

## Towards the National Curriculum for mathematics

Examples of what pupils with special educational needs should be able to do at each P level

This document should be used alongside the *Framework for teaching mathematics from Reception to Year 6*. It provides a supplement of examples, similar to those in the Framework, but aimed at P levels 1 to 8. The examples are not intended to be covered as a 'scheme of work', or used as a 'textbook'. Their purpose is to illustrate, for each P level, a selection of what pupils should know, understand and be able to do. Over time, teachers should add to and replace the examples with those that they find most useful and cross-reference them to other resources, including computer software, to form a working document.

The P level descriptions have been organised into the same four strands as the *Framework for teaching mathematics from Reception to Year 6*. This enables teachers to track between P levels 4–8 and the Reception key objectives (indicated  $\leftrightarrow$ ). This will provide support to teachers when planning for the inclusion of pupils working below level 1 in the Daily Mathematics Lesson.

Year 1 objectives have also been identified to enable teachers to move into the Key Stage 1 Programme of Study, providing an overview of the appropriate chronological teaching programme for pupils as they progress through to Key Stage 2.

In some schools and units pupils with profound and complex needs (often working at P level 1 to 3) are grouped together in the same class. The examples in this document will enable teachers to provide a mathematical context for those pupils whose curriculum in all subjects will revolve around very early levels of development. Where pupils are in a mixed-ability setting, these examples support the teacher in differentiating mathematics topics in order to develop the mathematical skills of all pupils.

Some of the examples described in the supplement include mathematical skills that could also apply to pupils at other levels. Work on particular skills needs to be both specific to that skill and connected to other experiences. At whatever level, pupils should be offered opportunities to extend their experiences and understanding in a range of contexts. They may progress within a level, by gaining greater breadth in learning, and applying it to diverse circumstances before progressing to higher levels. For some pupils, even to maintain their mathematical skill level may be described as progress.

## Strand 1: Numbers and the number system

### Pupils working at levels P1 to P3 should:

**P1(i):** Encounter activities and experiences. May be passive or resistant. May show simple reflex responses. Any participation is fully prompted.

- *Show toleration of stimulation, or begin to show enjoyment of light, sound, or touch sequences.*
- *Allow an adult to place an object in hands to experience the feel, be willing to have one object changed for the next.*

**P1(ii):** Show emerging awareness of activities and experiences. May have periods when they appear alert and ready to focus their attention on certain people, events, objects or parts of objects. May give intermittent reactions.

- *Take object to face to explore when the object is placed in hands.*
- *Look towards the next event in a sequence, such as the next light to come on slowly in sequence along a rope of brightly coloured lights. Begin to show response to adult prompt words like 'again' or 'first' and 'next'.*
- *Look around for next sound when the rhythmic beat on a drum stops.*

**P2(i):** Begin to respond consistently to familiar people, events and objects. React to new activities and experiences. Begin to show interest in people, events and objects. Accept and engage in co-active exploration.

- *Reach for object(s) when prompted, e.g. as adult uses descriptive language such as 'next' or 'another one' when the second of two wheels is rolled along the table, or 'again' as a swing-ball swoops across the room.*
- *Look from one object to another, altering focus, in a game, action rhyme or activity. Adult may use associated mathematical language, e.g. number names, 'more', 'gone', 'none'.*
- *Communicate surprise as an object is revealed or on hearing an unexpected noise in a familiar sequence. Adult may use associated mathematical language, e.g. 'again', 'another', order words or number words.*

**P2(ii):** Begin to be proactive in their interactions. Communicate consistent preferences and affective responses. Recognise familiar people, events and objects. Perform actions, often by trial and improvement, and remember learned responses over short periods of time. Cooperate with shared exploration and supported participation.

- *Make sequential sounds or gestures to accompany familiar rhythms, chants and songs.*
- *Cooperate with supported participation by pushing down fingers in finger game or figures in a pop-up toy (when prompted) to make them jump up again. Adult may use language of sequence and change, ordinal and number names.*

**P3(i):** Begin to communicate intentionally. Seek attention through eye contact, gesture or action. Request events or activities. Participate in shared activities with less support. Sustain concentration for short periods. Explore materials in increasingly complex ways. Observe the results of their own actions with interest. Remember learned responses over more extended periods.

- *Initiate a familiar activity by pushing an object in the direction of the adult. Become aware of turn-taking, anticipate taking items in a game. Adult may use descriptions of quantity, 'more', 'another'.*
- *Track the path of an object and anticipate where it will end, extend to include repetition and sequence, and experience of the associated language.*
- *Drop objects to initiate interactions, e.g. push bricks off the tray to encourage an adult to pick them up and replace them. Adult may use language of increase and decrease.*
- *Explore materials and things in increasingly systematic ways, e.g. banging two objects together, separating things, placing and repositioning.*

**P3(ii):** Use emerging conventional communication. Greet known people and may initiate interactions and activities. Remember learned responses over increasing periods of time and may anticipate known events. May respond to options and choices with actions or gestures. Actively explore objects and events for more extended periods. Apply potential solutions systematically to problems.

- *Relate to items in increasingly systematic ways, e.g. collect items together or enjoy co-actively putting items into containers, encouraging one at a time. Adult may track the sequence with appropriate language, describing sequence, and using number words.*
- *Use 'objects of reference' board to initiate a chosen number song or activity, be aware of sequential pointing.*
- *Coordinate sequential sound-making or gesture with rhythmic sounds or gestures modelled by adults or peers, e.g. tapping a drum, banging a tambourine, dropping wooden numerals into a tin.*

# Counting, properties of numbers and number sequences

**Pupils working at levels P4 and P5 should:**

**P4: Show an interest in number activities and counting.**

- Copy holding up fingers in response to an adult modelling a simple finger-counting rhyme or chant.
- During the singing of a familiar song, indicate through sign, speech or gestures the next action, following a prompt, e.g. point at the fifth bottle during the fifth verse of ten green bottles.
- Anticipate the end of familiar sequences.

**P5: Respond to and join in with familiar number rhymes, stories, songs, and games.**

- During the singing of a familiar song, place objects or characters according to actions, 'One, two, buckle my shoe ...' and be ready with fingers on shoes at the count of two.
- Join in by saying, signing or indicating at least one of the numbers in a familiar number chant.
- Through games and rhymes that involve collecting and accumulation begin to appreciate that number names and numerals refer to sequence of quantity; able to sequence 1 and 2.

**Pupils working at levels P6 to P8 should:**

**P6: Join in with new number rhymes, songs, stories and games with some assistance or encouragement.**

- Listen with interest to a new story involving the numbers 1, 2 and 3; join in by saying, signing or indicating the number of characters to 3.
- Join in the count in a story with a repetitive counting structure, e.g. '1, 2, 3, Go!'
- With encouragement, take part in a game of collecting three things, then saying or signing 1, 2, 3.
- Point to items on a number line up to 3.

**P6: Join in rote counting up to 5 and use numbers to 5 in familiar activities and games.**

- Say or sign number names or indicate numerals as 5 favourite things are taken from a bag and put on the table.
- Say or sign number names or indicate numerals to 5 in time with the beat of a drum, cymbal, and handclaps.

**P7: Join in with rote counting to 10.**

- Join in by pointing to appropriate numbers on an individual number track, as the numbers are said or signed.
- Step on floor number track in order from 1 to 10 as number names are said or signed by an adult or other pupils.

**P8: Join in with rote counting to beyond 10.**

- Join in with songs like:  
'One, two, three, four,  
Mary at the kitchen door ...'  
by singing, signing, or indicating correct number names.  
(Older children will enjoy adapted pop songs, raps and chants.)
- Say, sign number names or indicate numbers, in order from 1 to 10.

**P8: Continue the rote count onwards from a given small number.**

- Continue the rote count onwards from a given small number, e.g. during the second round in a game of chance when tokens are collected.
- Continue to say, sign or indicate the count aloud together up to 5, then 10, when an adult starts by counting the first two numbers.
- Continue to say, sign or indicate count up to 5, then 10, as before, with adult prompting on the number line: 3, 4, 5 ...
- Continue to say, sign or indicate the count when an adult starts using a familiar counting rhyme/chant/song.

**Beyond level P8 pupils should be taught to:**

**R: Say and use number names in order in familiar contexts.** ⇄

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Reception*, page 2.

**Y1: Know the number names and recite them in order to at least 20, from and back to 0.**

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, page 2.

# Strand 1: Numbers and the number system

## Pupils working at levels P1 to P3 should:

**P1(i):** Encounter activities and experiences. May be passive or resistant. May show simple reflex responses. Any participation is fully prompted.

- *Encounter and become aware of increasing and decreasing levels of stimulation or sequences of touch.*
- *Experience brief sensory contact or interaction, e.g. brief grasp of one object placed in the palm to examine, experience adults describing the object as 'one' and perhaps exchanging for another.*

**P1(ii):** Show emerging awareness of activities and experiences. May have periods when they appear alert and ready to focus their attention on certain people, events, objects or parts of objects. May give intermittent reactions.

- *Being alerted to touch and sound, allow a short series of small objects to be touched or counted into hand, show interest in the sequence.*
- *Focus on light-reflecting, or sound-making objects, as they are counted onto their table or tray.*
- *Enjoy the modelling of rhythmic or sequential touching, of fingers and movement of limbs.*
- *Focus interest on sharply defined or prominent stimuli, e.g. different small groups of high contrast spots.*

**P2(i):** Begin to respond consistently to familiar people, events and objects. React to new activities and experiences. Begin to show interest in people, events and objects. Accept and engage in co-active exploration.

- *Learn that other people's gaze or pointing actions are significant in drawing attention to one thing.*
- *Hold items and take them to the face for examination.*
- *Experience holding or touching items, in sequence or turn, associate with adult's use of 'one', 'two'.*
- *Be aware of intonations and show interest in the beginning, the rhythm and the end of sequences when adults or peers itemise objects or events, e.g. as the group participate in a game.*
- *Track items that are being counted, e.g. hats as they are counted onto children's heads.*
- *Watch fingers, and allow an adult to count them using number names.*

**P2(ii):** Begin to be proactive in their interactions. Communicate consistent preferences and affective responses. Recognise familiar people, events and objects. Perform actions, often by trial and improvement, and remember learned responses over short periods of time. Cooperate with shared exploration and supported participation.

- *Reach for toys as they are counted onto the table.*
- *Take given items and collect them in lap or on the table, experience number words.*
- *Be encouraged to gain and discard objects, uncover hidden objects, make sounds and gestures responding to sequences. Hear adults use vocabulary of quantity and number.*
- *When offered small groups of objects, show ability to choose larger group, where there are significant differences.*

**P3(i):** Begin to communicate intentionally. Seek attention through eye contact, gesture or action. Request events or activities. Participate in shared activities with less support. Sustain concentration for short periods. Explore materials in increasingly complex ways. Observe the results of their own actions with interest. Remember learned responses over more extended periods.

- *Hold out hand(s) to reach for a cup as an adult counts out cups to a group, or reach towards items in sequence, in turn-taking or exchanging games.*
- *Anticipate a count by vocalising or gesturing to suggest a continuation when an adult stops counting.*
- *Show anticipation of changing quantities, when adult hides and reveals up to four items from under a cloth or in bags or boxes. Adults use vocabulary of quantity and change and frequently check by counting.*
- *Show interest in sequential handling, placing objects in and taking objects out of containers one at a time. Adults use vocabulary emphasising sequence and increase or decrease.*

**P3(ii):** Use emerging conventional communication. Greet known people and may initiate interactions and activities. Remember learned responses over increasing periods of time and may anticipate known events. May respond to options and choices with actions or gestures. Actively explore objects and events for more extended periods. Apply potential solutions systematically to problems.

- *Participate as members of a group in games of change and chance by exchanging and stacking items or by playing skittle games and other practical activities that can be structured to give pupils supported opportunities to:*
  - *initiate repetitions of events extending to physical and sound sequences;*
  - *initiate communications about quantities, taking turns imitating gestures and sounds;*
  - *appreciate that other participants, adult or peer, use number names, and that there is sequence and stability;*
  - *coordinate sound-making with the use of early pointing strategies (looking, reaching, giving);*
  - *appreciate the purpose of tallying and collecting tokens or using fingers to track increase.*

# Counting, properties of numbers and number sequences

**Pupils working at levels P4 and P5 should:**

**P4: Show an interest in number activities and counting.**

- *Work alongside other children in motivating events that give opportunity to score and count, e.g. classroom basketball shots – resources: one bucket, one ball.*
- *Individually with an adult supporting count in domestic contexts, puzzle or computer switch activities.*

**P5: Indicate one or two.**

- *Copy an adult by putting two hands in the air (both together or one at a time).*
- *Clap once or twice in response to one or two objects.*
- *Use eye-pointing, blinks or gestures to indicate one or two.*
- *Gesture to accompany a rhyme or chant.*
- *Make two handprints, or footprints, or other shapes, in damp sand.*

**Pupils working at levels P6 to P8 should:**

**P6: Demonstrate an understanding of one-to-one correspondence in a range of contexts.**

- *Match cups to saucers reliably.*
- *Touch or point to each coat on a hook as an adult touches them and counts.*
- *Clap hands in time with the number sequence 'one, two, three ...'*

**P6: Count reliably to 3 and make sets of up to three objects.**

- *Touch one item held by an adult, touch two ears, touch three buttons, touch four items as an adult counts.*
- *Count toys or pictures of objects.*
- *Count:*
  - *three cutlery pieces: knife, fork, spoon;*
  - *three items of clothing: hat, coat, scarf;*
  - *three meals: breakfast, dinner, tea.*
- *Count three windows in the classroom.*
- *Make three sounds.*
- *Drum or move to waltz time.*

**P7: Count at least five objects reliably.**

- *Count:*
  - *five fingers on a glove;*
  - *six candles on a cake – use a snuffer;*
  - *seven days in a week.*

**P8: Begin to count up to ten objects.**

- *Count:*
  - *chairs around the table;*
  - *items in a lunch box;*
  - *beakers on a tray;*
  - *friend on the bus.*

**P8: Estimate a small number, and check by counting.**

- *Using numbers that can be checked by counting, guess then count the number of:*
  - *children in a group;*
  - *adults in the room;*
  - *cups needed at break time.*

**Beyond level P8 pupils should be taught to:**

**R: Count reliably up to ten everyday objects. 8→**

*See The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Reception, pages 4 and 5.*

**Y1: Count reliably at least 20 objects. 8→**

*See The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1, page 2.*

**Y1: Count on and back in ones from any small number and in tens from and back to 0. 8→**

*See The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1, pages 2,4,6.*

# Strand 1: Numbers and the number system

Pupils working at levels P1 to P3 should:

**P1(i): Encounter activities and experiences. May be passive or resistant. May show simple reflex responses. Any participation is fully prompted.**

- Experience touching and looking at single objects and hear them described as one.
- Experience groups of brightly coloured objects, e.g. fluorescent stars under UV in a darkened room, or hear groups of sounds; encounter repetition and differences.
- Encounter changing or different sizes of groups of things and hear adults comment on different groups.

**P1(ii): Show emerging awareness of activities and experiences. May have periods when they appear alert and ready to focus their attention on certain people, events, objects or parts of objects. May give intermittent reactions.**

- Cooperate with rhythmic or sequential movement of fingers or limbs and attend to adult's sound accompaniment.
- Show an interest in looking where other people are looking.
- Shift attention between groups of objects; show interest when adults change the size of groups.

**P2(i): Begin to respond consistently to familiar people, events and objects. React to new activities and experiences. Begin to show interest in people, events and objects. Accept and engage in co-active exploration.**

- Watch and feel adult mark-making, sequential movements or strokes, associated with keeping tally on events or objects.
- Be keen to participate in collecting things together with an adult and experience adults' use of number names.

**P2(ii): Begin to be proactive in their interactions. Communicate consistent preferences and affective responses. Recognise familiar people, events and objects. Perform actions, often by trial and improvement, and remember learned responses over short periods of time. Cooperate with shared exploration and supported participation.**

- Experience use of number names for small numbers, e.g. associating the pointing of a finger to a single object, or tracking as individual objects are pointed at or sequentially illuminated by a torch.
- Receive tokens offered by adults or peers intended as tallies marking events such as scoring in a game.
- Attend to adult counting of tokens, respond to intonation denoting gain and loss.
- Imitate adult gestures denoting quantity or scoring events.

**P3(i): Begin to communicate intentionally. Seek attention through eye contact, gesture or action. Request events or activities. Participate in shared activities with less support. Sustain concentration for short periods. Explore materials in increasingly complex ways. Observe the results of their own actions with interest. Remember learned responses over more extended periods.**

- Appreciate that adult finger-counting is denoting sequence of quantity, and will cooperate having their own fingers touched and folded, and associated with the process of sound-making.
- Seek attention and request events, e.g. draw attention to outcomes or actively request scoring tokens after turn.
- Accept wooden or plastic numerals as tokens and be encouraged to explore their shapes.

**P3(ii): Use emerging conventional communication. Greet known people and may initiate interactions and activities. Remember learned responses over increasing periods of time and may anticipate known events. May respond to options and choices with actions or gestures. Actively explore objects and events for more extended periods. Apply potential solutions systematically to problems.**

- Recognise differences in groups of objects and choose the larger group.
- Join with an adult in pointing at marks in sequences and coordinate sound-making with pointing, as adults use number names.
- Appreciate that numerals are objects of meaningful reference, and be willing to accept plastic numerals as tokens of exchange.
- Participate attentively as adult helps them finger-trace tally marks (dabbing or stroking schema) or number shapes.

# Place value and ordering

## Pupils working at levels P4 and P5 should:

These examples are for pupils working at level P4.

- Use a finger as a means of denoting 'one'.
- Itemise a sequence by picking up tokens or using fingers.
- Itemise events by making random marks.
- Trace with hand a shape of cut-out numerals 1 and 2, made out of wood, corrugated paper, sandpaper, fabric, dough.

These examples are for pupils working at level P5.

- In response to: 'find me a number two', pass the correct numeral from a choice of two.
- Recognise and point to a numeral 2 in a familiar picture book, e.g. next to two hens, two birds (for older children resources may be made using magazines or shopping catalogues).
- Make orderly marks, or place tokens to keep track of a sequence.
- Trace over numerals, being aware of their name.

## Pupils working at levels P6 to P8 should:

These examples are for pupils working at level P6.

- Associate numerals 1 to 3 with their respective dice patterns.
- Relate numerals 1 to 3 to the number of objects.
- Anticipate the number of items (1 to 3) in a counting drawer/box that is marked with a textured or relief numeral.

P7: Begin to recognise numerals from 1 to 5 and to understand that each represents a constant number or amount.

- Match numerals to the dot pattern that comes up on a dice.
- Put the correct number of objects (1 to 5) into a counting drawer or box, which has a relief numeral.
- Use orderly tally marks and associate them with spoken number names to 5.
- Create dot patterns with stickers and associate them with the numerals.
- Collect the correct number of items up to 5.

P8: Begin to recognise numerals from 1 to 9 and relate them to sets of objects.

- Pick out numerals on a telephone key-pad, calculator, clock.
- Count objects in a counting box and find the appropriate numeral.
- Say which numeral on a number line is hidden when 'an alien' is sitting on it.

### Beyond level P8 pupils should be taught to:

R: Recognise numerals 1 to 9 (consistently and with confidence) then 0 to 10. 

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Reception*, page 9.

Y1: Read and write numerals from 0 to at least 20.



See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, page 8.

# Strand 1: Numbers and the number system

## Pupils working at levels P1 to P3 should:

**P1(i):** Encounter activities and experiences. May be passive or resistant. May show simple reflex responses. Any participation is fully prompted.

- Experience activities that begin to encourage a response to quantitative or sequential changes in the environment.
- Experience individual or group events involving increasing and decreasing quantities or sequences of light, sound or tactile stimulation. These can provide opportunities for adults to use language, intonation and gesture that illustrates and reinforces pupils' appreciation of changes.

**P1(ii):** Show emerging awareness of activities and experiences. May have periods when they appear alert and ready to focus their attention on certain people, events, objects or parts of objects. May give intermittent reactions.

- Make sound or gesture to express a wish for 'more' or 'again'. Use music, a resonance board, light and tactile sessions as well as classroom games. Social and domestic events offer opportunities for adults and peers to encourage these responses.
- Alternate glances between objects, moving focus from one sharply defined or prominent stimulus to another.
- Share a focus with an adult on finger manipulation, or other touch sequences, showing some elements of anticipation.

**P2(i):** Begin to respond consistently to familiar people, events and objects. React to new activities and experiences. Begin to show interest in people events and objects. Accept and engage in co-active exploration.

- Maintain attention enough to follow changes in stimulating sequences.
- Track movement of light or sound from a single person.
- Anticipate stimuli, and show interest when changes occur in quantity, size and frequency.
- Appreciate their role in experiences of exchanges or taking turn with others, responding to changes, creating a sound, gesture or expression that suggests 'more' or 'less'.

**P2(ii):** Begin to be proactive in their interactions. Communicate consistent preferences and affective responses. Recognise familiar people, events and objects. Perform actions, often by trial and improvement, and remember learned responses over short periods of time. Cooperate with shared exploration and supported participation.

- Begin to appreciate that people can make things happen, cooperating with activity and anticipating events involving sequences and changes of quantities.
- Enjoy experience of things being collected or gaining and discarding things. Uncovering objects that they have seen being hidden.
- Track light, sound or objects with adult prompts, looking from one to another along a row.
- Show an interest in the difference between 'one' and 'more', when offered choices.

**P3(i):** Begin to communicate intentionally. Seek attention through eye contact, gesture or action. Request events or activities. Participate in shared activities with less support. Sustain concentration for short periods. Explore materials in increasingly complex ways. Observe the results of their own actions with interest. Remember learned responses over more extended periods.

- Appreciate that people can make things happen and seek their participation in producing sequences on resonance board, or drum, or using switch control, stop and continue.
- Participate in exchanges in accumulative games, touching or handling tokens, appreciating the language or intonation of gaining and losing.

**P3(ii):** Use emerging conventional communication. Greet known people and may initiate interactions and activities. Remember learned responses over increasing periods of time and may anticipate known events. May respond to options and choices with actions or gestures. Actively explore objects and events for more extended periods. Apply potential solutions systematically to problems.

- Respond actively to words, intonations and gestures that indicate more or less, in practical social or domestic contexts.
- Place items in containers and empty them, anticipating the sequence with associated language used by adult or peer.
- Play accumulative games with objects, touch screen or switch technology.

# Place value and ordering

**Pupils working at levels P4 and P5 should:**

**P4: Show an interest in number activities and counting.**

- Recognise 'one' and 'more than one' by collecting familiar items.
- Be able to add one more to a group or show another finger.

**P5: Demonstrate awareness of contrasting quantities by making groups of objects with help.**

- Respond to choice making questions that use simple vocabulary of size and comparison, e.g. 'Which has only one?' – 'Which has more?'
- Experience small number patterns, playing card and dice games with help or modified dice with a blank, a 1 and other selected patterns.
- Touch or point to one or two objects on request.

**Pupils working at levels P6 to P8 should:**

**P6: Demonstrate an understanding of the concept of more/fewer.**

- Say, sign or indicate that more counters, books, cups are required.
- In response to an adult, indicate which hoop has fewer balls in it.

**P6: Demonstrate an understanding of one-to-one correspondence in a range of contexts.**

- Place one item in each cup as it is counted.
- Make eye contact with each child as they are counted around the table.

**P7: Begin to recognise differences in quantity.**

- When presented with a table of boys and girls, say, sign or indicate if the number of boys or girls is bigger.

**P8: Compare two given numbers of objects saying which is more and which is less.**

- Given one stick of two cubes and another stick of eight cubes, indicate which stick has less (fewer).
- Given three items or counters in one hand and six counters in the other hand, indicate which hand holds more counters.

**P8: Begin to use ordinal numbers (first, second or third) when describing the position of objects, people or events.**

- Indicate who is first in a queue or line and who is last (using a group of more than six).
- Indicate which lesson is first in the day and which is last.
- Follow instructions in order. 'First, put your hand up; second, touch your ear, third, touch your nose.'

**Beyond level P8 pupils should be taught to:**

**R: Use language such as more or less, greater or smaller, to compare two numbers.** 

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Reception*, pages 11 and 12.

**Y1: Understand and use the vocabulary of comparing and ordering numbers.** 

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, page 10.

**Y1: Within the range 0 to 30, say the number that is 1 or 10 more or less than any given number.** 

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, page 12.

**Y1: Order numbers to at least 20.** 

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, page 14.

## Strand 2: Calculations

### Pupils working at levels P1 to P3 should:

**P1(i):** Encounter activities and experiences. May be passive or resistant. May show simple reflex responses. Any participation is fully prompted.

- *Become aware of adults entering and leaving their immediate vicinity and appreciating presence of one and more individuals.*
- *Encounter and become aware of changing levels of stimulation, light, sound, movement, pressure of touch.*
- *Extend glances between their own hands, or between objects within close vision, or begin to feel alternative items.*

**P1(ii):** Show emerging awareness of activities and experiences. May have periods when they appear alert and ready to focus their attention on certain people, events, objects or parts of objects. May give intermittent reactions.

- *Maintain sensory contact for short periods by sustaining a grasp on an object placed in the palm, mouthing or looking at it long enough to show awareness as adult provides another or changes the item. Experience adult's use of language and intonation that refers to 'another' or 'more'.*
- *Extend awareness, watching sequences of items being placed or stacked, etc. on tables, or being put into or taken out of bags, boxes, cupboards. Hear associated language.*

**P2(i):** Begin to respond consistently to familiar people, events and objects. React to new activities and experiences. Begin to show interest in people, events and objects. Accept and engage in co-active exploration.

- *Show anticipation and interest in watching collections being made, tracking sequences of increasing and decreasing objects. Experience adults' language and intonation describing beginning, end, or increase, decrease.*
- *Respond to collections being separated, towers knocked over, or items being taken from them.*
- *Cooperate with adult or peers giving and taking, experience language associated with gain and loss.*

**P2(ii):** Begin to be proactive in their interactions. Communicate consistent preferences and affective responses. Recognise familiar people, events and objects. Perform actions, often by trial and improvement, and remember learned responses over short periods of time. Cooperate with shared exploration and supported participation.

- *Be proactive in exchanging, obtaining, collecting and retaining items, express approval at gain, disapproval of loss.*
- *Keep tally in events or games of chance, or in domestic or shopping activities.*
- *Cooperate in building and reducing towers, or filling and emptying containers such as boxes of toys or bun trays. Show interest in language describing increase and decrease.*

**P3(i):** Begin to communicate intentionally. Seek attention through eye contact, gesture or action. Request events or activities. Participate in shared activities with less support. Sustain concentration for short periods. Explore materials in increasingly complex ways. Observe the results of their own actions with interest. Remember learned responses over more extended periods.

- *Offer and accept items, express anticipation and awareness of opportunity to obtain items, regret at losing.*
- *Show familiarity with selection and collection by pointing at items, to be added or removed from collections.*
- *Working with partner extend patterns by adding 'another one', e.g. item to a collection or box, another drum beat, microphone sound or light flash. Simple items with strong sensory qualities like coins tossed into tins can be used.*

**P3(ii):** Use emerging conventional communication. Greet known people and may initiate interactions and activities. Remember learned responses over increasing periods of time and may anticipate known events. May respond to options and choices with actions or gestures. Actively explore objects and events for more extended periods. Apply potential solutions systematically to problems.

- *Point at items in sequence along a number line, coordinate pointing with associated word sounds including intonation of increase and decrease.*
- *Anticipate their role and place in turn-taking games, aware that each turn is an opportunity to increase their collection.*
- *Initiate exploration and work independently collecting objects, expect things to be where they put them a few moments before.*
- *Show awareness if a significant change has been made to a group:*
  - *half of the apples are missing;*
  - *six wheelchairs have been added to the row.*

# Addition and subtraction

**Pupils working at levels P4 and P5 should:**

**Examples of pupils working at level P4.**

- Put more knives and forks in the box.
- Stick blue cubes and yellow cubes together to make a stick.
- Take just the knives from the box of cutlery and put them on the table.
- Separate the cube stick into two single colour sticks.

**P4: Aware of cause and effect in familiar mathematical activities.**

- Make a selection to find an item hidden under one of two or three cups.
- Put single items into a series of drawers, then expect to be able to take one out of each.
- Experience the result of combining the contents of two drawers.
- Experience losing and having items taken from them.

**P5: Indicate one or two.**

- Make groups of two using familiar pairs, e.g. two shoes, two socks, two gloves.
- Show and name one finger, then show another and name the quantity as two.
- Make other small matching sets with help.
- Strike two beats on a drum following one beat.

**Pupils working at levels P6 to P8 should:**

**P6: Demonstrate their understanding of one-to-one correspondence in a range of contexts.**

- Find one hat for each person.
- Given three knives, collect three forks and three spoons to set the table.

**P7: Respond appropriately to key vocabulary and questions, for example 'How many?'**

- Respond to instructions like 'Put two pencils in the box and add three more.'

**P7: Begin to recognise differences in quantity.**

- Given two plates, one with three biscuits and the other with several more, say which has more.

**P7: In practical situations, respond to 'add one' and 'take one'.**

- Without counting:
  - given a stick made of six cubes, make a stick with one more cube in it;
  - given a stick with four cubes, make a stick with one fewer cube in it;
  - given a pile of five books, make a pile with one more book in it.
- Using number that can be counted, respond to requests such as:
  - put one more pencil in the pot;
  - find one more chair for a friend to sit on;
  - fetch one more cup from the kitchen;
  - add one more sweet to a dish;
  - take one cake away from a plate of cakes.

**P8: In practical situations add one to or take one away from a number of objects.**

- Using objects placed on or people standing on a number track:
  - add one more to three people in a line, and say, sign or indicate how many people are now in the line;
  - take one person away and say, sign or indicate the number of people that are left;
  - add one more coat to three coats hanging on numbered pegs, and indicate or say how many coats there are altogether;
  - take one coat away from four coats hanging on numbered pegs, and say, sign or indicate how many coats are left;
  - given five boxes containing from one to five objects, arrange them in order.

**Beyond level P8 pupils should be taught to:**

**R: Begin to use the vocabulary involved in adding and subtracting.** ⇄

**R: Find one more or one less than a number from 1 to 10.** ⇄

**R: Begin to relate addition to combining two groups of objects.** ⇄

**R: Begin to relate subtraction to 'taking away'.** ⇄

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Reception*, page 14.

**Y1: Understand the operation of addition and subtraction (as 'take away', 'difference') and use the related vocabulary.** ⇄

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, pages 24 and 28.

**Y1: Know by heart: all pairs of numbers with a total of 10.** ⇄

See *The Framework for teaching mathematics from Reception to year 6, supplement of examples for Y1*, page 30.

## Strand 3: Solving problems

### Pupils working at levels P1 to P3 should:

**P1(i):** Encounter activities and experiences. May be passive or resistant. May show simple reflex responses. Any participation is fully prompted.

- *Encounter pattern of sound or vibration when placed on a soundboard, on which an adult is sounding out a simple repeating pattern. May show some response through eye or body movement or facial expression.*
- *Experience repeated contrasting sounds, e.g. high, low, high, low ... long, short, long, short.*

**P1(ii):** Show emerging awareness of activities and experiences. May have periods when they appear alert and ready to focus their attention on certain people, events, objects or parts of objects. May give intermittent reactions.

- *Show some expectation responding to the adult's pattern on the soundboard, and make some attempts at physical responses.*
- *Attempt to locate and focus on source of interesting sound patterns from voices, music, equipment, toys or materials. Express interest, pleasure.*
- *Focus attention on features of objects or parts of them that have distinct visual or tactile interest and may touch or grasp briefly.*

**P2(i):** Begin to respond consistently to familiar people, events and objects. React to new activities and experiences. Begin to show interest in people, events and objects. Accept and engage in co-active exploration.

- *Accept and engage in co-active exploration, manipulating items with adult support.*
- *Track items briefly by following the sound of a person or lights in a sensory room.*
- *Switch attention between objects on a table that are highlighted in turn using a torch beam, or are tapped to make distinct sounds.*

**P2(ii):** Begin to be proactive in their interactions. Communicate consistent preferences and affective responses. Recognise familiar people, events and objects. Perform actions, often by trial and improvement, and remember learned responses over short periods of time. Cooperate with shared exploration and supported participation.

- *Show curiosity in response to novel events and consistent response to familiar sound or movement patterns. Express choices and reach for preferred objects, e.g. patterned beaker, own gloves.*
- *Remember responses and patterns or sequences of events in games over short periods, learning to register and show surprise or heightened interest when patterns are changed or are broken, e.g. up the snakes and down the ladders.*
- *Begin to show desire to follow modelled actions and imitate adult responses in movement and sound patterns, e.g. long and short beats on a drum.*
- *Observe and manipulate items that are hidden and then revealed using toys and everyday items that can be combined and separated.*

**P3(i):** Begin to communicate intentionally. Seek attention through eye contact, gesture or action. Request events or activities. Participate in shared activities with less support. Sustain concentration for short periods. Explore materials in increasingly complex ways. Observe the results of their own actions with interest. Remember learned responses over more extended periods.

- *Beat on a drum or cymbal in response to a familiar piece of music being played.*
- *Organise beakers on a tray to create a pattern which they then observe being continued by others.*
- *Say, sign or indicate to anticipate when a tower of beakers is about to fall over as more beakers are added.*

**P3(ii):** Use emerging conventional communication. Greet known people and may initiate interactions and activities. Remember learned responses over increasing periods of time and may anticipate known events. May respond to options and choices with actions or gestures. Actively explore objects and events for more extended periods. Apply potential solutions systematically to problems.

- *Participate in activities that involve sequencing of events, e.g. meals in a day, routine activities at lunchtime.*
- *Complete a familiar sequence which has something missing or show awareness that part of the sequence is incorrect.*
- *With assistance, make a tower taller or shorter by adding or removing bricks.*

# Reasoning about numbers or shapes

## Pupils working at levels P4 and P5 should:

**P4: Show awareness of changes in shape, position or quantity.**

- Group objects that have similar key features such as shape (or colour), or functions, e.g. all cups.
- Supported by adult, mark changes of tone, tempo and movement in the pattern of musical sequences:
  - use clapping, drum, elastic castanet or everyday container that has interesting resonance – tin or large plastic water bottle.
- Create sequences of light or sound using switched equipment.
- Send number signals in response to numbers thrown on a dice, shown on a card or just called out. Children act as senders or decoders.
- Recall two or three objects that have been placed out of sight, e.g. pencils in a pot, eggs in a box.
- Remember as many items as possible that were put in a box; include counting as a checking strategy.
- Remember which number was hidden under which plant pot; put them in order as they are found; use numerals or spot groups or variations using both.

**P5: With support, match objects or pictures.**

- Match shoes by placing a shoe alongside one that an adult has placed on a carpet.
- Match socks by placing a sock next to one that an adult has placed.
- Find matching pairs from a collection of pictures, e.g. two trees, two houses, two cars ...
- Find functional pairs such as:
  - a cup and saucer;
  - a knife and a fork;
  - bread and butter;
  - a brush and a comb.

**P5: Search intentionally for objects in their usual place.**

- Expect to find pencils and other things in their usual places.
- Go to a usual place when told to get items such as their coat.

## Pupils working at levels P6 to P8 should:

**P6: Copy simple patterns or sequences.**

- Copy an adult, beating a one- or two-beat pattern, on a drum or triangle.
- Copy a pattern of repeated movements, e.g. stand up, sit down.
- Copy, next to an adult model, a pattern of coloured beakers.
- Make a chain of dominoes matching dot patterns for numbers 1 to 3.
- Order things by size using trial and improvement.

**P7: Identify when an object is different or does not belong to a given familiar category.**

- Sort familiar items as instructed following a model.
- Remove the odd items from collections and give reasons.
- Collect items into sorting drawers and indicate to an adult what to put on a label.

**P8: Recognise, describe and recreate simple repeating patterns and sequences.**

- Recognise that there are two colours used in a simple potato print pattern, e.g. red, green, red, green ... and continue the pattern.
- Describe a pattern of socks on a washing line and match identical socks to the pattern: two long socks, two short socks, two long socks, two short socks ...
- Join in pattern of hand claps, e.g. slow, quick, quick, slow, quick, quick ...
- Put the coats on every other coat peg.
- Talk about and copy patterns such as:
  - beats in familiar music;
  - shapes made by hand and feet in damp sand;
  - lines made by finger-painting;
  - sponge prints.
- Watch an adult make a simple sequence of actions, then repeat them.
  - sounds made with different mouth shapes;
  - stand up, turn around and sit down.

### Beyond level P8 pupils should be taught to:

**R: Talk about, recognise and recreate simple patterns.**



See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Reception*, page 18.

**Y1: Solve simple mathematical problems or puzzles; recognise and predict from simple patterns and relationships.**



See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, page 62.

## Strand 3: Solving problems

### Pupils working at levels P1 to P3 should:

**P1(i):** Encounter activities and experiences. May be passive or resistant. May show simple reflex responses. Any participation is fully prompted.

- *Show awareness as objects are placed against the hand, or face, in a series of touch events, accompanied by adult sound sequence.*
- *Show reflexive response or eye movement reacting to a light sequence played onto body or face with a torch or in sensory room.*

**P1(ii):** Show emerging awareness of activities and experiences. May have periods when they appear alert and ready to focus their attention on certain people, events, objects or parts of objects. May give intermittent reactions.

- *Show some anticipation of touch as items are touched on face or moved down their arm towards the hand, where they may grasp as items enter the palm. Adults may use language such as 'again' to encourage child to show some desire for repetition.*
- *Use eye movement or reflexive reactions to show awareness of light, sound, or movement to music that stops and is started again. Adult language and body movement should emphasise the pattern of events, particularly beginnings and ends, and encourage child to communicate.*

**P2(i):** Begin to respond consistently to familiar people, events and objects. React to new activities and experiences. Begin to show interest in people, events and objects. Accept and engage in co-active exploration.

- *Retain a hold on objects for longer and take objects to own face for examination.*
- *Extend the range of attention showing interest in events outside the immediate area of their body space, looking or listening to familiar events in the room, e.g. chairs put out in a circle for group work.*
- *With help, place hand in feely bag to experience different shapes and textures.*
- *Place hands in sink as a jug of water is being emptied.*

**P2(ii):** Begin to be proactive in their interactions. Communicate consistent preferences and affective responses. Recognise familiar people, events and objects. Perform actions, often by trial and improvement, and remember learned responses over short periods of time. Cooperate with shared exploration and supported participation.

- *Reach out and express a preference for a particular computer programme by touching the screen.*
- *Use a switch to gain response required from toy or computer software.*
- *Indicate that activity is finished at the sound of a buzzer.*
- *Respond through facial expression or movement to '1, 2, 3, Go!'*

**P3(i):** Begin to communicate intentionally. Seek attention through eye contact, gesture or action. Request events or activities. Participate in shared activities with less support. Sustain concentration for short periods. Explore materials in increasingly complex ways. Observe the results of their own actions with interest. Remember learned responses over more extended periods.

- *Hold coins to drop into a tin being passed around the group.*
- *Reach into a bag and feel a set of similar objects, such as a set of polished stones, furry animals, or horrible creatures.*
- *Indicate choice of biscuit from two.*
- *Use vocalisation or gesture as a prompt for example to be 'sold' something in role-play shop.*

**P3(ii):** Use emerging conventional communication. Greet known people and may initiate interactions and activities. Remember learned responses over increasing periods of time and may anticipate known events. May respond to options and choices with actions or gestures. Actively explore objects and events for more extended periods. Apply potential solutions systematically to problems.

- *Indicate to an adult to pick up a bag of coins in order to examine them together or use them in a familiar activity.*
- *Consistently use a recognised response to indicate preferred choice of mathematical activities.*
- *Show an awareness of common features of familiar objects, e.g. toothbrush, hairbrush, washing up brush.*

# Problems involving 'real life', money or measures

**Pupils working at levels P4 and P5 should:**

**P4: Be aware of cause and effect in familiar mathematical activities.**

- Know that in a role-play shop a coin can be exchanged for an item.
- Search for items that have gone out of sight, and find them unchanged, e.g. coins in the purse, or items in the shopping bag.

**P4: Anticipate, follow and join in mathematical activities when given a contextual clue.**

- When prompted match cakes to plates in order that there is one each.
- In the shop, be aware of sequence of events including paying.

**P5: Begin to sort sets of objects according to a single attribute.**

- Fit all the balls in a basket.
- Put all the hoops on a hook.
- Put all the large play equipment in the shed.
- Put all the furry toys in a box.
- With a collection of bricks of different sizes: giant bricks, jumbo bricks, small bricks ... sort the bricks into groups that go together.

**P5: Make sets that have the same small number of objects in each.**

- Distribute sweets into containers so that there are two in each.

**P5: Solve simple problems practically**

- Make small sets the same.
- Organise items into rows so that they can be compared.
- Select appropriate containers for items of different sizes.
- Carry out events against a clock or time count.
- Experience comparing weights.

**Pupils working at levels P6 to P8 should:**

**P6: Sort objects and materials according to given criteria.**

- Put large physiotherapy balls in the hall and the table tennis balls in the box.
- Put the paper money in the wallet and the coins in the purse.

**P6: Begin to identify when an object is different and does not belong to given categories.**

- Put equipment or shopping away.
- Use everyday object pictures to allocate items to rooms in the house.

**P6: Use 1p coins.**

- Hand a coin to shopkeeper in role-play and receive one small item in return.
- Hand two coins and receive two small items.
- Count how many coins are needed to buy four items.
- Encounter expensive items where shopkeeper demands more and use pound coin.
- Experience being given change.

**P7: Respond appropriately to key vocabulary and questions, for example 'How many?'**

**P7: Complete a range of classification activities using given criteria.**

- Sort a pile of coins by colour, by size, by shape, by the name of the coin ...
- Sort out all the wellies that are size 4.

**P7: Identify when an object is different and does not belong to a given familiar category.**

- Put all the coats on the coat pegs.
- Put all the books in the drawers.
- Put the red books on a shelf and the blue books in a cupboard.
- Put three of the pencils in the pot and the rest in the tray.
- Put all the silver coins in the purse.

**P8: Begin to use their developing mathematical understanding of counting to solve simple problems encountered in play, games or other work.**

- Use tokens or marks to tally events or scoring in games.
- Draw examples of counting from the school environment such as the classroom, playground, lunchtime, travelling to school ...
- Use ordinal words to describe positions and turns, etc.

**P8: Begin to make simple estimates, such as how many cubes will fit in a box.**

- Use large cushion blocks in a 2 x 2 grid box.

**Beyond level P8 pupils should be taught to:**

**R: Use developing mathematical ideas and methods to solve practical problems. ⇄**

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Reception*, page 20.

**Y1: Use mental strategies to solve simple problems using counting, addition, subtraction, doubling and halving, explaining methods and reasoning orally. ⇄**

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, pages 66, 68 and 70.

## Strand 4: Measures, shape and space

### Pupils working at levels P1 to P3 should:

**P1(i):** Encounter activities and experiences. May be passive or resistant. May show simple reflex responses. Any participation is fully prompted.

- *Tolerate and experience different kinds of spaces, confined or wide open, seated or laying, and actively moving (or being moved) perhaps in a wheelchair.*
- *Experience stretching and curling, either just using hands or feet or perhaps a whole body experience.*
- *Experience the weight and size of different objects placed in hands.*
- *See and hear stimulating sights or sounds coming from distance to close and from different directions, including behind.*

**P1(ii):** Show emerging awareness of activities and experiences. May have periods when they appear alert and ready to focus their attention on certain people, events, objects or parts of objects. May give intermittent reactions.

- *Show response at feeling a length of string pulled gently between fingers, or feel with loose hand as a long length of rope knotted or with a bobbin or bell at each metre is slowly pulled across the lap and through the hand.*
- *Experience adult's comments that draw attention to the passage of length and anticipate each knot. Use language 'another' and 'more', and show that the rope can stop, go back and finally it will reach the end.*
- *Feel a collection of different size spheres from table tennis to physiotherapy balls.*

**P2(i):** Begin to respond consistently to familiar people, events and objects. React to new activities and experiences. Begin to show interest in people, events and objects. Accept and engage in co-active exploration.

- *Make small movements to accept small items, hold arms wide to receive very large toy, hear adult language associated with size.*
- *Experience holding a ball, balloon as it is blown up or let down.*
- *Feel heavy and light items on the lap, and hear adults comment on 'more', 'heavier', 'bigger'. Show response, and respond to different language and intonation used by adult.*

**P2(ii):** Begin to be proactive in their interactions. Communicate consistent preferences and affective responses. Recognise familiar people, events and objects. Perform actions, often by trial and improvement, and remember learned responses over short periods of time. Cooperate with shared exploration and supported participation.

- *Reach towards items making choices related to size, hear language used that prompts and illustrates the choices.*
- *Experience turn-taking, or giving and taking sessions where the child is sometimes required to 'wait longer'.*
- *Use grasp to develop awareness of texture, length, weight of familiar objects.*
- *Use hands to enclose an object to experience its global shape and contours.*

**P3(i):** Begin to communicate intentionally. Seek attention through eye contact, gesture or action. Request events or activities. Participate in shared activities with less support. Sustain concentration for short periods. Explore materials in increasingly complex ways. Observe the results of their own actions with interest. Remember learned responses over more extended periods.

- *Point to items that have been taken away.*
- *Indicate through sound, sign or gesture that an item needs to be moved closer.*
- *Feel items of different lengths, some rigid, some flexible, e.g. lengths of tinsel, ribbons, strings of beads, cane strips.*
- *Explore long and short sounds on a keyboard with an adult.*

**P3(ii):** Use emerging conventional communication. Greet known people and may initiate interactions and activities. Remember learned responses over increasing periods of time and may anticipate known events. May respond to options and choices with actions or gestures. Actively explore objects and events for more extended periods. Apply potential solutions systematically to problems.

- *Judge sizes of items being placed in containers, nesting boxes or buckets by adults; indicate whether or not they will fit.*
- *Use sound, sign or gesture to indicate the size/shape of cup to have a drink in.*

# Measures

## Pupils working at levels P4 and P5 should:

**P5:** Compare the overall size of one object with that of another where there is a marked difference.

- Indicate which of two saucepans is the bigger.
- Indicate whether a child's scarf or an adult's scarf is longer.
- Compare the height of two pupils and indicate who is taller.
- Compare the sizes of two shoes.
- Indicate which of two pieces of string is longer/shorter.
- Follow instructions to place a small skittle at one end of a mat and a large skittle at the other end.

**P5:** Find big and small objects on request.

- Use familiar objects, e.g.
  - big ball and small ball;
  - big chair and small chair;
  - big plate and small plate;
  - big spoon and small spoon.

## Pupils working at levels P6 to P8 should:

**P6:** Show awareness of vocabulary such as 'more' and 'less', in practical situations.

Using large differences:

- Indicate which of two piles of cubes contains more cubes.
- Indicate the jug with more juice in it.

**P6:** Compare the overall size of one object with that of another where the difference is not great.

- Arrange a set of nesting cubes/Russian dolls in order of size.
- Fit a set of nesting beakers or cubes into one another.

**P7:** Use familiar words to compare sizes and quantities.

- Compare the weight of a full box of pencils and an empty pencil box. Indicate which is heavier.
- Indicate which is the bigger, heavier of two objects
  - very different in size;
  - nearly the same size.

**P8:** Compare directly two lengths or heights, where the difference is marked and can indicate 'the long one' or 'the tall one'.

- By looking, or by using a cup to fill a jug, indicate whether a jug holds more or less juice than a cup.

**P8:** Show awareness of time through some familiarity with names of the days of the week and significant times in their day, such as meal times, bed times.

See *The Framework for teaching mathematics from Reception to Year 6*, and adapt the Reception examples, page 23.

### Beyond level P8 pupils should be taught to:

**R:** Use language such as 'more' or 'less', 'longer' or 'shorter', 'heavier' or 'lighter' ... to compare two quantities. 

See *The Framework for teaching mathematics from Reception to year 6*, and adapt the Reception examples, page 22.

**Y1:** Compare two lengths, masses or capacities by direct comparison. 

See *The Framework for teaching mathematics from reception to Year 6, supplement of examples for Y1*, page 72.

**Y1:** Suggest suitable standard or uniform non – standard units and measuring equipment to estimate, then measure, a length, mass or capacity. 

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, pages 74 and 76.

## Strand 4: Measures, shape and space

### Pupils working at levels P1 to P3 should:

**P1(i):** Encounter activities and experiences. May be passive or resistant. May show simple reflex responses. Any participation is fully prompted.

- *Tolerate the feel of smooth shapes against the cheek.*
- *React to or show pleasure at feeling a smooth round shape.*
- *Move face to mouth objects.*
- *Tolerate the introduction of forms or items into the hand.*

**P1(ii):** Show emerging awareness of activities and experiences. May have periods when they appear alert and ready to focus their attention on certain people, events, objects or parts of objects. May give intermittent reactions.

- *Be assisted to feel the edges, angles, curves, planes of everyday objects and learn to manipulate, turn and look.*
- *Focus on interesting or sharply defined parts of stimuli, e.g. areas where high contrast creates line effect.*

**P2(i):** Begin to respond consistently to familiar people, events and objects. React to new activities and experiences. Begin to show interest in people, events and objects. Accept and engage in co-active exploration.

- *Manipulate and rotate a cardboard tube, a triangular prism and an orange in hands.*
- *Track moving shapes briefly across field of awareness in dark room using fluorescent colours.*

**P2(ii):** Begin to be proactive in their interactions. Communicate consistent preferences and affective responses. Recognise familiar people, events and objects. Perform actions, often by trial and improvement, and remember learned responses over short periods of time. Cooperate with shared exploration and supported participation.

- *Use grasp to develop awareness of texture, length, weight of familiar objects.*
- *Use hands to enclose an object to experience its global shape and contours.*
- *Experience the language of shape during exploration, e.g. 'side', 'curved', 'round', 'straight', 'pointed', etc.*

**P3(i):** Begin to communicate intentionally. Seek attention through eye contact, gesture or action. Request events or activities. Participate in shared activities with less support. Sustain concentration for short periods. Explore materials in increasingly complex ways. Observe the results of their own actions with interest. Remember learned responses over more extended periods.

- *Use vocalisation or gesture to indicate that a wheel is about to roll off a table.*
- *Wave wire loop to make soap bubbles.*

**P3(ii):** Use emerging conventional communication. Greet known people and may initiate interactions and activities. Remember learned responses over increasing periods of time and may anticipate known events. May respond to options and choices with actions or gestures. Actively explore objects and events for more extended periods. Apply potential solutions systematically to problems.

- *Manipulate and combine shape forms, continuing to experience their names.*
- *Explore the consequential properties of shape, e.g. balls roll, boxes stand or slide, triangles topple.*
- *Independently use hand movements to trace around the edge of a circle.*

# Shape and space

## Pupils working at levels P4 and P5 should:

**P4:** Begin to search for objects that have gone out of sight, hearing or touch, demonstrating the beginning of object permanence.

- Search for :
  - rectangular window panes behind the curtain;
  - tennis balls that have been rolled into a pipe.

**P5:** Search intentionally for objects in their usual place.

- Round hoops in the PE cupboard.
- Square mats in the lunch drawer.
- Cubes in a crate of design technology equipment.
- Small round plates on a shelf and large round plates in the cupboard.

## Pupils working at levels P6 to P8 should:

**P6:** Manipulate three-dimensional shapes.

- Place hand inside tub to retrieve an item.
- Roll a tube in a race with a partner.
- Explore how a tube fits into a circular hole.

**P7:** Start to pick out named shapes from a collection.

- Pick out all the round shapes in the classroom.
- Find objects with straight sides.
- Fit shapes into matching holes.

**P8:** Begin to use mathematical vocabulary such as 'straight', 'circle', 'larger' to describe the shape and size of solids and flat shapes.

- Pick out all the triangles from a set of 2-D shapes, or cubes from a set of 3-D shapes.
- Find all the lids which are circles/not circles.
- Say, sign or indicate which of two squares, or which of two circles, is larger.
- Use an answer board to respond to questions like 'Is it a cube?'
- Pick out all the squares that are bigger than a given one.

**P8:** Describe shapes in simple models, pictures and patterns.

- Stamp shapes in damp sand and describe them.
- Stamp out shapes using dough and pastry cutters, then talk about the shapes.
- Use a set of flat shapes to make pictures or patterns, then name some of the shapes used.

### Beyond level P8 pupils should be taught to:

**R:** Use language such as 'circle' or 'bigger' to describe the shape and size of solids and flat shapes.



See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Reception*, pages 24 and 25.

**Y1:** Use everyday language to describe features of familiar 3D to 2D shapes.



See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, page 80.

## Strand 4: Measures, shape and space

### Pupils working at levels P1 to P3 should:

**P1(i):** Encounter activities and experiences. May be passive or resistant. May show simple reflex responses. Any participation is fully prompted.

- *Develop a trust and be willing to be moved or turned to experience different stimuli.*
- *Respond to familiar items being moved within their immediate vicinity.*

**P1(ii):** Show emerging awareness of activities and experiences. May have periods when they appear alert and ready to focus their attention on certain people, events, objects or parts of objects. May give intermittent reactions.

- *React to changes of perspective when being moved in classroom, enjoy commentary on changing view and position being made by adult during a wheelchair journey.*
- *Show some awareness or desire to find source of sound that comes from side or behind.*
- *Shuffle or wriggle, moving head and/or body to gain different view.*

**P2(i):** Begin to respond consistently to familiar people, events and objects. React to new activities and experiences. Begin to show interest in people, events and objects. Accept and engage in co-active exploration.

- *Turn head or body to seek new sound, show awareness of sounds behind.*
- *When handed objects place them on head or on face.*
- *With assistance attempt to place a small box on a larger one.*

**P2(ii):** Begin to be proactive in their interactions. Communicate consistent preferences and affective responses. Recognise familiar people, events and objects. Perform actions, often by trial and improvement, and remember learned responses over short periods of time. Cooperate with shared exploration and supported participation.

- *Maintain interest in looking as a tower is built – respond to the bricks being knocked over.*
- *Follow with eyes as an adult moves to a different position in the room.*
- *Follow the placement of toys in a line, then reach out for the last objects.*

**P3(i):** Begin to communicate intentionally. Seek attention through eye contact, gesture or action. Request events or activities. Participate in shared activities with less support. Sustain concentration for short periods. Explore materials in increasingly complex ways. Observe the results of their own actions with interest. Remember learned responses over more extended periods.

- *Eye-point or gesture to the correct location of an object when asked, 'Where does this go?'*
- *With assistance, put a smaller beaker inside a larger one.*
- *Make a gesture with head or arms to indicate that an object is being placed in the wrong place, e.g. hat on foot; beaker on floor.*
- *Enjoy participating in the arrangement of objects in lines, under pots, on top of things, in ridiculous places and remember where they are.*

**P3(ii):** Use emerging conventional communication. Greet known people and may initiate interactions and activities. Remember learned responses over increasing periods of time and may anticipate known events. May respond to options and choices with actions or gestures. Actively explore objects and events for more extended periods. Apply potential solutions systematically to problems.

- *With prompt recognise that their coat hangs on a hook.*
- *Use emerging language skills to direct the hiding of objects, e.g. point using finger or eyes.*

## Position and direction

### Pupils working at levels P4 and P5 should:

**P4:** Begin to search for objects that have gone out of sight, hearing or touch, demonstrating the beginning of object permanence.

- Look for toy that adult hides.
- React to sound of drum outside the room.

**P4:** Demonstrate interest in position and the relationship between objects.

- With assistance:
  - place cubes in a straight line;
  - stack bricks.

**P5:** Search intentionally for objects in their usual place.

- Indicate by vocalising, signing, gesture or touching:
  - the milk in the fridge;
  - a book in a drawer;
  - a hat on a child's head;
  - the cupboard next to the book case;
  - a cup on a tray;
  - a drawer under a table top;
  - a hoop in a tunnel.

**P5:** Explore the position of objects.

- Using real objects:
  - line them up behind the biggest one;
  - stack them on top of the biggest one;
  - place them inside/outside a hoop;
  - place them in front of/behind a line;
  - fit as many as possible into a box.

### Pupils working at levels P6 to P8 should:

**P6:** Search for objects not found in their usual place, demonstrating an understanding of object permanence.

- Search for familiar objects which are out of sight:
  - break time beakers;
  - pencils and rulers;
  - counting equipment.

**P6:** Show understanding of words, signs and symbols that describe positions.

- Respond to a request to put or find:
  - a saucer on top of the cup;
  - a shoe inside a bag;
  - a parcel under the wheelchair;
  - a bag behind the chair.

**P7:** Begin to respond to 'forwards' and 'backwards'.

- When playing a board game, understand, 'move forwards two places, move backwards one place'.
- Lean or stretch forwards or backwards on request.
- Walk forwards five paces, e.g. as part of a treasure hunt.
- Recognise whether a vehicle is moving forwards or backwards.

**P7:** Use familiar words to describe position.

- Perform or describe actions such as:
  - put a pen on the table next to the book;
  - put the tallest book at the back of the shelf;
  - put the three smallest beakers on the tray.

#### Beyond level P8 pupils should be taught to:

**R:** Use everyday words to describe position. 

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Reception*, page 27.

**Y1:** Use everyday language to describe position, direction and movement. 

See *The Framework for teaching mathematics from Reception to Year 6, supplement of examples for Y1*, pages 86–88.