weight using non-standard units
108.5	B03	Solve word problem involving halves of 2-D shapes
108.1	A06	Order numerals, 0 to 99
108.1	B29	Solve one-step word problems involving measures of time
107.0	B19	Solve one-step word problems involving subtraction of clock times
106.5	A25	Solve one-step word problems involving addition within 99
106.4	A23	Identify patterns in number sequences

Once teachers are satisfied that pupils are successful on the types of tasks represented by these objectives, they can begin to provide support to pupils on Band 5 tasks (also found in Appendix B, Table B1). A decision on when to progress to Band 5 can be made by drawing on classroom observations of pupils' progress, as well as performance on tests set by the teacher.

It will be observed that some aspects of the curriculum are not referred to in Band 4. For example, there are no Data items. This arises because such items are located at other bands on the scale.

The same principles with regard to coverage of mathematical content and processes apply to the other groups. The middle group (those on Bands 2 and 3) could work initially on tasks related to these Bands (as per Appendix B, Table B1), before moving on eventually to tasks associated with Band 4 (detailed in the same table).

Where pupils at Band 1 are concerned, teachers may want to work initially on Band 1 tasks. However, it may be preferable in some cases to provide additional reinforcement on key concepts usually taught in Senior Infants before progressing to Level 1, Band 1 tasks.

## Monitoring Progress in Mathematics over Time

In this supplement, we consider the periodic use of standardised test results, and, in particular, the comparison of results on the DPMT-R at two points in time to draw conclusions about pupils' progress in mathematics.

### Comparing Standard Scores at Two or More Points in Time

Perhaps the simplest approach to tracking the performance of individual pupils on a standardised test is to compare their standard scores from year to year. The table below shows the scores of a pupil, Cian, over three years on the DPMT-R.

Class Level	Date of Test	Level / Form	Raw Score	Std. Score	Sten score	Percentile Rank
Third	May, 2005	3A	33	94	5	35
Fourth	June, 2006	4B	34	95	5	37
Fifth	May, 2007	5B	37	96	5	39

The table shows that Cian achieved standard scores of 94, 95 and 96 at the end of the Third, Fourth and Fifth classes respectively. These scores indicate that he maintained his performance in mathematics between Third and Fifth classes. It should be noted that performance may vary somewhat from year to year since there is measurement error associated with all test scores. In the case of DPMT-R scores, the standard error of measurement on the Total Test standard score scale is about 4 points. Hence, a difference of at least 4 points is required before concluding that two scores are significantly different from one another. We can say that a difference that is greater than 4 points is significant at the .68 level, and a difference that is greater than 8 points is significant at the .95 level.

The following table shows the scores of another student, Karen, at the end of the Fourth, Fifth and Sixth classes.

Class Level	Date of Test	Level / Form	Raw Score	Std. Score	Sten score	Percentile Rank
Fourth	May, 2005	4A	60	119	8	90
Fifth	June, 2006	5B	65	123	9	94
Sixth	May, 2007	6B	66	128	9	97

Karen's standard score in Fifth class is some 4 points higher than in Fourth class. Since the standard error of measurement is 4 points, we can say that there is a 68% chance that Karen's standard score in Fifth class is greater than her standard score in Fourth. The difference between Fourth and Sixth classes – some 9 standard score points – is large enough to say that we are 95% certain that the difference is real, and that Karen improved in her performance between the two class levels.

On the DMPT-R, a difference of at least 4 points is required between two standard scores before we can say that there is a statistically significant difference between them. We would expect a difference of 4 points to occur by chance 32 times in 100 administrations, and a difference of 8 points to occur by chance 5 times in 100 administrations.

## Estimating Progress Using the Test-wide Scale

In the process of developing the DPMT-R, a test-wide scale, covering all 6 levels of the test, was established (see DMPT-R Manuals). The overall mean score was set at 500, while the standard deviation was set at 50. Table 1 shows that the mean score is located at Level 4.

The following are the average test-wide scale scores at each level of the test. Readers will notice that average progress from one level to the next is not uniform. For example, average progress from Level 1 to Level 2 is 65 points, while from Level 2 to Level 3, it is 39 points. Progress between the remaining levels varies from 35 to 50 points.

**Table 1**  
**DPMT-R Test-wide Scale Score (Levels 1-6)**

Level/Form	Mean Test-wide Scale Score	Standard Deviation	Average Progress from Corresponding Form at Previous Level
Level 1, Form A	379	67	
Level 2, Form A	444	68	65
Level 3, Form A	483	54	39
Level 3, Form B	479	55	35
Level 4, Form A	529	64	46
Level 4, Form B	529	62	50
Level 5, Form A	568	68	39
Level 5, Form B	570	70	41
Level 6, Form A	606	67	38
Level 6, Form B	609	65	39
All levels/forms	500	100	

Nevertheless, we can track the performance of an individual pupil from year to year, using the test-wide scale. This allows us to examine whether or not the pupil has made progress along expected lines.

First, we need to convert the pupil's raw scores to a test-wide scale score. This can be done with reference to Tables DA1 to D10 in Appendix D. For example, for a pupil in Second class taking Level 2, Form A of the test, a raw score of 45 converts to a test-wide scale score of 512 (see Appendix D, Table D2).

Table 2 below shows the scores for a pupil over a 6-year period from First to Sixth class. It can be concluded that progress is consistent from year to year. The test-wide scale scores confirm a strong improvement between First and Second classes, and between Fifth and Sixth classes, and more modest progress between Second and Third, Third and Fourth, and Fourth and Fifth classes.

The test-wide scale can also be used to interpret the performance of a high- or low-achieving pupil in terms of the particular class level at which s/he is functioning. If, for example, a pupil in Fifth class achieves a test-wide score of 480 on Level 5 of the test, we can conclude (again with reference to Table 1 above) that s/he is performing

at the average level for a pupil taking Level 3 of the test. Similarly, a score of 450 points for a pupil in First can be interpreted as indicating that s/he is performing at about the average for Level 2 (Second class). Such information may be useful in understanding pupils' performance in mathematics.

**Table 2**  
**Partial DPMT-R Pupil Progress Record**

Date	Class	Level/ Form	Total Mathematics					Overall Stage*
			Raw Score	Standard Score	Sten Score	Percentile Rank	Test-wide Scale Score	
May, 2007	1st	1A	27	97	5	42	364	Stage 1
May, 2008	2nd	2A	45	115	8	84	512	Stage 3
May, 2009	3rd	3A	51	111	7	77	524	Stage 3
May, 2010	4th	4A	53	111	7	77	577	Stage 4
May, 2011	5th	5B	52	108	7	70	609	Stage 5
May, 2012	6th	6A	58	116	8	86	678	Stage 5

\*See next section for a description of the performance stages.

### Interpreting Performance Stages on the Test-wide Scale

Finally, teachers may wish to interpret pupils' performance on the DPMT-R with respect to performance stages linked to the overall scale. An overall performance scale for the DPMT-R was developed using the same procedures that were used to develop performance bands for the individual levels of the test. These test-wide performance stages allow us to describe the types of knowledge and skills that pupils have achieved as they progress through the curriculum over a number of years.

The procedure for accessing the point on the scale at which an individual pupil's score is located is simple. First, the teacher refers to the conversion table for the level and form of the test that a pupil has completed (i.e., Tables D1-D10 in Appendix D). For example, for a pupil in Second class taking Level 2, Form A of the test, a raw score of 45 converts to a test-wide scale score 512. Referring to Table 3, this pupil's performance places him/her at Stage 3.

Tables E1 to E5 in Appendix E provide descriptions of what pupils at different performance stages are able to do. These descriptions are based on the test items corresponding to each stage.

**Table 3**  
**Criteria for Test-wide Performance Stages**

Stage
Stage 5 – 600 points +
Stage 4 – 533-599
Stage 3 – 467-532
Stage 2 – 400-466
Stage 1 – 268-400
Below stage 1 – fewer than 268 points

We can say that a pupil scoring at Level 3 is likely to be successful on most or all of the tasks described at Levels 1 and 2 (Appendix E, Tables E1 and E2). In addition, the pupil is likely to be successful on tasks such as the following (drawn from Table E3), in the area of Number:

- recall division facts
- round whole numbers
- order simple fractions
- identify place value in decimals; and order decimals on the number line
- solve problems involving: place value in three-digit numbers; and operations with whole numbers and fractions.

Pupils scoring at Level 3 would be expected to be successful on the following tasks (again drawn from Table E3) in the area of Shape and Space:

- identify 2-D shapes from lists of properties
- construct 2-D shapes with lines of symmetry
- visualise properties of 3-D shapes
- use angles as rotations on a clock-face.

In the area of Measures, they would be expected to complete the following tasks successfully:

- compare lengths
- convert units of length
- calculate the perimeters of regular shapes
- compare and measure areas of regular and irregular shapes
- select appropriate units for measuring capacity
- compare and measure capacity
- convert between times in 12-hour and 24-hour format.

And in Data, they would be expected to complete the following:

- read and interpret tables, pictograms and bar charts;
- use vocabulary of uncertainty and chance
- order events in terms of likelihood of occurrence
- list outcomes of simple random processes.

## APPENDIX A

### Primary School Mathematics Curriculum (1999) Objectives and Corresponding DPMT-R Questions

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**Table A1**  
**PSMC Objectives for First Class and Corresponding DPMT-R Level 1 Questions**

Question	Objective
A2, A3, A28	1. Count the number of objects in a set 2. Read, write and order numerals, 0 to 99 3. Estimate the number of objects in a set 0 to 20 4. Compare equivalent and non-equivalent sets to 0 to 20 5. Order sets of objects by number
A1	6. Use the language of ordinal number, first to tenth 7. Identify and record place value 0 to 99
A4, A5, A6, A27	8. Recognise addition as combining or partitioning sets 9. Apply the commutative, associative and zero properties of addition
A7, A8, A25, A20	10. Recall addition facts within 20 11. Construct addition number sentences and number stories 12. Solve simple word problems involving addition within 20
A9, A10	13. Add numbers without and with renaming within 99 14. Use repeated addition and group counting
A12	15. Recognise subtraction as deducting, as complementing and as difference
A16	16. Recall subtraction facts within 20
A11	17. Construct /complete subtraction number sentences and number stories
A13, A17	18. Solve simple word problems involving subtraction 0 to 20 19. Estimate differences within 99
A14, A15	20. Subtract numbers without renaming within 99 21. Use the symbols +, -, =
A18, A19	22. Solve simple word problems involving addition and subtraction
A21, B1	23. Identify half of sets to 20
A22, A23, A26	24. Recognise pattern, including odd and even numbers 25. Use patterns in addition facts 26. Use a frame to show the presence of an unknown number 27. Use the vocabulary of spatial relations 28. Give and follow simple directions within classroom and school settings
B7, B10	29. Describe, compare and name 2-D shapes:
B9	30. Construct 2-D shapes
B2	31. Combine and partition 2-D shapes
B3, B8	32. Identify halves of 2-D shapes
B11, B12	33. Identify use of 2-D shapes in the environment 34. Describe, compare and name 3-D shapes 35. Identify use of 3-D shapes in the environment 36. Solve problems involving 2-D and 3-D shapes 37. Recognise the relationship between 2-D and 3-D shapes.
B13, B14	38. Estimate, compare, measure and record length using non-standard units 39. Select appropriate non-standard measuring units and instruments for length 40. Estimate, measure and record length using standard unit (the metre) 41. Solve simple word problems involving length
B26	42. Estimate, compare, measure and record weight using non-standard units 43. Select appropriate non-standard measuring units and instruments for weight 44. Estimate, measure and record weight using standard unit (the kilogram)
B27	45. Solve simple word problems involving measures of weight
B17	46. Estimate, compare, measure and record capacity using non-standard units
B18	47. Select appropriate non-standard measuring units and instruments for capacity 48. Estimate, measure and record capacity using standard unit (the litre) 49. Solve simple word problems involving measures of capacity 50. Use the vocabulary of time to sequence events 51. Read and record time using simple devices

**Table A1 (contd.)**  
**PSMC Objectives for First Class and Corresponding DPMT-R Level 1 Questions**

Question	Objective
	52. Read time in hours and half-hours on 12-hour analogue clock
B15, B16	53. Read day, date and month using calendar
A24, A29, A30, B19, B20, B21, B29, B30	54. Solve simple word problems involving measures of time
B24	55. Recognise, exchange and use coins
B22, B23, B25, B28	56. Calculate how many items may be bought with a given sum
	57. Sort and classify objects by two and three criteria
B4, B5, B6	58. Represent and interpret data using real objects, models and picture



**Table A2**  
**PSMC Objectives for Second Class and Corresponding DPMT-R Level 2 Questions**

Question	Objective
A1, A5	1. Count the number of objects in a set 2. Read, write and order numerals, 0 to 199 3. Estimate the number of objects in a set 4. Compare equivalent and non-equivalent sets 5. Use the language of ordinal number
A6, A3	6. Identify and record place value 0 to 199 7. Recognise addition as combining or partitioning sets
A4, A10, A27	8. Apply the commutative, associative and zero properties of addition 9. Recall addition facts
A29	10. Construct addition number sentences and number stories
A14	11. Solve simple word problems involving addition
A7, A8	12. Add numbers without and with renaming within 99
A2	13. Use repeated addition and group counting 14. Recognise subtraction as deducting, as complementing and as difference
A12	15. Recall subtraction facts
A22	16. Construct subtraction number sentences and number stories
A15, A16	17. Solve simple word problems involving subtraction
A9	18. Estimate sums and differences within 99
A11, A13	19. Subtract numbers without and with renaming within 99
A21	20. Use the symbols +, -, =, <, >
A17, A30	21. Solve simple word problems involving addition and subtraction.
A19, A20, A26	22. Identify half and a quarter of sets to 20
A18, B1, B2	23. Recognise and extend patterns in numbers 24. Use patterns in addition facts 25. Use the vocabulary of spatial relations 26. Give and follow simple directions within classroom and school settings
B8	27. Describe, compare and name 2-D shapes 28. Construct 2-D shapes
B3	29. Combine and partition 2-D shapes
B30	30. Identify halves and quarters of 2-D shapes 31. Identify use of 2-D shapes in the environment
B6, B7	32. Identify line symmetry in shapes and in the environment
B11	33. Recognise angles in the environment
B4, B5	34. Describe, compare and name 3-D shapes
B10	35. Identify use of 3-D shapes in the environment 36. Solve problems involving 2-D and 3-D shapes 37. Recognise the relationship between 2-D and 3-D shapes.
B12	38. Estimate, compare, measure and record length using non-standard units 39. Select appropriate non-standard measuring units and instruments for length 40. Estimate, measure and record length using standard unit (metre and cm)
B13, B14	41. Solve simple word problems involving length
B9	42. Estimate and measure area using non-standard units 43. Estimate, compare, measure and record weight using non-standard units 44. Select appropriate non-standard measuring units and instruments for weight 45. Estimate, measure and record weight using standard unit (the kilogram)
A23, B23	46. Solve simple word problems involving measures of weight 47. Estimate, compare, measure and record capacity using non-standard units
B21	48. Select appropriate non-standard measuring units and instruments for capacity 49. Estimate, measure and record capacity using standard unit (the litre)
B22	50. Solve simple word problems involving measures of capacity 51. Use the vocabulary of time to sequence events
A25	52. Read and record time using simple devices 53. Read time in hours and half-hours on 12-hour analogue and digital clock

**Table A2 (contd)**  
**PSMC Objectives for Second Class and Corresponding DPMT-R Level 2**  
**Questions**

Question	Objective
B18, B19	54. Read day, date month and season using calendar
A24, A28, B20, B27, B29	55. Solve simple word problems involving measures of time
	56. Recognise, exchange and use coins
B24, B25, B26, B28	57. Calculate how many items may be bought with a given sum
	58. Sort and classify objects by two and three criteria
B15, B16, B17	59. Represent, read and interpret block graphs

**Table A3**  
**PSMC Objectives for Third Class and Corresponding DPMT-R Level 3, Form A Questions**

Question	PSMC Objective
A8	1. Identify place value in whole numbers, 0-999
A12, A21, A24	2. Read, write and order three-digit numbers
A20	3. Round whole numbers to the nearest ten or hundred
A1, A5, A9, A13, A16	4. Identify place value in decimal numbers to one place of decimals
	5. Add and subtract, without and with renaming, within 999
A3, A14	6. Recall addition and subtraction facts
A18	7. Solve word problems involving addition and subtraction
	8. Recognise multiplication as repeated addition and vice versa
A17	9. Recognise the zero, commutative and distributive properties of multiplication
A23, B18	10. Recall multiplication facts within 100
	11. Multiply a one-digit or two-digit number by 0-10
A6	12. Solve word problems involving multiplication of whole numbers
A19	13. Recognise division as sharing and as repeated subtraction, without and with remainders
A25	14. Recall division facts within 100
B5	15. Divide a one-digit or two-digit number by a one-digit number without and with remainders
B3	16. Solve problems involving division of whole numbers
	17. Identify fractions and equivalent forms of fractions with denominators 2, 4, 8 and 10
	18. Compare and order fractions and position on the number line
	19. Calculate a fraction of a set using concrete materials
	20. Recognise the relationship between fractions and division
	21. Calculate a unit fraction of a number and calculate a number, given a unit fraction of it
A10, B20, B22, C2	22. Solve word problems involving fractions
A11, B21	23. Identify tenths and express in decimal form
B24	24. Order decimals on the number line
B2	25. Solve problems involving decimals.
	26. Recognise and record patterns in number, 0-999
	27. Extend and describe (explain rule for) sequences
	28. Use patterns as an aid in the memorisation of number facts
B19, C25	29. Translate an addition or subtraction number sentence into a word problem and vv
A7, A22, B16	30. Solve one-step number sentences
B8	31. Identify, describe and classify 2-D shapes
B14	32. Compare the properties of 2-D shapes
	33. Draw 2-D shapes from properties
	34. Combine 2-D shapes
B13	35. Identify the use of 2-D shapes in the environment
B4, B23, C1	36. Solve practical problems involving 2-D shapes.
	37. Identify, describe and classify 3-D shapes
B1	38. Describe and compare the properties of 3-D shapes
B9, B15, B17	39. Describe the relationship of 3-D shapes with constituent 2-D shapes
	40. Construct 3-D shapes
	41. Solve problems involving 2-D and 3-D shapes
	42. Identify line symmetry in the environment
B6, B7	43. Identify and draw lines of symmetry in 2-D shapes
	44. Identify, describe and classify vertical, horizontal and parallel lines

**Table A3 (contd.)**  
**PSMC Objectives for Third Class and Corresponding DPMT-R Level 3, Form A**  
**Questions**

Question	PSMC Objective
B12	45. Recognise an angle in terms of a rotation
B25	46. Classify angles as greater than, less than or equal to a right angle
	47. Solve problems involving lines and angles.
C3	48. Estimate, compare, measure and record lengths (m, cm)
C9	49. Rename units of length in m and cm
C15	50. Solve problems involving the addition and subtraction of lengths (m, cm)
C4, C10	51. Estimate, compare and measure the area of regular and irregular shapes
	52. Estimate, compare, measure and record the weight of objects (kg, g)
C6, C11, C23	53. Solve problems involving the addition and subtraction of weights (kg and g)
C7	54. Estimate, compare, measure the capacity of objects (l, ml)
C16	55. Solve problems involving the addition and subtraction of capacities (l, ml)
C14	56. Read time in five-minute intervals on analogue and digital clock (12-hour)
	57. Record time in analogue and digital forms
	58. Read and interpret simple timetables
	59. Rename minutes as hours and hours as minutes
	60. Read dates from calendars and express weeks as days and vice versa
C5, C8, C12, C13, C24	61. Solve and complete practical tasks and problems involving times and dates
C17	62. Rename amounts of euro or cents and record using symbols and decimal point
C18	63. Solve one-step problems involving the addition and subtraction of money.
	64. Collect, organise and represent data using pictograms, block graphs and bar charts
A4, A15, C19, C20, C21, C22	65. Read and interpret tables, pictograms, block graphs and bar charts
	66. Use data sets to solve problems
B10	67. Use vocabulary of uncertainty and chance:
A2	68. Order events in terms of likelihood of occurrence
B11	69. Identify and record outcomes of simple random processes

**Table A4**  
**PSMC Objectives for Third Class and Corresponding DPMT-R Level 3, Form B**  
**Questions**

Question	PSMC Objective
A8	1. Identify place value in whole numbers, 0-999
A12, A21, A24	2. Read, write and order three-digit numbers
A20	3. Round whole numbers to the nearest ten or hundred
A1, A5, A9, A13, A16	4. Identify place value in decimal numbers to one place of decimals
A3, A14	5. Add and subtract, without and with renaming, within 999
A18	6. Recall addition and subtraction facts
A17	7. Solve word problems involving addition and subtraction
A23*, B18	8. Recognise multiplication as repeated addition and vice versa
A6	9. Recognise the zero, commutative and distributive properties of multiplication
A19	10. Recall multiplication facts within 100
A25	11. Multiply a one-digit or two-digit number by 0-10
B5	12. Solve word problems involving multiplication of whole numbers
B3	13. Recognise division as sharing and as repeated subtraction, without and with remainders
A10, B20, B22, C2	14. Recall division facts within 100
A11, B21	15. Divide a one-digit or two-digit number by a one-digit number without and with remainders
B24	16. Solve problems involving division of whole numbers
B2	17. Identify fractions and equivalent forms of fractions with denominators 2, 4, 8 and 10
B19, C25	18. Compare and order fractions and position on the number line
A7, A22, B16	19. Calculate a fraction of a set using concrete materials
B8	20. Recognise the relationship between fractions and division
B14	21. Calculate a unit fraction of a number and calculate a number, given a unit fraction of it
B13	22. Solve word problems involving fractions
B4, B23, C1	23. Identify tenths and express in decimal form
B1	24. Order decimals on the number line
B9, B15, B17	25. Solve problems involving decimals
B6, B7	26. Recognise and record patterns in number, 0-999
B12	27. Extend and describe (explain rule for) sequences
B25	28. Use patterns as an aid in the memorisation of number facts
	29. Translate an addition or subtraction number sentence into a word problem and vice versa
	30. Solve one-step number sentences
	31. Identify, describe and classify 2-D shapes
	32. Compare the properties of 2-D shapes
	33. Draw 2-D shapes from properties
	34. Combine 2-D shapes
	35. Identify the use of 2-D shapes in the environment
	36. Solve practical problems involving 2-D shapes.
	37. Identify, describe and classify 3-D shapes
	38. Describe and compare the properties of 3-D shapes
	39. Describe the relationship of 3-D shapes with constituent 2-D shapes
	40. Construct 3-D shapes
	41. Solve problems involving 2-D and 3-D shapes.
	42. Identify line symmetry in the environment
	43. Identify and draw lines of symmetry in 2-D shapes
	44. Identify, describe and classify vertical, horizontal and parallel lines
	45. Recognise an angle in terms of a rotation
	46. Classify angles as greater than, less than or equal to a right angle

**Table A4 (contd.)**  
**PSMC Objectives for Third Class and Corresponding DPMT-R Level 3, Form B**  
**Questions**

Question	PSMC Objective
	47. Solve problems involving lines and angles
C3	48. Estimate, compare, measure and record lengths (m, cm)
C9	49. Rename units of length in m and cm
C15	50. Solve problems involving the addition and subtraction of lengths (m, cm)
C4, C10	51. Estimate, compare and measure the area of regular and irregular shapes
	52. Estimate, compare, measure and record the weight of objects (kg, g)
C6, C11, C23	53. Solve problems involving the addition and subtraction of weights (kg and g)
C7	54. Estimate, compare, measure the capacity of objects (l, ml)
C16	55. Solve problems involving the addition and subtraction of capacities (l, ml)
C14	56. Read time in five-minute intervals on analogue and digital clock (12-hour)
	57. Record time in analogue and digital forms
	58. Read and interpret simple timetables
	59. Rename minutes as hours and hours as minutes
	60. Read dates from calendars and express weeks as days and vice versa
C5, C8, C12, C13, C24	61. Solve and complete practical tasks and problems involving times and dates
C17	62. Rename amounts of euro or cents and record using symbols and decimal point
C18	63. Solve one-step problems involving the addition and subtraction of money
	64. Collect, organise and represent data using pictograms, block graphs and bar charts
A4, A15, C19, C20, C21, C22	65. Read and interpret tables, pictograms, block graphs and bar charts
	66. Use data sets to solve problems
B10	67. Use vocabulary of uncertainty and chance
A2	68. Order events in terms of likelihood of occurrence
B11	69. Identify and record outcomes of simple random processes

\* Item A23 tests ability to solve problems involving ratio (not formally on 3rd class curriculum list of objectives), but could also be described as ability to solve problems involving both multiplication and addition (not formally on the 3<sup>rd</sup> class curriculum either). Its inclusion in the objective on solving problems involving multiplication is a compromise classification.

**Table A5**  
**PSMC Objectives for Fourth Class and Corresponding DPMT-R**  
**Level 4, Form A Questions**

Question	Objective
	1. Identify place value in whole numbers, 0-9999
A04	2. Read, write and order four-digit numbers
A10	3. Round whole numbers to the nearest thousand
A02	4. Identify place value in decimal numbers to two places of decimals
A03	5. Add and subtract, without and with renaming, within 9999
	6. Recall addition and subtraction facts
C01, C10	7. Solve word problems involving addition and subtraction
	8. Understand multiplication as repeated addition and vice versa
A11, A25	9. Understand the zero, commutative and distributive properties of multiplication
	10. Recall multiplication facts within 100
A13, A20, A24	11. Multiply a two-digit or three-digit number by a one or two-digit number (including estimation)
A09, A23, C03	12. Solve problems involving multiplication of whole numbers
	13. Understand division as sharing and as repeated subtraction, without and with remainders
A01	14. Recall division facts within 100
A08	15. Divide a three-digit number by a one-digit number without and with remainders
	16. Use a calculator to check estimates
A15, C11	17. Solve problems involving division of whole numbers
A05	18. Identify fractions and equivalent forms of fractions with denominators 2, 3, 4, 5, 6, 8, 9, 10, and 12
A06	19. Compare and order fractions with appropriate denominators and position on the number line
	20. Calculate a fraction of a set using concrete materials
	21. Understand the relationship between fractions and division
	22. Calculate a number, given a multiple fraction of the number
	23. Express one number as a fraction of another number
A14	24. Solve and complete practical tasks and problems involving fractions
A21	25. Express tenths and hundredths in fraction or decimal form
A19	26. Identify place value of whole numbers and decimals (two places) and write in expanded form
	27. Order decimals on the number line
	28. Add and subtract whole numbers and decimals (two places)
A12	29. Multiply and divide a decimal number (two places) by a one-digit whole number
	30. Solve problems involving decimals
	31. Recognise and record patterns in number, 0-999
C15	32. Extend and describe sequences
	33. Translate a number sentence into a word problem
A07, B09	34. Translate a one-step word problem into a number sentence
A22,	35. Solve one-step number sentences
B14, B24	36. Identify, describe and classify 2-D shapes
B13	37. Compare the properties of 2-D shapes
B25	38. Draw 2-D shapes
	39. Combine, tessellate and make patterns with 2-D shapes
	40. Identify the use of 2-D shapes in the environment
	41. Solve practical problems involving 2-D shapes
	42. Identify, describe and classify 3-D shapes
B10	43. Describe and compare the properties of 3-D shapes

**Table A5**  
**PSMC Objectives for Fourth Class and Corresponding DPMT-R**  
**Level 4, Form A Questions**

Question	Objective
B01, B08	44. Describe the relationship of 3-D shapes with constituent 2-D shapes
	45. Construct 3-D shapes
	46. Solve problems involving 2-D and 3-D shapes
	47. Identify line symmetry in the environment
B03, B11	48. Identify and draw lines of symmetry in 2-D shapes, pictures or patterns
	49. Identify, describe and classify oblique, perpendicular and intersecting lines
B20	50. Classify angles as greater than, less than or equal to a right angle
B15	51. Solve problems involving lines and angles
B21	52. Estimate, compare, measure and record lengths (m, cm)
B16	53. Rename units of length using decimal or fraction form
C04	54. Estimate and measure the perimeter of regular 2-D shapes
C02, C05, C25	55. Solve problems involving calculations with lengths (m, cm, km)
B12	56. Estimate, compare and measure the area of regular and irregular shapes
B17	57. Estimate, compare, measure and record the weight of objects (kg, g)
B02	58. Rename units of weight in kg and g
	59. Rename units of weight using decimal or fraction form
	60. Solve problems involving calculation with weights (kg and g)
B18, C06, C18, C20	61. Estimate, compare, measure the capacity of objects ( <i>l</i> , ml)
B07	62. Rename units of capacity in <i>l</i> and ml
B19	63. Rename units of capacity using decimal and fraction form
C19, C21, C22	64. Solve problems involving calculation with capacities ( <i>l</i> , ml)
	65. Read time in five-minute intervals on analogue and digital clock (12-hour)
B04	66. Read time in analogue and digital forms (12 hour)
B22, B23	67. Read and interpret simple timetables
	68. Rename minutes as hours and hours as minutes
	69. Read dates from calendars and express weeks as days and vice versa
C08, C23	70. Solve and complete practical tasks and problems involving times and dates
	71. Rename amounts of euro or cents and record using symbols and decimal point
C07, C09, C16, C17, C24	72. Solve one-step problems involving calculation with money
	73. Collect, organise and represent data using pictograms, block graphs and bar charts with scales
A16	74. Read and interpret tables, pictograms, block graphs and simple pie charts
A17, A18, C12, C13, C14	75. Use data sets to solve problems
	76. Use vocabulary of uncertainty and chance
	77. Order events in terms of likelihood of occurrence
B05, B06	78. Identify and record outcomes of simple random processes



**Table A6**  
**PSMC Objectives for Fourth Class and Corresponding DPMT-R**  
**Level 4, Form B Questions**

Question	Objective
A04	1. Identify place value in whole numbers, 0-9999
A10	2. Read, write and order four-digit numbers
A02	3. Round whole numbers to the nearest thousand
A03	4. Identify place value in decimal numbers to two places of decimals.
C01, C10	5. Add and subtract, without and with renaming, within 9999
A11, A25	6. Recall addition and subtraction facts
A13, A20, A24	7. Solve word problems involving addition and subtraction
A09, A23, C03	8. Understand multiplication as repeated addition and vice versa
A01	9. Understand the zero, commutative and distributive properties of multiplication
A08	10. Recall multiplication facts within 100
A15, C11	11. Multiply a two-digit or three-digit number by a one or two-digit number (including estimation)
A05	12. Solve problems involving multiplication of whole numbers
A06	13. Understand division as sharing and as repeated subtraction, without and with remainders
A14	14. Recall division facts within 100
A21	15. Divide a three-digit number by a one-digit number without and with remainders
A19	16. Use a calculator to check estimates
A12	17. Solve problems involving division of whole numbers
C15	18. Identify fractions and equivalent forms of fractions with denominators 2, 3, 4, 5, 6, 8, 9, 10, and 12
A07, B09	19. Compare and order fractions with appropriate denominators and position on the number line
A22,	20. Calculate a fraction of a set using concrete materials
B14, B24	21. Understand the relationship between fractions and division
B13	22. Calculate a number, given a multiple fraction of the number
B25	23. Express one number as a fraction of another number
B10	24. Solve and complete practical tasks and problems involving fractions
B01, B08	25. Express tenths and hundredths in fraction or decimal form
	26. Identify place value of whole numbers and decimals (two places) and write in expanded form
	27. Order decimals on the number line
	28. Add and subtract whole numbers and decimals (two places)
	29. Multiply and divide a decimal number (two places) by a one-digit whole number
	30. Solve problems involving decimals.
	31. Recognise and record patterns in number, 0-999
	32. Extend and describe sequences
	33. Translate a number sentence into a word problem
	34. Translate a one-step word problem into a number sentence
	35. Solve one-step number sentences
	36. Identify, describe and classify 2-D shapes
	37. Compare the properties of 2-D shapes
	38. Draw 2-D shapes
	39. Combine, tessellate and make patterns with 2-D shapes
	40. Identify the use of 2-D shapes in the environment
	41. Solve practical problems involving 2-D shapes.
	42. Identify, describe and classify 3-D shapes
	43. Describe and compare the properties of 3-D shapes
	44. Describe the relationship of 3-D shapes with constituent 2-D shapes
	45. Construct 3-D shapes

**Table A6 (contd).**  
**PSMC Objectives for Fourth Class and Corresponding DPMT-R**  
**Level 4, Form B Questions**

Question	Objective
	46. Solve problems involving 2-D and 3-D shapes.
	47. Identify line symmetry in the environment
B03, B11	48. Identify and draw lines of symmetry in 2-D shapes, pictures or patterns
B20	49. Identify, describe and classify oblique, perpendicular and intersecting lines
B15	50. Classify angles as greater than, less than or equal to a right angle
B21	51. Solve problems involving lines and angles
B16	52. Estimate, compare, measure and record lengths (m, cm)
C04	53. Rename units of length using decimal or fraction form
	54. Estimate and measure the perimeter of regular 2-D shapes
C02, C05, C25	55. Solve problems involving calculations with lengths (m, cm, km)
B12	56. Estimate, compare and measure the area of regular and irregular shapes
B17	57. Estimate, compare, measure and record the weight of objects (kg, g)
B02	58. Rename units of weight in kg and g
	59. Rename units of weight using decimal or fraction form
B18, C06, C18, C20	60. Solve problems involving calculation with weights (kg and g)
B07	61. Estimate, compare and measure the capacity of objects ( <i>l</i> , ml)
B19	62. Rename units of capacity in <i>l</i> and ml
	63. Rename units of capacity using decimal and fraction form
C19, C21, C22	64. Solve problems involving calculation with capacities ( <i>l</i> , ml)
	65. Read time in five-minute intervals on analogue and digital clock (12-hour)
B04	66. Read time in analogue and digital forms (12 hour)
B22, B23	67. Read and interpret simple timetables
	68. Rename minutes as hours and hours as minutes
	69. Read dates from calendars and express weeks as days and vice versa
C08, C23	70. Solve and complete practical tasks problems involving times and dates
	71. Rename amounts of euro or cents and record using symbols and decimal point
C07, C09, C16, C17, C24	72. Solve one-step problems involving calculation with money
A16	73. Collect, organise and represent data using pictograms, block graphs and bar charts with scales
A17, A18, C12, C13, C14	74. Read and interpret tables, pictograms, block graphs and simple pie charts
	75. Use data sets to solve problems
	76. Use vocabulary of uncertainty and chance
B05, B06	77. Order events in terms of likelihood of occurrence
	78. Identify and record outcomes of simple random processes

**Table A7**  
**PSMC Objectives for Fifth Class and Corresponding DPMT-R**  
**Level 5, Form A Questions**

Question	Objective
A01, B02, B10	1. Read, write and order whole numbers and decimals
A06, B07	2. Identify place value in whole numbers and decimals
B09, B11	3. Round whole numbers and decimals
A18, B01	4. Estimate sums, differences, products and quotients of whole numbers
A02, B12	5. Add and subtract whole numbers and decimals (to three places) without and with a calculator
A10	6. Multiply a decimal (to three places) by a whole number, without and with a calculator
A03	7. Divide a three-digit number by a two-digit number, without and with a calculator
A13, B05	8. Divide a decimal number by a whole number, without and with a calculator
A04, A07, A08, A09, A11, A12, A16, A21, A22, A24, A25, B04, B08, B15, B18, B19, B23, B25, C04, C05, C16, C19, C20, C21	9. Compare and order fractions and identify equivalent forms of fractions with denominators 2-12
B17	10. Express improper fractions as mixed numbers and position them on the number line
B21	11. Add and subtract simple fractions and simple mixed numbers
B22	12. Multiply a fraction by a whole number
B13, B14	13. Express tenths, hundredths and thousandths in both fractional and decimal form
A23	14. Know simple percentages and relate them to fractions and decimals
A05, A14, A19, A20, B03	15. Compare and order fractions and decimals
B24	16. Solve problems involving operations with whole numbers, fractions, decimals and percentages (including measures)
C22	17. Identify simple prime and composite numbers
C25	18. Identify square and rectangular numbers
C17	19. Identify factors and multiples
C02	20. Identify positive and negative numbers in context
B20, C08	21. Use simple properties and rules about brackets and priority of operation
C23	22. Identify relationships and record verbal and simple symbolic rules for number patterns
C03	23. Translate number sentences with a frame into word problems and vice versa
	24. Solve one-step number sentences and equations
	25. Make informal deductions about 2-D shapes and their properties
	26. Use angle and line properties to classify and describe triangles and quadrilaterals
	27. Identify the properties of the circle
	28. Construct a circle of given radius or diameter
	29. Tessellate combinations of 2-D shapes
	30. Classify 2-D shapes according to their lines of symmetry
	31. Use 2-D shapes and properties to solve problems
	32. Identify 3-D shapes (including tetrahedron) and analyse relationships
	33. Draw nets of simple 3-D shapes and construct the shapes
	34. Recognise, classify and describe angles and relate them to shape and the environment
	35. Recognise angles in terms of a rotation
	36. Estimate, measure and construct angles in degrees

**Table A7 (contd.)**  
**PSMC Objectives for Fifth Class and Corresponding DPMT-R**  
**Level 5, Form A Questions**

Question	Objective
	37. Know the sum of the angles in a triangle
B06	38. Estimate and measure length using appropriate metric units and instruments
C06	39. Estimate and measure the perimeter of regular and irregular shapes.
A15, C24	40. Recall that the area of a rectangle is length by breadth
	41. Estimate and measure the area of regular and irregular 2-D shapes
	42. Calculate area using square centimetres and square metres
	43. Compare visually square metres and square centimetres
C18	44. Estimate and measure weight using appropriate metric units and instruments
B16, C01	45. Estimate and measure capacity using appropriate metric units and instruments
	46. Read and interpret timetables and the 24-hour clock (digital and analogue)
C07	47. Interpret and convert between times in 12-hour and 24-hour format
	48. Compare value for money using unitary method
	49. Collect, organise and represent data using charts and graphs
C10, C11, C14	50. Read and interpret pictograms, bar charts, and pie charts and graphs
	51. Compile and use simple data sets
A17, C15	52. Calculate averages of simple data sets
C12, C13	53. Use data sets to solve problems
	54. Identify and list all possible outcomes of simple random processes
C09	55. Estimate the likelihood of occurrence of events
	56. Construct and use frequency charts and tables

**Table A8**  
**PSMC Objectives for Fifth Class and Corresponding DPMT-R**  
**Level 5, Form B Questions**

Question	Objective
A01, B02, B10	1. Read, write and order whole numbers and decimals
	2. Identify place value in whole numbers and decimals
A06, B07	3. Round whole numbers and decimals
B09, B11	4. Estimate sums, differences, products and quotients of whole numbers
	5. Add and subtract whole numbers and decimals (to three places) without and with a calculator
A18, B01	6. Multiply a decimal (to three places) by a whole number, without and with a calculator
	7. Divide a three-digit number by a two-digit number, without and with a calculator
	8. Divide a decimal number by a whole number, without and with a calculator
A02, B12	9. Compare and order fractions and identify equivalent forms of fractions with denominators 2-12
	10. Express improper fractions as mixed numbers and position them on the number line
A10	11. Add and subtract simple fractions and simple mixed numbers
A03	12. Multiply a fraction by a whole number
	13. Express tenths, hundredths and thousandths in both fractional and decimal form
A13, B05	14. Know simple percentages and relate them to fractions and decimals
	15. Compare and order fractions and decimals
A04, A07, A08, A09, A11, A12, A16, A21, A22, A24, A25, B04, B08, B15, B18, B19, B23, B25, C04, C05, C16, C19, C20, C21	16. Solve problems involving operations with whole numbers, fractions, decimals and percentages (including measures)
B17	17. Identify simple prime and composite numbers
B21	18. Identify square and rectangular numbers
B22	19. Identify factors and multiples
B13, B14	20. Identify positive and negative numbers in context
A23	21. Use simple properties and rules about brackets and priority of operation
	22. Identify relationships and record verbal and simple symbolic rules for number patterns
	23. Translate number sentences with a frame into word problems and vice versa
A05, A14, A19, A20, B03	24. Solve one-step number sentences and equations
B24	25. Make informal deductions about 2-D shapes and their properties
C22	26. Use angle and line properties to classify and describe triangles and quadrilaterals
C25	27. Identify the properties of the circle
C17	28. Construct a circle of given radius or diameter
	29. Tessellate combinations of 2-D shapes
	30. Classify 2-D shapes according to their lines of symmetry
	31. Use 2-D shapes and properties to solve problems
C02	32. Identify 3-D shapes (including tetrahedron) and analyse relationships
B20, C08	33. Draw nets of simple 3-D shapes and construct the shapes
	34. Recognise, classify and describe angles and relate them to shape and the environment
C23	35. Recognise angles in terms of a rotation
C03	36. Estimate, measure and construct angles in degrees
	37. Know the sum of the angles in a triangle

**Table A8 (contd.)**  
**PSMC Objectives for Fifth Class and Corresponding DPMT-R**  
**Level 5, Form B Questions**

Question	Objective
B06	38. Estimate and measure length using appropriate metric units and instruments
C06	39. Estimate and measure the perimeter of regular and irregular shapes.
A15, C24	40. Recall that the area of a rectangle is length by breadth
	41. Estimate and measure the area of regular and irregular 2-D shapes
	42. Calculate area using square centimetres and square metres
	43. Compare visually square metres and square centimetres
C18	44. Estimate and measure weight using appropriate metric units and instruments
B16, C01	45. Estimate and measure capacity using appropriate metric units and instruments
	46. Read and interpret timetables and the 24-hour clock (digital and analogue)
C07	47. Interpret and convert between times in 12-hour and 24-hour format
	48. Compare value for money using unitary method
	49. Collect, organise and represent data using charts and graphs
C10, C11, C14	50. Read and interpret pictograms, bar charts, and pie charts and graphs
	51. Compile and use simple data sets
A17, C15	52. Calculate averages of simple data sets
C12, C13	53. Use data sets to solve problems
	54. Identify and list all possible outcomes of simple random processes
C09	55. Estimate the likelihood of occurrence of events
	56. Construct and use frequency charts and tables

**Table A9**  
**PSMC Objectives for Sixth Class and Corresponding DPMT-R**  
**Level 6, Form A Questions**

Question	Objective
B04	1. Read, write and order whole numbers and decimals
	2. Identify place value in whole numbers and decimals
A01, B02	3. Round decimals
A17, B01, B03	4. Estimate sums, differences, products and quotients of decimals
A02	5. Add and subtract whole numbers and decimals (three places) without and with a calculator
A12	6. Multiply a decimal by a decimal, without and with a calculator
	7. Divide a four-digit number by a two-digit number, without and with a calculator
	8. Divide a decimal number by a decimal, without and with a calculator
B09	9. Compare and order fractions and identify equivalent forms of fractions
B06	10. Express improper fractions as mixed numbers and position them on the number line
	11. Add and subtract simple fractions and simple mixed numbers
A05, B11	12. Multiply a fraction by a fraction
	13. Express tenths, hundredths and thousandths in both fractional and decimal form
	14. Divide a whole number by a unit fraction
B07, B21	15. Use simple ratios
A03, A09, A14	16. Use percentages and relate them to fractions and decimals
	17. Compare and order percentages of numbers
A06, A10, A11, A18, B22, B24, C04, C07, C09, C14, C25	18. Solve problems relating to profit and loss, discount, VAT and interest
	19. Identify simple prime and composite numbers
B08	20. Identify square numbers
	21. Identify simple square roots
B05, B16	22. Identify common factors and multiples
	23. Write whole numbers in exponential form
	24. Identify positive and negative numbers on the number line
B13	25. Add simple positive and negative numbers on the number line
	26. Know simple properties and rules about brackets and priority of operation
	27. Identify relationships and record symbolic rules for number patterns
B15	28. Use a variable in the context of simple patterns, tables and simple formulae
	29. Substitute values for variables
	30. Translate word problems with a variable into number sentences
A07, A08, A16, A20, A25, B10, B12, B14, B20, B25	31. Solve one-step number sentences and equations
	32. Make informal deductions about 2-D shapes and their properties
	33. Use angle and line properties to classify and describe triangles and quadrilaterals
	34. Construct triangles from given sides or angles
	35. Identify the properties of the circle
C13	36. Construct a circle of given radius or diameter
	37. Tessellate combinations of 2-D shapes
	38. Classify 2-D shapes according to their lines of symmetry
C16	39. Plot simple co-ordinates
C19	40. Use 2-D shapes and properties to solve problems.
	41. Identify 3-D shapes and analyse relationships, including octahedron
C02	42. Draw the nets of simple 3-D shapes and construct the shapes.
	43. Recognise, classify and describe angles and relate angles to shape

**Table A9 (contd.)**  
**PSMC Objectives for Sixth Class and Corresponding DPMT-R**  
**Level 6, Form A Questions**

Question	Objective
C12	44. Recognise angles in terms of a rotation
C17	45. Estimate, measure and construct angles in degrees
C20	46. Explore the sum of the angles in a quadrilateral
A22, A24	47. Select and use appropriate instruments of measurement
	48. Rename measures of length
C03	49. Estimate and measure the perimeter of regular and irregular shapes
C01	50. Use and interpret scales on maps and plans
A04, C18	51. Know that the length of the perimeter of a rectangular shape does not determine its area
A15, C23	52. Calculate the area of regular and irregular 2-D shapes
	53. Measure the surface area of specified 3-D shapes
A13, A23, C06	54. Calculate area using acres and hectares
	55. Identify the relationship between square metres and square centimetres
	56. Find the area of a room from a scale plan
A21, C15	57. Rename measures of weight
C24	58. Rename measures of capacity
A19, C08	59. Find the volume of a cuboid experimentally
	60. Solve problems involving international time zones
B17, B18, B19, B23, C21, C22	61. Know the relationship between time, distance and average speed
	62. Compare prices to identify value for money
	63. Convert foreign currencies to euros and vice versa
	64. Collect, organise and represent data using pie charts and trend graphs
	65. Read and interpret trend graphs and pie charts
C05, C11	66. Compile and use simple data sets
	67. Calculate averages of simple data sets
	68. Use data sets to solve problems.
C10	69. Identify and list all possible outcomes of simple random processes
	70. Estimate the likelihood of occurrence of events
	71. Order on a scale from 0 to 100%, 0 to 1
	72. Construct and use frequency charts and tables



**Table A10**  
**PSMC Objectives for Sixth Class and Corresponding DPMT-R**  
**Level 6, Form B Questions**

Question	Objective
B04	1. Read, write and order whole numbers and decimals
	2. Identify place value in whole numbers and decimals
A01, B02	3. Round decimals
A17, B01, B03	4. Estimate sums, differences, products and quotients of decimals
A02	5. Add and subtract whole numbers and decimals (three places) without and with a calculator
A12	6. Multiply a decimal by a decimal, without and with a calculator
	7. Divide a four-digit number by a two-digit number, without and with a calculator
	8. Divide a decimal number by a decimal, without and with a calculator
B09	9. Compare and order fractions and identify equivalent forms of fractions
B06	10. Express improper fractions as mixed numbers and position them on the number line
A11	11. Add and subtract simple fractions and simple mixed numbers
A05, B11	12. Multiply a fraction by a fraction
	13. Express tenths, hundredths and thousandths in both fractional and decimal form
	14. Divide a whole number by a unit fraction
B07, B21	15. Use simple ratios
A03, A09, A14, B24	16. Use percentages and relate them to fractions and decimals
	17. Compare and order percentages of numbers
A06, A10, A18, B22, C04, C07, C09, C14, C25	18. Solve problems relating to profit and loss, discount, VAT, interest
	19. Identify simple prime and composite numbers
B08	20. Identify square numbers
	21. Identify simple square roots
B05, B16	22. Identify common factors and multiples
	23. Write whole numbers in exponential form
	24. Identify positive and negative numbers on the number line
B13	25. Add simple positive and negative numbers on the number line
	26. Know simple properties and rules about brackets and priority of operation
	27. Identify relationships and record symbolic rules for number patterns
B15	28. Use a variable in the context of simple patterns, tables and simple formulae
	29. Substitute values for variables
	30. Translate word problems with a variable into number sentences
A07, A08, A16, A20, A25, B10, B12, B14, B20, B25	31. Solve one-step number sentences and equations
	32. Make informal deductions about 2-D shapes and their properties
	33. Use angle and line properties to classify and describe triangles and quadrilaterals
	34. Construct triangles from given sides or angles
	35. Identify the properties of the circle
C13	36. Construct a circle of given radius or diameter
	37. Tessellate combinations of 2-D shapes
	38. Classify 2-D shapes according to their lines of symmetry
C16	39. Plot simple co-ordinates
C19	40. Use 2-D shapes and properties to solve problems.

**Table A10 (contd.)**  
**PSMC Objectives for Sixth Class and Corresponding DPMT-R**  
**Level 6, Form B Questions**

Question	Objective
C02	1. Identify 3-D shapes (including octahedron) and analyse relationships
	2. Draw the nets of simple 3-D shapes and construct the shapes.
	3. Recognise, classify and describe angles and relate angles to shape
C12	4. Recognise angles in terms of a rotation
C17	5. Estimate, measure and construct angles in degrees
C20	6. Explore the sum of the angles in a quadrilateral
	7. Select and use appropriate instruments of measurement
A22, A24	8. Rename measures of length
	9. Estimate and measure the perimeter of regular and irregular shapes
C03	10. Use and interpret scales on maps and plans
C01	11. Know that the length of the perimeter of a rectangular shape does not determine its area
	12. Calculate the area of regular and irregular 2-D shapes
A04, C18	13. Measure the surface area of specified 3-D shapes
	14. Calculate area using acres and hectares
A15	15. Identify the relationship between square metres and square centimetres
	16. Find the area of a room from a scale plan
	17. Rename measures of weight
A13, A23, C06	18. Rename measures of capacity
	19. Find the volume of a cuboid experimentally
A21, C15	20. Solve problem involving international time zones
C24	21. Know the relationship between time, distance and average speed
A19, C08	22. Compare prices to identify value for money
	23. Convert foreign currencies to euros and vice versa
C23	24. Collect, organise and represent data using pie charts and trend graphs
	25. Read and interpret trend graphs and pie charts
	26. Compile and use simple data sets
B17, B18, B19, B23, C21, C22	27. Calculate averages of simple data sets
	28. Use data sets to solve problems
	29. Identify and list all possible outcomes of simple random processes
C11	30. Estimate the likelihood of occurrence of events;
C05	31. Order on a scale from 0 to 100%, 0 to 1
	32. Construct and use frequency charts and tables

## APPENDIX B

### Item Descriptors, Corresponding DPMT-R Items, and Item Scale Scores

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**Table B1**  
**Item Descriptors by Performance Band – DPMT-R Level 1**

<b>Band 5 (115 +)</b>		
190.5	B21	Solve non-routine word problems involving subtraction of clock times
142.5	B14	Compare lengths using non-standard units
128.4	A30	Solve one-step word problems involving measures of time in hours
127.2	B16	Solve non-routine problems using calendar
123.5	B25	Solve word problem involving subtraction of money
122.9	B05	Represent data on a block graph
121.0	B28	Solve two-step word problems involving addition of money
119.0	A24	Solve one-step problems involving subtraction of clock time (mins)
116.0	B18	Select appropriate non-standard instruments for measuring capacity
<b>Band 4 (105 – 114)</b>		
113.9	A27	Use the associative property of addition
112.0	B23	Calculate cost of a set of shopping items
110.7	A28	Identify place value in numbers up to 99
110.6	A19	Solve two-step word problems involving addition and subtraction
110.0	B15	Solve routine problems using calendar
109.3	B27	Measure weight using non-standard units
108.5	B03	Solve word problem involving halves of 2-D shapes
108.1	A06	Order numerals, 0 to 99
108.1	B29	Solve one-step word problems involving measures of time
107.0	B19	Solve one-step word problems involving subtraction of clock times (hrs)
106.5	A25	Solve one-step word problems involving addition within 99
106.4	A23	Identify patterns in number sequences
<b>Band 3 (95 – 104)</b>		
104.4	B17	Measure capacity using non-standard units
103.5	B02	Partition 2-D shapes
103.2	B30	Solve one-step word problems involving addition of measures of time
102.9	A16	Order numerals, 0 to 99
102.8	A09	Add numbers with renaming within 99
99.6	A29	Solve one-step word problems involving addition of measures of time
98.7	B22	Solve word problems involving addition of money
98.5	B08	Identify halves of 2-D shapes
98.4	A14	Subtract numbers without renaming within 99
97.6	A12	Identify subtraction as complementing situations
97.5	B01	Solve word problem involving halves of sets within 20
95.3	A17	Connect verbal and symbolic representations of a subtraction problem
95.3	A20	Solve one-step word problems involving repeated addition within 20
95.0	B09	Construct 2-D shapes
<b>Band 2 (85 – 94)</b>		
94.3	B20	Solve routine word problems involving addition of clock times
94.2	B07	Identify 2-D shapes in context
94.1	A15	Subtract numbers without renaming within 99
94.0	A04	Use the commutative property of addition
93.6	B24	Exchange coins
93.0	B06	Interpret data in a block graph
92.4	A05	Use the zero property of addition
90.9	A22	Identify odd and even numbers
90.4	A08	Solve one-step word problems involving addition within 99
89.4	A13	Solve one-step word problems involving subtraction within 20
87.9	B11	Identify 3-D shapes from their properties
87.7	A26	Recognise pattern in even numbers on the hundred square

**Table B1 (Contd.)**  
**Item Descriptors by Performance Band – DPMT-R Level 1**

<b>Value</b>	<b>Item</b>	<b>Band 1 (84-65)</b>
81.7	B12	Describe properties of regular 3-D shapes
81.5	B04	Read data from a block graph
79.1	A18	Solve two-step word problems involving addition and subtraction
78.3	A07	Solve one-step word problems involving addition within 20
77.7	A11	Complete subtraction number sentences
76.3	A21	Identify half of sets of up to 20
71.3	B26	Compare weights of objects
70.3	B13	Measure length using non-standard units
65.1	A01	Connect pictorial and symbolic representations of numerals within 99
<b>Band 0 (less than 65)</b>		
63.8	B10	Describe properties of simple 2-D shapes
52.8	A02	Read numerals from 0 to 99

**Table B2**  
**Item Descriptors, by Performance Band – DPMT-R Level 2**

<b>Value</b>	<b>Item</b>	<b>Band 5 (115 +)</b>
155.4	B06	Identify lines of symmetry in 2-D shapes
126.3	B28	Solve non-routine word problems involving addition and subtraction of money
120.8	B22	Solve simple word problems involving measures of capacity
119.7	A09	Estimate sums within 99
119.3	B27	Solve non-routine two-step word problems involving measures of time
118.3	B12	Compare lengths using non-standard units
116.7	B24	Solve two-step word problems involving addition and subtraction of money
116.5	A30	Solve non-routine word problems involving addition within 99
<b>Band 4 (105 – 114)</b>		
110.1	A25	Convert 12-hour analogue clock times to digital times
110.1	A28	Solve two-step word problems involving addition of time
109.7	A18	Complete patterns in numbers
109.7	A23	Solve simple word problems involving comparison of weight
108.5	B19	Solve non-routine one-step word problem using calendar
108.3	A26	Complete number sentences involving quarters of sets to 20
108.0	B21	Select appropriate non-standard instruments for measuring capacity
106.7	B29	Solve non-routine one-step word problems involving subtraction of time
105.8	B10	Describe properties of 3-D shapes in the environment
<b>Band 3 (95 – 104)</b>		
103.7	B15	Represent data in a block graphs
103.6	A16	Solve routine one-step word problems involving subtraction
102.9	B23	Solve simple word problems involving subtraction of weights
102.8	A10	Apply the associative property of addition to complete number sentences
102.7	B01	Extend patterns in numbers
101.8	A06	Rename numbers, 0 to 199
101.8	B16	Interpret block graphs
101.5	B13	Solve simple word problems involving metres and centimetres
101.3	B26	Solve one-step word problems involving addition of money
100.4	A13	Subtract numbers within 99 (number sentence format)
98.8	B25	Exchange money.
98.3	B30	Identify quarters of 2-D shapes
96.6	A17	Solve two-step word problems involving addition and subtraction within 20
96.0	A24	Solve one-step word problems involving subtraction of time
95.2	B18	Solve routine one-step word problems using calendar
<b>Band 2 (85 – 94)</b>		
94.8	B14	Solve simple word problems involving addition of lengths
94.6	B03	Partition 2-D shapes
94.6	B11	Recognise angles as rotations
94.4	A21	Use the symbols $<$ , $>$
93.7	A12	Recall subtraction facts
92.3	A03	Solve word problems involving place value 0 to 199
90.5	A08	Add three two-digit numbers within 99 (number sentence format)
88.6	A14	Solve routine word problems involving addition
86.8	A02	Count in groups
86.5	A05	Order numerals, 0 to 199
86.3	A20	Solve word problems involving identification of quarters of sets to 20
86.0	A22	Construct subtraction number sentences from number stories
85.2	B02	Identify even numbers

**Table B2 (contd.)**  
**Item Descriptors, by Performance Band – DPMT-R Level 2**

<b>Value</b>	<b>Item</b>	<b>Band 1 (65 - 84)</b>
79.9	A29	Complete subtraction number sentences
77.8	A07	Add three two-digit numbers within 99 (column format)
73.3	B08	Describe properties of 2-D shapes
70.3	A11	Subtract numbers within 99 without renaming (column format)
68.4	A19	Identify half of sets to 20
65.0	B04	Describe properties of 3-D shapes
<b>Below Band 1 (Less than 65)</b>		
57.0	B09	Solve word problems involving measures of area using non-standard units
54.8	B07	Solve simple problem involving line symmetry in 2-D shape
50.8	A01	Read numerals, 0 to 199
32.4	B05	Identify 3-D shapes from lists of properties

**Table B3**  
**Item Descriptors, by Performance Band – DPMT-R Level 3 (Combined Forms)**

<b>Score</b>	<b>Form</b>	<b>Item</b>	<b>Band 5 (115 + )</b>
234.3	A	B23	Partition 2-D shapes to make other 2-D shapes
189.8	A	A23	Solve word problems involving multiplication and addition of whole numbers
133.8	A	B09	Identify 2-D shapes in faces of 3-D shapes
132.9	B	C04	Measure areas of regular and irregular shapes
130.2	A	C16	Solve problems involving subtraction of capacities (l, ml)
129.9	B	B14	Identify 2-D shapes from list of properties
129.1	A	A10	Solve word problems involving fractions of numbers
127.7	A	A25	Solve problems involving division of whole numbers
126.5	B	B04	Combine 2-D shapes to make other 2-D shapes
124.4	B	B03	Position fractions on the number line
123.2	A	C25	Translate two-step word problems into number sentences
120.6	A	B25	Classify angles as greater than, less than or equal to a right angle
118.2	A	A24	Estimate the products of multiplying one-digit by two-digit numbers
116.2	A	C15	Solve word problems involving the subtraction of lengths (m, cm)
<b>Band 4 (105 – 114)</b>			
114.2	A	A07	Complete one-step number sentences involving $>$ , $<$ , $=$
113.9	B	B22	Solve word problems involving fractions
112.9	A	C07	Compare capacities of objects (l, ml)
112.4	A	B18	Solve word problems involving multiplication and subtraction of whole numbers
110.4	A	C23	Solve problems involving addition and subtraction of weights (kg and g)
109.3	B	B05	Identify fractions of regular shapes
108.6	B	A18	Apply distributive property of multiplication
107.9	B	C20	Read and interpret pictograms
107.4	A	C12	Solve problems involving months on calendar
106.4	A	C17	Solve two-step problems involving the addition and subtraction of money.
106.3	A	A02	Order events in terms of likelihood of occurrence
106.2	B	C13	Solve problems involving addition of times
106.1	B	B19	Translate one-step word problems into number sentences
105.3	B	A21	Estimate the sums of two-digit numbers
105.2	B	A16	Subtract three-digit numbers with renaming, within 999
105.1	A	A22	Complete one-step addition number sentences involving associative property
<b>Band 3 ( 95 to 104 )</b>			
103.6	A	C03	Compare lengths (m, cm)
103.6	A	C05	Solve problems involving subtraction of dates on a calendar
102.6	A	B20	Solve word problems involving fractions as sets
101.3	A	C10	Compare areas of irregular shapes
101.2	A	C18	Solve one-step problems involving addition of money.
100.4	A	A11	Express tenths in decimal form
99.7	A	A17	Multiply two-digit numbers by one-digit numbers
99.6	B	B01	Describe properties of 3-D shapes
99.3	A	C06	Solve problems involving addition of weights (kg and g)
99.0	A	A20	Identify place value in decimal numbers
98.4	A	B13	Identify the use of 2-D shapes in the environment
98.4	A	B16	Complete multiplication number sentences involving associative property
98.3	A	B12	Recognise an angle in terms of a rotation
98.3	A	C09	Rename units of length
97.7	A	A19	Divide two-digit numbers by a one-digit numbers with remainders
97.7	A	B17	Construct 3-D shapes from 2-D shapes
97.2	A	A08	Solve word problems involving place value in three-digit numbers
96.9	A	B24	Order decimals on the number line
95.5	A	A14	Solve word problems involving multi-digit subtraction



**Table B3 (contd.)**  
**Item Descriptors, by Performance Band – DPMT-R Level 3 (Combined Forms)**

<b>Score</b>	<b>Form</b>	<b>No.</b>	<b>Band 2 (85 - 94)</b>
94.6	A	C14	Read time in five-minute intervals on analogue and digital clocks (12-hour)
93.8	A	C24	Solve problems involving Unitary Method
93.2	A	C02	Solve word problems involving fractions of numbers
92.6	A	B02	Complete number patterns
90.0	B	A06	Recall division facts within 100
89.4	B	C08	Solve problems involving subtraction of times
89.2	B	A13	Add three numbers with renaming, within 999
88.2	B	A04	Read and interpret tables
87.9	A	B15	Identify nets of 3-D shapes
87.2	A	A15	Read and interpret bar charts
87.0	B	A03	Solve word problems involving multi-digit addition of whole numbers
85.0	A	A12	Round whole numbers to the nearest ten or hundred
<b>Band 1 (65-84)</b>			
81.6	A	B08	Identify properties of 2-D shapes
80.5	A	B10	Use vocabulary of uncertainty and chance
79.5	A	B06	Draw lines of symmetry in 2-D shapes
73.9	A	A05	Subtract two-digit numbers with renaming, within 999
71.2	A	B11	Identify and record outcomes of simple random processes
<b>Below Band 1 (Less than 65)</b>			
61.1	A	B07	Identify lines of symmetry in 2-D shapes
27.0	A	C01	Compare areas of regular shapes

**Table B4**  
**Item Descriptors, by Performance Band – DPMT-R Level 4 (Combined Forms)**

<b>Score</b>	<b>Form</b>	<b>Item</b>	<b>Band 5 (115 + )</b>
305.3	A	B16	Order measures of length
150.8	A	B13	Make informal deductions about 2-D shapes
139.0	A	A21	Convert fractions to decimals
133.4	B	B02	Convert weights in grams to kilograms
121.7	A	C23	Solve non-routine word problems involving measures of time
117.0	A	B19	Convert capacities in litres to millilitres
117.0	B	C18	Solve one-step word problems involving multiplication of weights
115.9	A	C22	Solve word problems involving division of fractions
115.7	A	B17	Order measures of weight
115.0	B	B24	List properties of 2-D shapes
<b>Band 4 (105 – 114)</b>			
112.3	B	A14	Solve routine word problems involving fractions
111.4	A	C11	Solve word problems involving Unitary Method
111.3	B	C21	Solve word problems involving division of capacity
110.7	B	C03	Solve one-step word problems involving multiplication
110.3	A	C20	Solve multi-step word problems involving weights
109.9	A	C25	Solve multi-step word problems involving lengths
109.7	A	B20	Identify examples of parallel lines
109.5	A	B23	Solve problems involving timetables
109.0	A	C19	Solve word problems involving multiplication of capacities
108.9	A	C15	Extend decimal number patterns
108.5	A	A15	Solve routine word problems involving division facts
108.4	A	A13	Multiply three-digit numbers by two-digit numbers
108.1	A	A12	Divide decimals by whole numbers
108.1	A	A24	Estimate products of whole numbers
107.9	B	C14	Analyse tables of data
106.3	A	C16	Solve multi-step word problems involving money
<b>Band 3 (95 – 104)</b>			
104.5	B	C17	Solve multi-step word problems involving money (fractional parts)
103.8	A	C18	Solve one-step word problems involving subtraction of weights
103.1	A	B25	Construct 2-D shapes from list of properties
102.8	A	B15	Identify right angles in 2-D shapes
102.5	A	A25	Complete number sentence involving the distributive property
102.1	A	C10	Solve word problems involving addition and multiplication
101.5	A	C12	Read tables of data
100.7	A	A10	Round four-digit numbers
100.3	B	C02	Solve word problems involving subtraction of lengths
100.0	A	B21	Use angles as rotations on a clock-face
99.8	A	A23	Solve word problems involving addition and multiplication
98.4	A	C04	Convert lengths in metres to centimetres
98.1	A	A02	Identify place value in decimals
98.0	A	C24	Solve word problems involving multiplication and subtraction of money
96.8	A	B14	Identify 2-D shapes
96.7	B	A06	Order simple fractions in terms of magnitude
96.7	B	C08	Solve one-step word problems involving multiplication of time
96.6	B	A16	Read and interpret bar charts
95.6	B	B23	Solve problems involving calendars

**Table B4 (contd.)**  
**Item Descriptors, by Performance Band – DPMT-R Level 4 (Combined Forms)**

<b>Score</b>	<b>Form</b>	<b>Item</b>	<b>Band 2 (85 – 94)</b>
93.9	A	C09	Solve multi-step word problems involving money
93.6	A	B08	Construct 3-D shapes from 2-D shapes
93.3	A	B11	Construct 2-D shapes with lines of symmetry
92.8	A	B05	Order simple events in terms of likelihood of occurrence
92.8	A	B12	Measure areas of regular shapes using a grid
91.6	B	B10	Visualise properties of 3-D shape
91.5	A	B04	Convert analogue times to digital times
91.0	A	B07	Select appropriate units for measuring capacity
90.9	A	B22	Solve problems involving timetables
90.8	B	C12	Read tables of data
90.5	A	A04	Order four-digit numbers
89.7	A	A05	Identify fractional areas of regular 2-D shapes
89.4	A	A08	Divide three-digit numbers by one-digit numbers
88.9	A	B06	Solve simple word problems on concept of chance in game contexts
88.1	B	C07	Solve two-step word problems involving addition & subtraction of money
88.0	A	A19	Identify place value in decimals
87.8	A	C03	Solve one-step word problems involving multiplication
87.2	A	A03	Subtract multi-digit numbers
86.9	A	A07	Connect verbal and symbolic representations of one-step word problems
86.2	A	C05	Solve one-step word problems involving subtraction of lengths
86.2	A	C06	Solve one-step word problems involving subtraction of weights
<b>Band 1 (65-84)</b>			
84.2	B	B14	Identify 2-D shapes
83.8	A	B09	Translate one-step word problems into number sentences
83.7	B	B15	Identify obtuse angles in 2-D objects
83.4	B	C13	Read tables of data
77.1	A	A01	Recall basic multiplication/division facts
77.1	A	A16	Construct bar charts
76.7	A	B03	Identify line symmetry in 2-D shapes
72.0	A	B01	Identify nets of 3-D shapes
70.6	A	C01	Solve word problems involving multi-digit subtraction

**Table B5**  
**Item Descriptors, by Performance Band – DPMT-R Level 5 (Combined Forms)**

<b>Score</b>	<b>F</b>	<b>Item</b>	<b>Band 5 (115 + )</b>
153.8	A	A23	Complete number sentences involving brackets and priority of operation
143.9	B	C24	Calculate area of rectangles
133.0	B	B18	Solve problems involving operations with decimals and percentages
119.4	A	A21	Solve problems involving operations with times
119.3	A	C25	Identify the properties of the circle
115.9	A	A22	Solve word problems involving multiple operations with money
115.0	B	C15	Solve problems using concept of average
<b>Band 4 (105 – 114)</b>			
114.6	A	B25	Solve problems involving operations with percentages
113.8	B	C09	Solve simple word problems involving concept of chance
113.7	A	B21	Identify number patterns
112.8	A	C17	Construct a circle given its diameter
112.7	A	C13	Solve problems using bar charts
112.7	B	B19	Solve problems involving operations with times and distances
109.9	A	B16	Convert litres to millilitres
109.6	B	A10	Add mixed numbers
107.9	B	A20	Complete two-step number sentences involving decimals
107.6	A	C14	Solve word problems involving use of scales on maps
106.2	A	B24	Identify properties of 2-D shapes
105.9	A	B17	Identify simple prime numbers
105.3	B	B06	Order lengths
105.0	A	C02	Identify properties of 3-D shapes
105.0	B	B22	Identify multiples of numbers
<b>Band 3 (95 – 104)</b>			
104.9	A	A07	Solve word problems involving operations with decimal lengths
103.6	A	A14	Complete number sentences involving the distributive property
103.4	B	B04	Solve problems involving operations with whole numbers
101.7	A	B14	Read and interpret tables involving positive and negative numbers
101.5	B	C20	Solve problems involving operations with lengths
101.3	A	C23	Identify angles in terms of a rotation through compass points
100.4	A	C21	Solve problems involving operations with times and capacities
100.2	A	A19	Complete number sentences involving subtraction of whole numbers
100.0	A	B11	Estimate sums of whole numbers
100.0	A	B22	Identify factors of numbers
99.9	A	A09	Solve word problems involving operations with decimal weights
99.9	A	A17	Calculate averages of simple data sets
99.7	A	C19	Solve word problems involving operations with money
99.4	A	A25	Calculate percentages of quantities
99.1	A	A24	Solve word problems involving multiplication of fractions by whole numbers
98.9	A	C10	Read and interpret tables of data
98.8	B	B12	Order fractions
97.1	A	B05	Convert fractions to decimals
97.1	A	C05	Solve word problem using unitary method
97.0	A	A13	Convert percentages to fractions
97.0	A	C18	Order weights
96.1	A	A16	Solve word problems involving operations with litres
96.0	A	C04	Solve problems involving operations with times and distances
95.8	B	B09	Estimate products of whole numbers and decimals
95.0	B	B17	Identify prime numbers

**Table B5 (contd.)**  
**Item Descriptors, by Performance Band – DPMT-R Level 5 (Combined Forms)**

<b>Score</b>	<b>F</b>	<b>Item</b>	<b>Band 2 (85 – 94)</b>
94.8	B	C18	Convert grammes to kilogrammes
94.4	B	C03	Measure angles in degrees
94.2	A	B10	Read and write whole numbers
94.0	A	A15	Calculate area of rectangles
93.5	A	C12	Solve problems using bar charts
92.3	A	B08	Solve problems involving operations with fractions
91.0	A	A05	Complete one-step equations
90.5	A	B03	Complete number sentences involving the associative property in multiplication
89.7	A	A06	Round whole numbers
89.5	A	B15	Solve word problems involving subtraction of weights
89.0	B	B20	Construct 3-D shapes from 2-D shapes
87.8	A	A18	Multiply a three-digit number by a two-digit number
87.7	A	C11	Read and interpret bar charts
87.3	B	A04*	Solve word problems involving operations with whole numbers and fractions
87.0	A	C07*	Convert between times in 12-hour and 24-hour format
86.0	A	A03	Multiply a fraction by a whole number
<b>Band 1 (65-84)</b>			
84.7	A	C22	Identify 2-D shapes
82.5	A	B02	Order decimals
81.9	A	A02	Identify fractions of shapes
80.8	A	C08	Construct 3-D shapes from nets
79.6	A	C01	Measure capacity using appropriate metric units and instruments
79.3	A	C06	Calculate the perimeters of regular shapes.
73.5	A	A01	Order whole numbers
<b>Below Band 1 (Less than 65)</b>			
39.8	A	B01	Multiply a decimal (two places) by a whole number

**Table B6**  
**Item Descriptors, by Performance Band – DPMT-R Level 6 (Combined Forms)**

<b>Item</b>	<b>F</b>	<b>No.</b>	<b>Band 5 (115 + )</b>
250.8	A	B23	Solve problems involving comparisons of graphs
124.9	B	B19	Interpret tables of data
123.4	A	C19	Draw all lines of symmetry of regular 2-D shapes
122.4	B	A10	Solve problems relating to profit and loss
121.5	B	A18	Solve problems involving operations with money
117.8	A	B21	Solve problems involving ratios
117.5	A	C24	Find the volume of a cuboid experimentally
116.8	B	A22	Solve problem involving of division of distances
116.8	B	C13	Construct a circle given its diameter
116.1	B	C16	Plot simple co-ordinates to find intersection of two lines
115.5	A	B16	Identify common factors of four numbers
<b>Band 4 (105 – 114)</b>			
114.0	A	B15	Translate word problems with a variable into number sentences
114.0	A	B24	Solve problems relating to interest on loans
113.7	A	C23	Solve problems involving calculation of area in hectares
113.6	A	A14	Calculate percentages of whole numbers
113.1	A	C18	Calculate the area of regular 2-D shapes
112.8	A	C21	Interpret and analyse bar charts
112.5	A	A08	Solve simple equations
111.4	B	A14	Convert decimals to percentages
110.4	A	A20	Complete one-step number sentences involving multiplication of powers of ten
110.2	A	A25	Complete one-step number sentences involving division of decimals
109.7	B	B14	Complete number sentences involving multiplication of whole numbers
108.9	B	C25	Solve problems involving comparison of prices of products
107.7	B	C07	Solve problems relating to income tax
107.4	B	A21	Solve problems involving operations with measures of capacity
106.9	A	A19	Solve problems involving subtraction of clock times
106.9	A	C11	Solve word problem involving the likelihood of occurrence of events
106.7	A	C08	Solve problems involving international time zones
105.3	A	A06	Solve problems relating to VAT
<b>Band 3 (95 – 104)</b>			
104.4	A	C03	Solve word problems involving use of scales on maps
102.8	A	A16	Complete one-step number sentences involving decimals
102.2	A	A11	Solve problems involving operations with money
102.0	A	A17	Estimate quotients involving decimals
101.4	A	B25	Complete number sentences involving division of whole numbers
101.0	B	C20	Solve problems involving the sum of the angles in a quadrilateral
100.8	B	B24	Solve problems relating to percentages of monies
99.7	A	C15	Solve problems involving division of measures of capacity
99.6	A	A12	Multiply a decimal by a whole number
98.4	B	C06	Solve word problem involving fractions of weights
98.2	B	B12	Complete number sentences involving multiplication of fractions
97.8	A	A13	Convert grammes to kilogrammes
97.3	A	C17	Construct triangles from given sides and angles
97.1	B	C23	Solve problems involving calculation of speeds
97.0	A	A24	Solve problem involving of multiplication of distances
97.0	A	C09	Solve problems relating to exchange rates
96.5	A	C14	Solve problems relating to percentage change
95.9	B	A23	Solve problems involving division of weights
95.8	A	A09	Solve problems relating to percentages
95.6	B	A11	Solve problems involving operations with fractions
95.5	A	B05	Identify common factors of two numbers
95.4	A	B11	Multiply a fraction by a fraction
95.3	A	A15	Convert ares to square metres.

**Table B6 (contd.)**  
**Item Descriptors, by Performance Band – DPMT-R Level 6 (Combined Forms)**

<b>Item</b>	<b>F</b>	<b>No.</b>	<b>Band 2 (85 – 94)</b>
94.9	A	B07	Solve word problems involving simple ratios
94.4	A	B06	Express improper fractions as mixed numbers
94.4	B	C14	Solve problems relating to percentage change
93.8	A	B22	Solve problems relating to discount
93.4	A	A07	Complete number sentences involving multi-digit subtraction of whole numbers
91.6	A	B20	Solve fraction equations
91.5	A	C04	Solve problems involving the Unitary Method
91.0	A	B18	Read and interpret bar charts
90.0	A	B08	Extend decimal number patterns
89.8	A	C12	Identify angles in terms of a rotation through compass points
89.7	A	A03	Convert percentages to fractions
89.6	A	B10	Complete number sentences involving fractions of whole numbers
89.1	A	C10	Solve problems using tabular data
88.7	A	B09	Compare and order fractions
86.3	B	B01	Solve problems involving estimation of sums
85.7	B	B03	Estimate products of decimal numbers
<b>Band 1 (65-84)</b>			
84.7	A	A04	Calculate the area of regular 2-D shapes
83.7	A	B13	Solve word problems involving addition of positive and negative numbers
83.5	A	B04	Read and write whole numbers
82.5	A	B02	Round whole numbers
80.2	A	A02	Solve problems involving operations with whole numbers
77.3	A	B12	Complete number sentences involving multiplication of decimals
77.2	A	A05	Calculate fractions of whole numbers
76.9	B	A19	Solve problems involving multiplication of clock times
75.6	A	C02	Identify the nets of simple 3-D shapes
71.8	A	A01	Round decimals
69.9	B	C11	Solve word problem involving the listing of all possible outcomes
<b>Below Band 1 (Less than 65)</b>			
64.5	A	C01	Calculate the perimeters of regular shapes.

## APPENDIX C

### Short Descriptions of Performance Bands

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**Table C1**  
**Short Descriptions of Performance Bands – DPMT-R Level 1**

<p><b>Band 5: Advanced Level of Achievement (115 or more )</b></p> <ul style="list-style-type: none"> <li>• <b>Number/Algebra:</b> Pupils at Band 5 can compare lengths of objects using non-standard units and select appropriate non-standard instruments for measuring capacity. They can solve non-routine word problems involving subtraction of clock times, use of a calendar, and addition and subtraction of money.</li> <li>• <b>Data:</b> They can represent data on a block graph.</li> <li>• They can also do the tasks described in Bands 1, 2, 3 and 4 below.</li> </ul>
<p><b>Band 4: Higher Level of Achievement (105 – 114)</b></p> <ul style="list-style-type: none"> <li>• <b>Number/Algebra:</b> Pupils at Band 4 can identify place value and order numbers up to 99, use the associative property of addition, and identify patterns in number sequences. They can solve routine word problems involving addition and subtraction of whole numbers.</li> <li>• <b>Shape &amp; Space:</b> They can solve problems involving halves of 2-D shapes.</li> <li>• <b>Measures:</b> They can measure weight using non-standard units. They can calculate the cost of a set of shopping items. They can solve one-step problems involving subtraction of clock times, and use of a calendar.</li> <li>• They can also do the tasks described in Bands 1, 2, and 3 below.</li> </ul>
<p><b>Band 3: Average Level of Achievement (95 – 104)</b></p> <ul style="list-style-type: none"> <li>• <b>Number/Algebra:</b> Pupils at Band 3 can order numerals, 0 to 99. They can add and subtract numbers within 99. They can identify subtraction as complementary addition and connect verbal and symbolic representations of a subtraction problem. They can solve routine problems involving repeated addition of numbers, and halves of sets.</li> <li>• <b>Shape &amp; Space:</b> They can construct and partition 2-D shapes, and identify halves of 2-D shapes.</li> <li>• <b>Measures:</b> They can solve routine word problems involving addition of time, and addition of money.</li> <li>• They can also do the tasks described in Bands 1, and 2 below.</li> </ul>
<p><b>Band 2: Basic Level of Achievement (85 – 94)</b></p> <ul style="list-style-type: none"> <li>• <b>Number/Algebra:</b> Pupils at Band 2 can subtract numbers without renaming within 99, use the commutative and zero properties of addition, identify odd and even numbers, and recognise patterns on the hundred square. They can solve routine word problems involving addition within 99, and subtraction within 20.</li> <li>• <b>Shape &amp; Space:</b> Pupils at this band can identify 2-D shapes in context, and identify 3-D shapes from their properties.</li> <li>• <b>Measures:</b> They can exchange coins. They can interpret a block graph.</li> <li>• They can also do the tasks described in Band 1 below.</li> </ul>
<p><b>Band 1: Low Level of Achievement (65 - 84)</b></p> <ul style="list-style-type: none"> <li>• <b>Number/Algebra:</b> Pupils at Band 1 can read numerals from 0 to 99, connect pictorial and symbolic representations of numerals within 99, complete subtraction number sentences, and identify halves of sets of up to 20. They can solve routine word problems involving addition and subtraction within 20.</li> <li>• <b>Shape &amp; Space:</b> They can describe the properties of simple 2-D and 3-D shapes.</li> <li>• <b>Measures:</b> Pupils at this band can measure length using non-standard units, and compare weights of objects.</li> <li>• <b>Data:</b> They can read data from a block graph.</li> </ul>
<p><b>Below Band 1: Less than 65</b></p>

**Table C2**  
**Short Descriptions of Performance Bands – DPMT-R Level 2**

<p><b>Band 5: Advanced Level of Achievement (115 +)</b></p> <ul style="list-style-type: none"> <li>• <i>Number/Algebra:</i> Pupils at Band 5 can estimate sums within 99. They can solve non-routine word problems involving addition within 99.</li> <li>• <i>Shape &amp; Space:</i> They can identify lines of symmetry in 2-D shapes.</li> <li>• <i>Measures:</i> They can compare lengths using non-standard units. They can solve non-routine word problems involving addition and subtraction of money, measures of capacity, and measures of time.</li> <li>• They can also do the tasks described in Bands 1, 2, 3 and 4 below.</li> </ul>
<p><b>Band 4: Higher Level of Achievement (105 – 114)</b></p> <ul style="list-style-type: none"> <li>• <i>Number/Algebra:</i> Pupils at Band 4 can complete patterns in numbers and complete number sentences involving quarters of sets.</li> <li>• <i>Shape &amp; Space:</i> They can describe properties of 3-D shapes in the environment.</li> <li>• <i>Measures:</i> They can select appropriate non-standard instruments for measuring capacity, and convert 12-hour analogue clock times to digital times. They can solve non-routine word problems involving addition and subtraction of times, comparison of weights, and using a calendar.</li> <li>• They can also do the tasks described in Bands 1, 2 and 3 below.</li> </ul>
<p><b>Band 3: Average Level of Achievement (95 – 104)</b></p> <ul style="list-style-type: none"> <li>• <i>Number/Algebra:</i> Pupils at Band 3 can apply the associative property of addition to complete number sentences, and extend patterns in numbers. They can rename numbers, 0 to 199, and subtract numbers within 99 (number sentence format). They can solve routine word problems involving subtraction of numbers, and addition and subtraction within 20. They can identify quarters of 2-D shapes.</li> <li>• <i>Measures:</i> They can solve routine word problems involving metres and centimetres, subtraction of weights, subtraction of times using a calendar, and addition and exchange money.</li> <li>• <i>Data:</i> Pupils at this band can interpret block graphs, and represent data in block graphs.</li> <li>• They can also do the tasks described in Bands 1 and 2 below.</li> </ul>
<p><b>Band 2: Basic Level of Achievement (85 – 94)</b></p> <ul style="list-style-type: none"> <li>• <i>Number/Algebra:</i> Pupils at Band 2 can order numerals, 0 to 199, recall subtraction facts, and add a row of three two-digit numbers within 99. Pupils at this band can count in groups, identify even numbers, use the symbols <math>&lt;</math>, <math>&gt;</math>, and construct subtraction number sentences from number stories. They can solve word problems involving place value 0 to 199, and identify quarters of sets to 20.</li> <li>• <i>Shape &amp; Space:</i> They can partition 2-D shapes, and recognise angles as rotations.</li> <li>• <i>Measures:</i> They can solve word problems involving addition of lengths.</li> <li>• They can also do the tasks described in Band 1 below.</li> </ul>
<p><b>Band 1: Low Level of Achievement (65 - 84)</b></p> <ul style="list-style-type: none"> <li>• <i>Number/Algebra:</i> Pupils at Band 1 can add a column of three two-digit numbers within 99, and subtract numbers within 99. They can read numerals, 0 to 199, complete subtraction number sentences, and identify halves of sets to 20.</li> <li>• <i>Shape &amp; Space:</i> Pupils at this band can describe properties of 2-D and 3-D shapes and also identify shapes from lists of properties. They can solve routine problems involving line symmetry in 2-D shapes.</li> <li>• <i>Measures:</i> They can solve routine word problems involving non-standard measures of area.</li> </ul>
<p><b>Below Band 1: (less than 65)</b></p>

**Table C3**  
**Short Description of Performance Bands – DPMT-R Level 3 (Combined Forms)**

---

**Band 5: Advanced Level of Achievement (115+)**

- **Number/Algebra:** Pupils at band 5 can estimate the products of multiplying one-digit numbers by two-digit numbers. They can position fractions on the number line. They can translate two-step word problems into number sentences. They can solve non-routine word problems involving: division, multiplication and addition, and fractions of whole numbers.
- **Shape & Space:** Pupils at this band can combine and partition 2-D shapes to make other 2-D shapes, identify 2-D shapes from property lists and in faces of 3-D shapes, and classify angles as greater than, less than, or equal to a right angle.
- **Measures:** They can measure areas of regular and irregular shapes. They can solve non-routine word problems involving subtraction of lengths (m, cm) and subtraction of capacities (l, ml).
- They can also do the tasks described in Bands 1, 2, 3 and 4 below.

---

**Band 4: Higher Level of Achievement (105 – 114)**

- **Number/Algebra:** Pupils at Band 4 can subtract three-digit numbers, and estimate sums of two-digit numbers. They can complete number sentences involving  $>$ ,  $<$ ,  $=$ , the associative property (addition), and the distributive property. They can identify fractions of regular shapes. They can translate one-step word problems into number sentences. They can solve word problems involving multiplication and subtraction of whole numbers, and fractions of sets.
- **Measures:** Pupils at this band compare capacities of objects (l, ml). They can solve problems involving addition and subtraction of weights (kg and g), addition of times, months on the calendar and. addition and subtraction of money.
- **Data:** They can interpret pictograms, and order events in terms of likelihood of occurrence.
- They can also do the tasks described in Bands 1, 2 and 3 below.

---

**Band 3: Average Level of Achievement (95 – 104)**

- **Number/Algebra:** Pupils at Band 3 can complete multiplication number sentences involving the associative property, express tenths in decimal form, and identify place value in decimal numbers. They can multiply two-digit numbers by one-digit numbers, and divide two-digit numbers by one-digit numbers with remainders. They can order decimals on the number line. They can solve word problems involving place value in three-digit numbers, multi-digit subtraction, and fractions as sets.
  - **Shape & Space:** They can identify the use of 2-D shapes in the environment, describe properties of 3-D shapes, construct 3-D shapes from 2-D shapes, and recognise an angle as a rotation.
  - **Measures:** They can compare lengths (m, cm), rename units of length, and compare areas of irregular shapes. They can solve word problems on subtraction of dates on a calendar, addition of money, and addition of weights (kg and g).
  - They can also do the tasks described in Bands 1 and 2 below.
-

**Table C3 (contd.)**  
**Short Description of Performance Bands – DPMT-R Level 3 (Combined Forms)**

---

**Band 2: Basic Level of Achievement (85 – 94)**

- **Number/Algebra:** Pupils at Band 2 can recall multiplication and division facts, add three numbers with renaming, round whole numbers to the nearest ten or hundred, and complete number patterns. They can solve word problems involving multi-digit addition of numbers, fractions of numbers, and Unitary Method.
- **Shape & Space:** They can identify nets of 3-D shapes.
- **Measures:** Pupils at this band can read time in five-minute intervals on analogue and digital clocks (12-hour). They can solve word problems involving subtraction of time.
- **Data:** They can read and interpret tables and bar-charts.
- They can also do the tasks described in Band 1 below.

---

**Band 1: Low Level of Achievement (65 - 84)**

- **Number/Algebra:** Pupils at Band 1 can subtract multi-digit numbers with renaming.
- **Shape & Space:** They can identify properties of 2-D shapes, and identify and draw lines of symmetry in 2-D shapes. They can compare areas of regular shapes.
- **Data:** They can use vocabulary of uncertainty and chance, and record outcomes of simple random processes.

---

**Below Band 1 (Less than 65)**

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**Table C4**  
**Short Descriptions of Performance Bands – DPMT-R Level 4 (Combined Forms)**

---

**Band 5: Advanced Level of Achievement (115 +)**

- **Number/Algebra:** Pupils at Band 5 can convert fractions to decimals.
- **Shape & Space:** They can list properties of types of triangles and make informal deductions about 2-D shapes.
- **Measures:** They can convert litres to millilitres, grams to kilograms, and order measures of length and weight. They can solve word problems involving multiplication of weights, division of capacities, and measures of time.
- They can also do the tasks described in Bands 1, 2, 3 and 4 below.

---

**Band 4: Higher Level of Achievement (105 – 114)**

- **Number/Algebra:** Pupils at Band 4 can multiply three-digit numbers by two-digit numbers, divide decimals by whole numbers, estimate products of whole numbers, and extend decimal number patterns. They can solve word problems involving division facts, Unitary Method, and fractions.
- **Shape & Space:** They can list properties of 2-D shapes and identify examples of parallel lines.
- **Measures:** They can solve problems involving multiplication of capacities and multiple operations with lengths, weights, timetables, and money.
- **Data:** They can analyse tables of data.
- They can also do the tasks described in Bands 1, 2, and 3, below.

---

**Band 3: Average Level of Achievement (95 – 104)**

- **Number/Algebra:** Pupils at Band 3 can order fractions, identify place value in decimals, round four-digit numbers, and estimate products of whole numbers. They can complete number sentences involving the associative and distributive properties. They can solve word problems involving addition with multiplication of whole numbers.
- **Shape & Space:** Pupils at this band can identify 2-D shapes, construct 2-D shapes from lists of properties, identify right angles in 2-D shapes, and use angles as rotations on a clock-face.
- **Measures:** They can convert metres to centimetres. They can solve problems involving fractions of monies, subtraction of lengths and weights, multiplication of time, calendars, and multiplication with subtraction of money.
- **Data:** They can read and interpret bar charts.
- They can also do the tasks described in Bands 1, and 2, below.

---

**Band 2: Basic Level of Achievement (85 – 94)**

- **Number/Algebra:** Pupils at Band 2 can order four-digit numbers, subtract multi-digit numbers; divide three-digit numbers by one-digit numbers, order simple fractions in terms of magnitude, and identify place value in decimals. Pupils at this band can connect verbal and symbolic representations of one-step problems, and complete number sentences using the associative property.
  - **Shape & Space:** They can identify fractional areas of regular 2-D shapes, visualise 3-D shapes, construct 3-D shapes from 2-D shapes, and construct 2-D shapes with lines of symmetry.
  - **Measures:** They can measure areas of regular shapes, select appropriate units for measuring capacity, and convert analogue times to digital times. They can solve problems involving multiple operations with monies and timetables.
  - **Data:** They can order simple events in terms of likelihood of occurrence and read tables of data. They can solve problems involving concept of chance in game contexts.
  - They can also do the tasks described in Band 1 below.
-

Table C4 (contd.)

**Short Descriptions of Performance Bands – DPMT-R Level 4 (Combined Forms)**

---

**Band 1 : Low Level of Achievement (65 - 84)**

- **Number/Algebra:** Pupils at Band 1 can recall basic multiplication and division facts and translate simple word problems into number sentences. They can solve routine one-step word problems involving multi-digit subtraction of whole numbers.
- **Shape & Space:** They can identify line symmetry in 2-D shapes, obtuse angles in 2-D shapes, nets of 3-D shapes, and visualise properties of 3-D shapes.
- **Measures:** They can solve problems involving subtraction of money.
- They can also read tables and construct simple bar charts.

---

**Below Band 1: Less than 65**

---

**Table C5**  
**Short Descriptions of Performance Bands - DPMT-R Level 5 (Combined Forms)**

---

**Band 5: Advanced Level of Achievement (115 + )**

- **Number/Algebra:** Pupils at Band 5 can complete number sentences involving brackets and priority of operation. They can solve problems involving operations with decimals and percentages.
- **Shape & Space:** They can identify the properties of the circle and calculate area of rectangles.
- **Measures:** They can solve problems involving operations with times; multiple operations with money; and use of the concept of average.
- They can also do the tasks described in Bands 1, 2, 3, and 4 below.

---

**Band 4: Higher Level of Achievement (105 – 114)**

- **Number/Algebra:** Pupils at Band 4 can identify multiples of numbers and simple prime numbers, and extend number patterns. They can add mixed numbers and complete two-step number sentences involving decimals. They can solve problems involving operations with percentages.
- **Shape & Space:** Pupils at this band can identify properties of more complex 2-D shapes and 3-D shapes.
- **Measures:** They can order lengths, construct a circle given its diameter, and convert litres to millilitres. They can solve problems involving use of scales on maps, and operations with times and distances.
- **Data:** They can solve problems involving use of the concept of chance and analysis of bar charts.
- They can also do the tasks described in Bands 1, 2, and 3 below.

---

**Band 3: Average Level of Achievement (95 – 104)**

- **Number/Algebra:** Pupils at Band 3 can order fractions and weights, calculate percentages of quantities and convert percentages to fractions and fractions to decimals. Pupils at this band can estimate sums and products of whole numbers and decimals. They can identify prime numbers and factors of numbers, and complete number sentences involving subtraction of whole numbers and the distributive property. They can read and interpret tables involving positive and negative numbers. They can solve word problems involving: multiple operations with whole numbers; multiplication of fractions by whole numbers; and use of Unitary Method.
- **Shape & Space:** They can identify angles in terms of a rotation through compass points.
- **Measures:** They can solve word problems involving: operations with decimal lengths; operations with times and distances, weights and capacities; and money.
- **Data:** They can read and interpret tables of data, and calculate averages of simple data sets.
- They can also do the tasks described in Bands 1, and 2, below.

---

**Band 2: Basic Level of Achievement (85 – 94)**

- **Number/Algebra:** Pupils at Band 2 can read, write and round whole numbers, multiply a three-digit number by a two-digit number, and multiply a fraction by a whole number. They can complete one-step equations, and complete number sentences involving the associative property in multiplication. They can solve word problems involving: operations with whole numbers and fractions.
  - **Shape & Space:** Pupils at this band can construct 3-D shapes from 2-D shapes, and measure angles in degrees, and calculate the areas of rectangles.
  - **Measures:** They can convert grammes to kilogrammes, and convert between times in 12-hour and 24-hour format. They can solve word problems involving subtraction of weights.
  - **Data:** They can read and interpret bar charts.
  - They can also do the tasks described in Band 1 below.
-

**Table C5 (contd.)**  
**Short Descriptions of Performance Bands – DPMT-R Level 5 (Combined Forms)**

---

**Band 1: Low Level of Achievement (65 - 84)**

- **Number/Algebra:** Pupils at this Band can order whole numbers and decimals, multiply a decimal (two places) by a whole number.
- **Shape & Space:** They can identify fractions of 2-D shapes, identify 2-D shapes, and construct 3-D shapes from nets.
- **Measures:** They can measure capacity using appropriate metric units and instruments and calculate the perimeters of regular shapes.

---

**Below Band 1: Less than 65**

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**Table C6**  
**Short Descriptions of Performance Bands – DPMT-R Level 6 (Combined Forms)**

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**Band 5: Advanced Level of Achievement (115 +)**

- **Number/Algebra:** Pupils at Band 5 can identify common factors of four numbers. They can solve problems involving ratios, profit and loss, division of distances, and operations with money.
- **Shape & Space:** They can draw all lines of symmetry of regular 2-D shapes, construct a circle given its diameter, and plot simple co-ordinates to find intersection of two lines.
- **Measures:** They can find the volume of a cuboid experimentally.
- **Data:** They can read and interpret tables of data and solve problems involving comparisons of graphs.
- They can also do the tasks described in Bands 1, 2, 3, and 4 below.

---

**Band 4: Higher Level of Achievement (105 – 114)**

- **Number/Algebra:** Pupils at Band 4 can calculate percentages of whole numbers, and convert decimals to percentages. They can solve simple equations and translate word problems with a variable into number sentences. They can complete one-step number sentences involving: multiplication of powers of ten; division of decimals; and multiplication of whole numbers.
- **Shape & Space:** Pupils at this band can calculate the area of regular shapes.
- **Measures:** They can solve problems involving: comparison of prices of products; income tax; international time zones; VAT; interest on loans; area in hectares; operations with measures of capacity; subtraction of time.
- **Data:** They can interpret and analyse bar charts, and solve problems involving the likelihood of occurrence of events.
- They can also do the tasks described in Bands 1, 2, and 3, below.

---

**Band 3: Average Level of Achievement (95 – 104)**

- **Number/Algebra:** Pupils at Band 4 can multiply a decimal by a whole number, estimate quotients involving decimals, multiply a fraction by a fraction, and identify common factors of two numbers. They can complete one-step number sentences involving division of whole numbers, and multiplication of fractions and decimals. They can solve problems involving operations with fractions and percentages.
- **Shape & Space:** They can construct triangles from given sides and angles, and solve problems using the sum of angles in a quadrilateral.
- **Measures:** They can convert grammes to kilogrammes, and ares to square metres. They can solve problems involving: calculation of speeds; multiplication of distances; fractions of weights; division of measures of weight and capacity; operations with money; percentages of monies; exchange rates; and use of scales on maps.
- They can also do the tasks described in Bands 1 and 2 below.

---

**Band 2: Basic Level of Achievement ( 85 – 94)**

- **Number/Algebra:** Pupils at Band 2 can express improper fractions as mixed numbers, compare and order fractions, estimate products of decimal numbers, and convert percentages to fractions. They can extend decimal number patterns, and complete number sentences involving multi-digit subtraction of whole numbers. They can solve fraction equations and complete number sentences involving fractions of whole numbers. They can solve word problems involving simple ratio and estimation of sums.
  - **Shape & Space:** Pupils at this band can identify angles in terms of a rotation through compass points.
  - **Measures:** They can solve problems involving percentage change; discount, the Unitary Method.
  - **Data:** They can solve problems using tabular data.
  - They can also do the tasks described in Band 1 below.
-

**Table C6 (contd.)**  
**Short Descriptions of Performance Bands – DPMT-R Level 6 (Combined Forms)**

---

**Band 1: Low Level of Achievement (65 - 84)**

- **Number/Algebra:** Pupils at Band 1 can read and write whole numbers, round whole numbers and decimals, and calculate fractions of whole numbers. They can complete number sentences involving multiplication of decimals. They can solve problems involving multiple operations with whole numbers and addition of positive and negative numbers.
- **Shape & Space:** Pupils at this band can identify the nets of simple 3-D shapes. They can calculate the perimeter and area of regular 2-D shapes. They can solve problems involving multiplication of clock times and listing of all possible outcomes of processes.

---

**Below Band 1: Less than 65**

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## APPENDIX D

### Conversion Tables Raw Scores to Test-wide Scale Scores

Level and Form	Table	Page
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**LEVEL 1, FORM A****TEST-WIDE SCALE**

**TABLE D1**  
**TEST-WIDE SCALE SCORES FOR LEVEL 1, FORM A (SPRING)**  
 Raw Score to Test-wide Scale Score

<b>MATHEMATICS</b>	
Raw Score- Level 1, Form A	Test-wide Scale Score
60	584
59	574
58	563
57	554
56	544
55	535
54	526
53	518
52	509
51	502
50	494
49	487
48	479
47	473
46	466
45	459
44	453
43	447
42	441
41	435
40	430
39	424
38	419
37	414
36	409
35	403
34	398
33	393
32	389
31	384
30	379

<b>MATHEMATICS</b>	
Raw Score- Level 1, Form A	Test-wide Scale Score
29	374
28	369
27	364
26	359
25	354
24	348
23	343
22	338
21	332
20	327
19	321
18	315
17	309
16	303
15	297
14	290
13	283
12	276
11	269
10	261
9	253
8	245
7	237
6	228
5	219
4	209
3	199
2	189
1	179
0	168

**TABLE D2**  
**TEST-WIDE SCALE SCORES FOR LEVEL 2, FORM A (SPRING)**  
 Raw Score to Test-wide Scale Score

MATHEMATICS	
Raw Score- Level 2, Form A	Test-wide Scale Score
60	633
59	622
58	612
57	603
56	593
55	584
54	576
53	568
52	560
51	552
50	545
49	538
48	531
47	524
46	518
45	512
44	506
43	500
42	495
41	490
40	484
39	479
38	474
37	469
36	464
35	460
34	455
33	450
32	446
31	441
30	436

MATHEMATICS	
Raw Score- Level 2, Form A	Test-wide Scale Score
29	432
28	427
27	422
26	417
25	413
24	408
23	403
22	397
21	392
20	386
19	381
18	375
17	369
16	363
15	356
14	349
13	342
12	335
11	327
10	320
9	311
8	303
7	294
6	285
5	275
4	265
3	255
2	244
1	233
0	221

**TABLE D3**  
**TEST-WIDE SCALE SCORES FOR LEVEL 3, FORM A (SPRING)**  
 Raw Score to Test-wide Scale Score

<b>MATHEMATICS</b>	
Raw Score- Level 3, Form A	Test-wide Scale Score
75	658
74	650
73	643
72	635
71	628
70	621
69	615
68	608
67	602
66	596
65	590
64	584
63	579
62	574
61	568
60	563
59	559
58	554
57	549
56	545
55	540
54	536
53	532
52	528
51	524
50	520
49	517
48	513
47	509
46	506
45	502
44	499
43	495
42	492
41	489
40	485
39	482
38	479

<b>MATHEMATICS</b>	
Raw Score- Level 3, Form A	Test-wide Scale Score
37	475
36	472
35	469
34	465
33	462
32	458
31	455
30	452
29	448
28	444
27	441
26	437
25	433
24	429
23	425
22	421
21	417
20	413
19	408
18	404
17	399
16	394
15	389
14	384
13	379
12	373
11	368
10	362
9	356
8	350
7	343
6	337
5	330
4	323
3	316
2	308
1	301
0	293

**TABLE D4**  
**TEST-WIDE SCALE SCORES FOR LEVEL 3, FORM B (SPRING)**  
 Raw Score to Test-wide Scale Score

<b>MATHEMATICS</b>	
Raw Score- Level 3, Form B	Test-wide Scale Score
75	661
74	654
73	647
72	640
71	633
70	626
69	620
68	614
67	607
66	602
65	596
64	590
63	585
62	580
61	574
60	570
59	565
58	560
57	555
56	551
55	546
54	542
53	538
52	534
51	530
50	526
49	522
48	518
47	514
46	510
45	507
44	503
43	499
42	496
41	492
40	489
39	485
38	482

<b>MATHEMATICS</b>	
Raw Score- Level 3, Form B	Test-wide Scale Score
37	478
36	474
35	471
34	467
33	464
32	460
31	456
30	453
29	449
28	445
27	441
26	437
25	433
24	429
23	425
22	421
21	417
20	412
19	407
18	403
17	398
16	393
15	388
14	383
13	378
12	372
11	366
10	361
9	355
8	349
7	342
6	336
5	329
4	322
3	315
2	308
1	301
0	293

**TABLE D5**  
**TEST-WIDE SCALE SCORES FOR LEVEL 4, FORM A (SPRING)**  
 Raw Score to Test-wide Scale Score

<b>MATHEMATICS</b>	
Raw Score- Level 4, Form A	Test-wide Scale Score
75	707
74	699
73	691
72	684
71	676
70	669
69	662
68	655
67	649
66	643
65	637
64	631
63	625
62	620
61	614
60	609
59	604
58	599
57	595
56	590
55	586
54	581
53	577
52	573
51	569
50	565
49	561
48	558
47	554
46	551
45	547
44	544
43	540
42	537
41	534
40	530
39	527
38	524

<b>MATHEMATICS</b>	
Raw Score- Level 4, Form A	Test-wide Scale Score
37	521
36	517
35	514
34	511
33	507
32	504
31	501
30	497
29	494
28	490
27	486
26	483
25	479
24	475
23	471
22	467
21	463
20	459
19	454
18	450
17	445
16	440
15	435
14	430
13	424
12	419
11	413
10	407
9	401
8	395
7	388
6	382
5	375
4	367
3	360
2	352
1	344
0	336



**TABLE D6**  
**TEST-WIDE SCALE SCORES FOR LEVEL 4, FORM B (SPRING)**  
 Raw Score to Test-wide Scale Score

<b>MATHEMATICS</b>	
Raw Score- Level 4, Form B	Test-wide Scale Score
75	701
74	694
73	687
72	680
71	673
70	667
69	660
68	654
67	648
66	642
65	637
64	631
63	626
62	620
61	615
60	610
59	606
58	601
57	596
56	592
55	587
54	583
53	579
52	575
51	571
50	567
49	563
48	559
47	555
46	552
45	548
44	544
43	541
42	537
41	534
40	530
39	527
38	523

<b>MATHEMATICS</b>	
Raw Score- Level 4, Form B	Test-wide Scale Score
37	520
36	516
35	513
34	509
33	506
32	502
31	498
30	495
29	491
28	487
27	484
26	480
25	476
24	472
23	468
22	464
21	459
20	455
19	450
18	446
17	441
16	436
15	432
14	427
13	421
12	416
11	411
10	405
9	399
8	393
7	387
6	381
5	374
4	368
3	361
2	354
1	346
0	339

**TABLE D7**  
**TEST-WIDE SCALE SCORES FOR LEVEL 5, FORM A (SPRING)**  
 Raw Score to Test-wide Scale Score

<b>MATHEMATICS</b>	
Raw Score- Level 5 Form A	Test-wide Scale Score
75	763
74	753
73	744
72	735
71	726
70	718
69	709
68	702
67	694
66	687
65	679
64	672
63	666
62	659
61	653
60	647
59	641
58	636
57	630
56	625
55	620
54	615
53	610
52	606
51	601
50	597
49	593
48	589
47	585
46	581
45	577
44	573
43	569
42	566
41	562
40	559
39	555
38	552

<b>MATHEMATICS</b>	
Raw Score- Level 5, Form A	Test-wide Scale Score
37	549
36	545
35	542
34	538
33	535
32	532
31	528
30	525
29	521
28	517
27	514
26	510
25	506
24	502
23	499
22	494
21	490
20	486
19	482
18	477
17	472
16	468
15	463
14	457
13	452
12	447
11	441
10	435
9	429
8	423
7	416
6	409
5	402
4	395
3	387
2	380
1	372
0	363

**TABLE D8**  
**TEST-WIDE SCALE SCORES FOR LEVEL 5, FORM B (SPRING)**  
 Raw Score to Test-wide Scale Score

<b>MATHEMATICS</b>	
Raw Score- Level 5, Form B	Test-wide Scale Score
75	752
74	744
73	735
72	727
71	720
70	712
69	705
68	698
67	691
66	684
65	678
64	671
63	665
62	659
61	654
60	648
59	643
58	637
57	632
56	627
55	622
54	618
53	613
52	609
51	604
50	600
49	596
48	592
47	587
46	584
45	580
44	576
43	572
42	568
41	564
40	561
39	557
38	553

<b>MATHEMATICS</b>	
Raw Score- Level 5, Form B	Test-wide Scale Score
37	550
36	546
35	543
34	539
33	535
32	532
31	528
30	524
29	520
28	517
27	513
26	509
25	505
24	501
23	496
22	492
21	488
20	483
19	479
18	474
17	469
16	464
15	459
14	454
13	448
12	443
11	437
10	431
9	425
8	419
7	413
6	406
5	399
4	392
3	385
2	377
1	370
0	362

**TABLE D9**  
**TEST-WIDE SCALE SCORES FOR LEVEL 6, FORM A (SPRING)**  
 Raw Score to Test-wide Scale Score

<b>MATHEMATICS</b>	
Raw Score- Level 6, Form A	Test-wide Scale Score
75	788
74	780
73	772
72	764
71	756
70	749
69	742
68	735
67	729
66	722
65	716
64	710
63	704
62	699
61	693
60	688
59	683
58	678
57	673
56	669
55	664
54	660
53	656
52	652
51	647
50	644
49	640
48	636
47	632
46	629
45	625
44	622
43	618
42	615
41	612
40	608
39	605
38	602

<b>MATHEMATICS</b>	
Raw Score- Level 6, Form A	Test-wide Scale Score
37	598
36	595
35	592
34	588
33	585
32	582
31	578
30	575
29	571
28	568
27	564
26	560
25	557
24	553
23	549
22	545
21	541
20	536
19	532
18	527
17	523
16	518
15	513
14	508
13	502
12	497
11	491
10	485
9	479
8	473
7	466
6	460
5	453
4	446
3	438
2	431
1	423
0	415

**TABLE D10**  
**TEST-WIDE SCALE SCORES FOR LEVEL 6, FORM B (SPRING)**  
 Raw Score to Test-wide Scale Score

<b>MATHEMATICS</b>	
Raw Score- Level 3, Form B	Test-wide Scale Score
75	796
74	788
73	780
72	772
71	764
70	757
69	749
68	742
67	735
66	729
65	722
64	716
63	710
62	704
61	698
60	693
59	687
58	682
57	677
56	672
55	667
54	662
53	658
52	653
51	649
50	645
49	640
48	636
47	632
46	628
45	624
44	620
43	617
42	613
41	609
40	605
39	602
38	598

<b>MATHEMATICS</b>	
Raw Score- Level 3, Form B	Test-wide Scale Score
37	594
36	591
35	587
34	583
33	580
32	576
31	572
30	568
29	565
28	561
27	557
26	553
25	549
24	545
23	541
22	536
21	532
20	527
19	523
18	518
17	513
16	508
15	503
14	498
13	493
12	487
11	481
10	476
9	469
8	463
7	457
6	450
5	444
4	437
3	429
2	422
1	414
0	406

## APPENDIX E

### Test-wide Performance Stages – Descriptors

Stage	Table	Page
Stage 1 (268-399)	E1	73
Stage 2 (400-466)	E2	74
Stage 3 (467-532)	E3	75
Stage 4 (533-599)	E4	76
Stage 5 (600+)	E5	77

**Table E1**  
**Test-Wide Performance Stages – Stage 1 Descriptors**

**Stage 1 (268 – 399)**

Pupils at Stage 1 can read numerals, 0 to 199; count in groups; identify subtraction as complementing situations; add three two-digit numbers within 99 (row format); add three two-digit numbers within 99 (column format); subtract numbers within 99 (column format); and identify half of sets of up to 20. They can solve problems involving: (i) repeated addition, multi-digit subtraction, and halves or quarters of sets to 20.

They can identify odd and even numbers; use the zero property or commutative property of addition; construct subtraction number sentences from number stories; connect verbal and symbolic representations of a subtraction problem; connect pictorial and symbolic representations of numerals within 99; and complete subtraction number sentences.

Pupils at this Stage can partition 2-D shapes to make other 2-D shapes; identify halves of 2-D shapes; describe properties of simple 2-D shapes; identify 2-D shapes in context; construct 2-D shapes; and identify 3-D shapes from their properties. They can solve problems involving line symmetry in 2-D shapes.

They can measure length or capacity using non-standard units; exchange coins; compare weights of objects; and read data from a block graph. They can solve problems involving: measures of area using non-standard units; addition of coins; and addition of clock times.

**Table E2**  
**Test-Wide Performance Stages – Stage 2 Descriptors**

**Stage 2 (400 – 466)**

Pupils at Stage 2 can order numerals, 0 to 99; identify place value in numbers up to 99; round whole numbers to the nearest ten or hundred; rename numbers, 0 to 199; recall subtraction facts; and estimate the products of multiplying one-digit by two-digit numbers. They can solve problems involving: addition and subtraction within 20; division of whole numbers; and halves of 2-D shapes.

They can identify patterns in number sequences, and apply the associative property of addition to complete number sentences.

Pupils at this Stage can identify obtuse angles in 2-D objects; combine 2-D shapes to make other 2-D shapes; identify nets of 3-D shapes; and describe properties of 3-D shapes.

They can calculate cost of a set of shopping items and measure weight using non-standard units. They can solve problems involving: subtraction of weights; metres and centimetres; addition of lengths; subtraction of dates on a calendar; subtraction of capacities (l, ml); and addition of money.

They can construct bar charts; interpret block graphs; represent data in a block graphs; and read tables of data.

They can also do the tasks described in Stage 1.



**Table E3**  
**Test-Wide Performance Stages – Stage 3 Descriptors**

**Stage 3 (467 – 532)**

Pupils at Stage 3 can recall division facts; round whole numbers; add multi-digit numbers; identify fractions of regular shapes; calculate fractions of whole numbers; order simple fractions; identify place value in decimals; and order decimals on the number line. They can solve problems involving: place value in three-digit numbers; and operations with whole numbers and fractions.

They can complete number sentences involving:  $>$ ,  $<$ ,  $=$ ; associative property of addition and multiplication; quarters of sets to 20; and multiplication of decimals. They can complete number patterns; connect verbal and symbolic representations of word problems; and complete one-step equations.

Pupils at this Stage can identify 2-D shapes from lists of properties; construct 2-D shapes with lines of symmetry; identify the use of 2-D shapes in the environment; identify the nets of simple 3-D shapes; visualise properties of 3-D shapes; construct 3-D shapes from nets and from 2-D shapes; and use angles as rotations on a clock-face.

They can compare lengths; convert units of length; calculate the perimeters of regular shapes; compare and measure areas of regular and irregular shapes; select appropriate units for measuring capacity; compare and measure capacity; read time in five-minute intervals on analogue and digital clocks; convert between times in 12-hour and 24-hour format; and convert analogue times to digital times. They can solve problems involving: addition with subtraction of money or weights; comparison of weights; subtraction of lengths; fractions of money; and subtraction or multiplication of clock times.

They can read and interpret tables, pictograms and bar charts; use vocabulary of uncertainty and chance; order events in terms of likelihood of occurrence; and list outcomes of simple random processes. They can solve problems involving: lists of all possible outcomes; and concept of chance in game contexts.

They can also do the tasks described in Stages 1 and 2.

**Table E4**  
**Test-Wide Performance Stages – Stage 4 Descriptors**

**Stage 4 (533 – 599)**

Pupils at Stage 4 can read and write whole numbers; order fractions; express improper fractions as mixed numbers; convert percentages to fractions and decimals; estimate sums and products of whole numbers and decimals; subtract two-digit numbers with renaming; multiply three-digit numbers by two-digit numbers; divide two-digit numbers by one-digit numbers; multiply a fraction by a fraction; multiply a decimal by a whole number; divide decimals by whole numbers; and calculate percentages of quantities. They can identify factors of numbers and simple prime numbers. They can solve problems involving: multiplication of fractions by whole numbers; the unitary method; and estimation of sums.

They can extend decimal number patterns. They can complete number sentences involving: subtraction of whole numbers and fractions; the associative property; and the distributive property of multiplication. They can translate word problems into number sentences. They can solve problems involving addition of positive and negative numbers.

Pupils at this Stage can list properties of 2-D and 3-D shapes; identify lines of symmetry in 2-D shapes; construct 2-D shapes from list of properties; identify 2-D shapes in faces of 3-D shapes; identify examples of parallel and perpendicular lines; identify angles in terms of a rotation through compass points; classify angles as greater than, less than, or equal to a right angle; identify right angles in 2-D shapes; and measure angles in degrees.

They can convert grammes to kilogrammes and ares to square metres, and order measures of weight. They can solve problems involving: exchange rates and discount; operations with measures of time, distance, weight, and capacity; and timetables and calendars.

They can read, interpret and analyse tables of data and calculate averages of simple data sets. They can solve problems involving tables of data.

They can also do the tasks described in Stages 1, 2, and 3.

**Table E5**  
**Test-Wide Performance Stages – Stage 5 Descriptors**

**Stage 5 (600 +)**

Pupils at Stage 5 can convert fractions to decimals and decimals to percentages; estimate quotients involving decimals; calculate percentages of whole numbers; add mixed numbers; and identify common factors and multiples of numbers. They can solve word problems involving: multiple operations with whole numbers; fractions; decimals; percentages; and ratios; VAT; profit and loss; percentages of monies; comparison of prices; interest on loans; and income tax.

Pupils at this Stage can complete number sentences involving: decimals; multiplication of powers of ten; multiplication of fractions; division of whole numbers; brackets and priority of operation; and complete number patterns. They can translate word problems with a variable into number sentences, and find solutions of simple equations.

They can draw all lines of symmetry of regular 2-D shapes; partition 2-D shapes to make other specified 2-D shapes; make informal deductions about 2-D shapes; identify the properties of the circle; construct a circle given its diameter; construct triangles from given sides and angles; and plot simple co-ordinates to find intersection of two lines. They can solve problems involving the sum of the angles in a quadrilateral.

Pupils at this Stage can order measures of lengths; compare areas of regular and irregular shapes; find the volume of a cuboid experimentally; convert weights in grams to kilograms; convert capacities in litres to millilitres and vice versa. They can solve word problems involving: operations with measures of times; capacity; multiplication of weights; international time zones; calculation of speeds; calculation of area in hectares; multiplication of distances; use of scales on maps; and division of distances.

They can read and interpret multiple tables of data. They can solve word problems involving: the likelihood of occurrence of events; chance as ratio; comparisons of graphs; use of bar charts; and average.

They can also do the tasks described in Stages 1, 2, 3, and 4.