Year 1 Assessment: Literacy and Numeracy Checkpoints
Numeracy work samples
Contents

Overview ............................................................................................................. 3

Targeted Prep Indicators .................................................................................... 4

Calculating and estimating .............................................................................. 4
  CE P iii ........................................................................................................... 4
  CE P iii ........................................................................................................... 5
  CE P vi .......................................................................................................... 6
  CE P vi .......................................................................................................... 7
  CE P vi .......................................................................................................... 8

Recognising and using patterns and relationships .................................. 9
  PR P i ........................................................................................................... 9
  PR P i .......................................................................................................... 10

Using spatial reasoning ................................................................................. 11
  SR P i .......................................................................................................... 11
  SR P ii .......................................................................................................... 12

Using measurement ....................................................................................... 13
  M P i ........................................................................................................... 13
  M P i .......................................................................................................... 14
  M P iii .......................................................................................................... 15

Recognising and using patterns and relationships ......................... 23
  PR 1 i .......................................................................................................... 23

Using fractions, decimals, percentages, ratios and rates.................. 24
  FDPR 1 i .................................................................................................... 24

Using spatial reasoning ............................................................................. 25
  SR 1 i .......................................................................................................... 25
  SR 1 i .......................................................................................................... 26
  SR 1 ii .......................................................................................................... 27

Using measurement .................................................................................... 28
  M 1 i .......................................................................................................... 28
  M 1 iv .......................................................................................................... 29

Targeted Year 1 Indicators .......................................................................... 16

Calculating and estimating ...................................................................... 16
  CE 1 iv ........................................................................................................ 16
  CE 1 vi ........................................................................................................ 17
  CE 1 vii ...................................................................................................... 18
  CE 1 vii ...................................................................................................... 19
  CE 1 vii ...................................................................................................... 20
  CE 1 vii ...................................................................................................... 21
  CE 1 x ......................................................................................................... 22
Overview

The purpose of these work samples is to provide teachers with an annotated example of the selected Numeracy Indicators in Year 1 Assessment: Literacy and Numeracy Checkpoints. Evidence has been gathered from children at the beginning of Year 1, using some of the indicators for the end of Prep, and at the end of Year 1, using the indicators for Year 1.

Highlighted text within the indicator shows which part of the indicator is being assessed. Learning experiences should be developed for the entire indicator.
Targeted Prep Indicators

Calculating and estimating

**Context:** Investigation — SOSE

The teacher had shown a small group of children different ways that calendars can be constructed. They had learnt that calendars developed by Indigenous peoples sometimes have the days of the month positioned to create a “snake line”.

The teacher asked the children to order and position whole numbers to 20 on a calendar using 10 (written in red) as a reference point. A centrally placed dish contained discs numbered from 1 to 31. Children took one, two or three numbered discs and positioned the selected number/s using 10 as a reference point. They recorded the number/s in the space/s provided on the calendar and returned the used number disc/s to the dish before selecting other numbered discs for placement.

Each child worked independently on their individual calendar to order and position the numbers they randomly chose from the dish. Cooper continued to complete the numbers in the calendar.

**Analysis of evidence**

Cooper has used 10 as the key reference point to position and order whole numbers to 20 on a calendar. He counted back from 10 to place 7, and forward from 10 to record 11. He placed 2 and 4 by counting on from the first circle.

**Evidence:** Work sample transcript

This evidence shows the assessment in progress.

**Cooper:** Records 11 in the box after 10.

**Teacher:** Why did you put that number there?

**Cooper:** ‘Cause when you count, you go 10, 11. So, 11 goes in this circle.

Cooper continues to record the numbers he selects randomly from the dish, using 10 as the reference point. He puts his finger on 10 and either counts forward or back from 10.

Note: The “snake line” calendar allows children to engage with 10 as the reference point. Calendars with rows of 7 days have the potential to distract children’s thinking away from the reference points.
Order and position whole numbers using 5, 10 and 20 as key reference points

Context: Socio-dramatic negotiated play

The class had set up a delicatessen. As part of the planning process, the children created a number-ticketing system to manage the queue of customers. A number roll was used to give customers a place in the queue and whole-number cards were created and allocated to customers, to support the socio-dramatic play. When making the number roll, the teacher had printed 5 and 10 in place (in red) as reference points. The shopkeepers (Anna and Connor) served the customers (their classmates) and the customers returned their number cards after they were served. The shopkeepers then ordered and positioned the whole numbers onto the roll.

Analysis of evidence

Anna and Connor have ordered whole numbers on a number line.

In addition, when Connor was given numbers between 6 and 10, he was flexible in his use of 5 or 10 as reference points. He consistently counted on from 5 for numbers close to 5 and counted back from 10 for numbers close to 10.

Evidence: Work sample transcript

Note: 5 and 10 were printed on the roll as key reference points.

Teacher: Anna, can you put customer number 6 back on the roll? Use the number 5 to help you work out where to put it.

Anna: Points to the 5 and runs her finger as she counts forward then, says: 6. Here!

Teacher: Connor, put customer number 8 back onto the roll. Use the 10 to help you work out where to put it.

Connor: Points to 10 and counts back, 9, 8. It goes there!

This evidence is an image of the assessment in progress to show how the reference points 5 was used by Anna in the top image and reference point 10 used by Connor in the bottom image. Both children served all customers and ordered and positioned all whole numbers to 10.
### CE P vi

Use strategies to combine, add, take away and find the difference in everyday situations by:

- counting on to identify the quantity of a collection when one, two or three objects are added
- counting back to identify what is left in a collection when one, two or three objects are taken away
- comparing two quantities of single-digit collections and working out the difference
- making number patterns, e.g. the domino pattern, pairs or rows of three
- subitising

### Context: Focused learning and teaching — Investigation

The teacher had read a storybook about a kitchen disaster to the class. At the end, the teacher asked, “I wonder why the recipe went so wrong?”

This prompted the children and the teacher to investigate a series of questions about recipes. As part of this investigation, the class explored recipes together, and viewed and read recipes in cookbooks and online. As a result, the whole class created a class recipe on the computer, using Clip Art and Auto Shapes.

The teacher asked William to independently identify “how many” in collections using the ingredients shown on the class recipe, and “how many” cups and eggs were pasted from Clip Art and Auto Shapes onto the recipe.

### Analysis of evidence

William has identified the small groups of 2, 3 and 4 ingredients without counting (subitising) the amounts.

He counted on when two or three objects were added.

He also used the strategy of ‘partitioning to make to ten’ which is beyond the requirement of this indicator.

Additional assessment will be required to determine if William can demonstrate the rest of the indicator.

### Evidence: Work sample and transcript

**Teacher:** Refers to the class recipe. How many cups of sugar do we need?

**William:** 2.

**Teacher:** How much milk do we need?

**William:** 3 cups.

**Teacher:** How much flour do we need?

**William:** 2 cups.

**Teacher:** How many eggs do we need?

**William:** 4.

**Teacher:** Can you work out many cups and eggs we have pasted onto the recipe altogether?

**William:** Pauses and then points to the recipe. “There’s 2 cups sugar and 2 cups flour that is 4 cups... and 3 cups of milk then that is 7 cups......and 4 eggs. Mmmmm, if I count on to10. 8, 9, 10 that is 3 eggs and there is one more egg.... So that is 11 things. Yes 11”. 
**CE P vi**

**Use strategies to combine, add, take away and find the difference in everyday situations by:**
- counting on to identify the quantity of a collection when one, two or three objects are added
- counting back to identify what is left in a collection when one, two or three objects are taken away
- comparing two quantities of single-digit collections and working out the difference
- making number patterns, e.g. the domino pattern, pairs or rows of three
- subitising

**Context: Outdoor exploratory play**

The children went outdoors for exploratory play. Jessica played at the trough filled with sand. She arranged a collection of shells in a ring on the ‘seashore’ she had created. The teacher used the opportunity to speak individually with Jessica about counting on when one object is combined with the existing collection.

**Analysis of evidence**

Jessica has counted the shells that were in her collection. She counted on to identify the new quantity of 6 and then 7 when one more shell was combined each time.

**Evidence: Transcript**

Teacher: How many shells have you got?
Jessica: Points and counts. 1, 2, 3, 4, 5.
Teacher: Places a shell at the end of the row. And another shell.
Jessica: Keeps counting. 6.
Teacher: How many have are there now?
Jessica: 6.
Teacher: What if I put another one on. How many will be there then?
Jessica: 7.
**Context: Routines and transitions**

The teacher had organised a transition game called *Five currant buns*. Five currant buns (children) stood in a row. The teacher selected Joshua to be the baker and five other children to come along to buy one bun from him and take it away. The class sang the rhyme along with the game: “Five currant buns in the baker’s shop, round and fat with sugar on the top. Along came a boy/girl with a dollar one day, bought a currant bun and took it away”.

As the baker, Joshua worked out the number of currant buns left after each sale, by counting back each time. Joshua was prompted to refer to the number lines on display around the room, if needed.

---

**Analysis of evidence**

Joshua has counted backwards (5–4, 4–3, 3–2, 2–1) during the transition game without recounting the number of buns (children) each time one bun was taken away.

---

**Evidence: Checklist**

```markdown
<table>
<thead>
<tr>
<th>Name</th>
<th>How many</th>
<th>Count on</th>
<th>Count back</th>
</tr>
</thead>
<tbody>
<tr>
<td>Josh</td>
<td>3/02</td>
<td>drive</td>
<td>10/2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Baker shop</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>S → 1</td>
</tr>
<tr>
<td>Emily</td>
<td>3/02</td>
<td>drive</td>
<td>10/2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Baker shop</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>every time</td>
</tr>
<tr>
<td>Alisha</td>
<td>slow</td>
<td>purple</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
```

---

**CE P vi**

**Use strategies** to combine, add, take away and find the difference in everyday situations by:

- counting on to identify the quantity of a collection when one, two or three objects are added
- counting back to identify what is left in a collection when one, two or three objects are taken away
- comparing two quantities of single-digit collections and working out the difference
- making number patterns, e.g. the domino pattern, pairs or rows of three
- subitising
## Recognising and using patterns and relationships

<table>
<thead>
<tr>
<th>PR P i</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create repeating patterns using objects and actions, and separate the repeating parts</td>
</tr>
</tbody>
</table>

### Context: Socio-dramatic play

The children had explored a variety of repeating patterns seen in jewellery pieces available in the dress-up box. A whole class discussion had taken place about these repeating patterns. The class negotiated setting up a jewellery shop and brainstormed the resources they would need.

Anna made a pattern design for her jewellery and recorded it on a large piece of paper. She investigated some of the jewellery explored as a class, before recording her ideas in drawings.

### Analysis of evidence

Anna has created a repeating pattern with circles and rectangles and the colours, brown and yellow. Anna’s ability to separate the repeating part is evident in her description of the pattern design and how that part was repeated over and over to make the jewellery.

### Evidence: Work sample

<table>
<thead>
<tr>
<th>Anna:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draws a design for her bracelet for the jewellery shop.</td>
</tr>
</tbody>
</table>

**Teacher:** Identify the repeated part?

**Anna:** I just used the yellow bead, and the brown straw and repeated them over and over and o-o-o-ver.

This observation forms one part of the evidence collected for this indicator throughout the year. This demonstrates one way a teacher may collect evidence.
**Context:** Routines and transitions

The class had just finished their weekly Health and Physical Education (HPE) lesson and were moving to morning tea. The teacher asked Marcus to create a body pattern (non-locomotor and locomotor pattern) for the other children to copy and perform on the way back to the classroom. Marcus created a three-step pattern and repeated it as the class moved to their room.

**Analysis of evidence**

Marcus created a repeated action pattern with three elements. The repetition of the repeating parts demonstrates his understanding that the pattern continues.

**Evidence: Work sample**

Marcus repeats three elements in his action pattern:
- stretch up
- hand on hip
- jump forward.
Using spatial reasoning

**SR Pi**

**Identify, sort and describe:**
- 3-D objects (cubes, cylinders, spheres and cones) in everyday environments, using straight and curved surfaces and number of faces
- **typical representations of common 2-D shapes** (circles, triangles, rectangles including squares), using straight and curved lines and number of sides
- **non-typical representations** of triangles and rectangles

**Context: Focused learning and teaching — Technology**

The class had been observing shapes in the built environment through a variety of activities. The teacher had been focusing on the properties of shapes and how particular shape properties lend themselves to building construction. For example, shapes with straight edges stack well together and shapes with curved edges have more decorative uses in building.

The children were asked to use shapes with straight and curved lines to design a building. They viewed photographs of familiar environments as stimulus materials. They worked independently on their own sheet of butcher’s paper. Drawing resources such as pencils, crayons and rulers were available for children to select from when designing their buildings.

Through questioning, the teacher focused Emma’s attention on the key properties of the shapes.

**Analysis of evidence**

Emma has identified a 2-D triangle with straight lines and a 2-D circle with curved lines.

She used the geometric shape names “triangle” and “circle”.

Note: More questioning is needed to show evidence of identification of rectangles and squares. It cannot be inferred from this drawing.

**Evidence: Interview transcript/work sample**

Teacher: How did you make the roof?
Emma: I drew a triangle with three straight lines.
Teacher: Why did you use that shape for the roof?
Emma: It has to be straight at the bottom to fit on the roof.

Teacher: Points to the circles on the fence. Tell me about these?
Emma: They’re the round balls. I made them look like circles on the fence.

Teacher: Why did you use that shape?
Emma: They’re curvy.

Teacher: What is this tree?
Emma: A berry tree.

Teacher: How did you make it look like berries?
Emma: I used curved lines.
Context: Outdoor exploratory play — Mathematics

The class had been playing outdoors in the playground. While Jess played on the fort, the teacher took the opportunity to work individually with her, and to gather evidence about Jess’s understanding of her position relative to objects in the playground.

The teacher also asked Jess to give single routine directions using the language identified in the indicator.

Analysis of evidence

Jess has identified her own spatial position relative to the tunnel — “between the tunnel and the ladder” — and slide — “next to the slide” — using positional language.

She followed a single routine direction to move forwards to the fireman's pole.

Jess gave the teacher a single routine direction to follow: “Stand next to ‘x’ the cross game.”

Note: More evidence is required to demonstrate understanding of other positional language.

Evidence: Transcript

<table>
<thead>
<tr>
<th>Teacher: Where are you?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jess: Between the tunnel and the ladder.</td>
</tr>
<tr>
<td>Teacher: Can you move somewhere else and tell me where you are?</td>
</tr>
<tr>
<td>Jess: Moves next to the slide and sits down.</td>
</tr>
<tr>
<td>Teacher: Where are you now?</td>
</tr>
<tr>
<td>Jess: Next to the slide.</td>
</tr>
<tr>
<td>Teacher: Can you move forwards to the fireman's pole?</td>
</tr>
<tr>
<td>Jess: Runs forwards and leans on the pole.</td>
</tr>
<tr>
<td>Teacher: Great, let's take turns. Can you tell me where to stand?</td>
</tr>
<tr>
<td>Jess: Points to noughts and crosses game. Stand next to ‘x’ the cross game.</td>
</tr>
<tr>
<td>Teacher: Moves to the location. Am I next to the ‘x’ on the cross game?</td>
</tr>
<tr>
<td>Jess: Yes.</td>
</tr>
</tbody>
</table>
Using measurement

**MPi**

**Use direct and indirect comparison and describe the relationship between different attributes using comparative language, e.g. longer/shorter, bigger/smaller, holds more/less, heavier/lighter**

**Context:** Exploratory play

Andrew and John had been cooperatively building in the block area. As they played, they had used comparative terms to describe lengths of blocks they needed in the joint construction project.

Andrew was holding a long block and had placed it beside the space to directly compare the lengths. He asked John for a shorter block to fit into a space. “We need a shorter block to fit in here,” Andrew said as he pointed to the space in the construction, showing the comparison of lengths.

John glanced at the space and compared the blocks available. “Not a long one,” John said. “We need a shorter one.”

John put two blocks side by side and selected the shorter block.

**Analysis of evidence**

John has directly compared the lengths of the blocks to determine which one was the length he required. He used comparative terms “shorter” and “longer” when directly comparing length.

Note: More evidence is required to demonstrate understanding of other comparative terms in the indicator, e.g. holds more/holds less.

**Evidence:** Teacher’s anecdotal observations from the daily plan

Note: This observation forms one small part of a range of evidence collected by the teacher around this indicator throughout the year. This demonstrates one way a teacher may record evidence.
**Context: Routines and transitions**

The whole class was playing a game called *Pass the bag* before going to lunch. Each child worked individually when it was their turn. Each child selected two objects from the bag, then described to the class the similarities and differences observed and felt. The children had learnt how to heft to feel and compare mass in previous learning and teaching experiences.

Isabella selected a rose quartz paperweight and a rectangular, blue, interlocking block. She hefted the two objects before commenting on the differences in the mass of the two objects.

**Analysis of evidence**

Isabella has used the comparative terms “heavier” and “lighter” when hefting mass. She used the terms when directly comparing the mass of two objects.

Note: More evidence is required to demonstrate understanding of other comparative terms in the indicator, e.g. holds more/holds less.

**Evidence: Partial transcript**

Isabella: This is pink (*hefts the paperweight*); this one’s blue (*hefts the block*). It’s got bumps (*block*) and it’s smooth (*paperweight*). This is heavier (*paperweight*); lighter (*holds up the block*).
**Context:** Focused learning and teaching and Routines and transitions

The class started to develop a visual timetable (using photographs) to show their daily routine and specialist lessons for relief teachers and other school staff.

Georgia and Callum responded individually to the teacher's questions about their daily routines.

**Analysis of evidence**

Georgia and Callum have described aspects of their daily school routine in sequence.

**Evidence:** Transcript

**Teacher:** *Asks both children the same initial question individually.* On our timetable we have to show what happens at school from the time we get here in the morning to when we leave in the afternoon. What kinds of things do we need to put on our timetable?

**Georgia:** When we come, we have a play and stuff and then we read a book and … it’s first break and then we do some stuff. Then it’s second break – that’s lunch and then we come in for a bit and then it’s home time.

**Teacher:** When do we have HPE?

**Georgia:** After first break.

**Callum:** We get to school and we do puzzles till mat time. Then we mark the roll and have a talk. Then we go and play.

**Teacher:** What happens next?

**Callum:** Well, we have morning tea and then it’s groups and then it’s lunch.

**Teacher:** When do we have music and HPE?

**Callum:** I think music is after play.

**Teacher:** What about HPE?

**Callum:** HPE is after library with Mrs Tingle.

**Teacher:** What’s your favourite time of the day?

**Callum:** Home time at the end when Mum picks me up.
## Targeted Year 1 Indicators

### Calculating and estimating

<table>
<thead>
<tr>
<th>CE 1 iv</th>
<th><strong>Identify and compare the quantity of whole numbers to at least 100, partitioning using place value (groups of 10)</strong></th>
</tr>
</thead>
</table>

**Context:** Investigation — English

The teacher had read and discussed a story with the class that involved identifying and comparing quantities of whole numbers to at least 100. The story was *One is a Snail, Ten is a Crab — a counting by feet book* (by April Pulley Sayre and Jeff Sayre).

After the discussion, the teacher asked a small group of children to investigate the construction of whole numbers using a range of the plastic animals provided. A small group was necessary because of the resources available to support the text.

The children were asked to construct numbers using combinations of toy animals’ legs or “feet”: 1 — snail, 2 — plastic people or standing birds, 4 — jungle animals or farm animals, 5 — starfish, 6 — insects, 8 — spiders or octopus, and 10 — crab (including counting the nippers as suggested by the text).

The children worked individually within the small group and were encouraged to choose the numbers they would construct. They referred to the 100 board as required.

**Analysis of evidence**

Declan has recorded the partition using a number sentence and made reference to a group of ten. Olivia has recorded the whole number 30. She used—2 tens (20 crab legs) and double five (10 starfish legs) to make 30. She identified groups of ten in her description of the number sentence.

**Evidence:** Observation

This evidence shows assessment in progress.

Declan selects the animals to make 20 legs and records partitions as 10 + 5 + 5. He used one group of ten and double five to make twenty.

Olivia selects the animals to make 30 legs and records the partitions. The teacher asks her to explain the partitioning and it was clear that the crabs represent 10 and the starfish represent 5. She proceeds to record the number sentence. She used her knowledge of groups of ten to make thirty: 2 groups of tens and double five is thirty legs, she said.

Work out basic facts and explain the mental strategies and processes used to combine, add, take away and find the difference in everyday situations by:
- counting on
- counting back
- partitioning, including place value, and rearranging parts

Children in a small group were working individually with coloured picture cards. Each child had chosen a different number of cards representing a collection of their favourite fruit. The teacher asked each child to share half of their fruit with a friend who had different fruit. Each child then had 2 different types of fruit. This provided an opportunity for each child to combine the fruits and work out the total.

The teacher asked each child to work out how many pieces of fruit they had in total when they were given half of a friend’s collection.

Heath answered the teacher’s questions about working out the difference between the 2 fruit collections and what would be left if 1 piece of fruit was eaten or given (taken) away.

Heath has combined the fruits (visuals) to determine the total required for this everyday situation. The half piece of fruit did not cause any hesitation or difficulty for him. He simply looked at the combined collection and said the answer.

He used a matching strategy to work out the difference, which showed understanding of comparing the groups.

When asked to solve the take away problem, Heath indicated that he was confident by saying “easy”, and offered a second part/part/total description using taking away language.

After the children have shared half of their collection with their friend, the teacher engages the children in the following discussion.

**Teacher:** How many fruit do you have now?
**Heath:** Looks at the fruit.
5. See? 2 oranges and 3 apples. 5.
**Teacher:** What is the difference between the number of apples you have and the number of oranges you have?
**Heath:** Matches 1 apple to 1 orange, then repeats this action. 1 apple, and oops, there’s another apple. I think the answer is 1. Is that right?
**Teacher:** What would you have left if you gave me all your apples?
**Heath:** The bit of apple as well?
**Teacher:** Yes.
**Heath:** Easy! 2 oranges. And if you took all my oranges I would have 3 apples left. This is fun!
**CE 1 vi**

**Context:** Focused teaching — SOSE

As a class, the children had been talking about things they liked, had collected or owned. They sorted through and selected a collection of picture cards that best matched their ideas. Each card pictured one object in groups up to 5. The children worked in small groups. The picture cards were placed in a pile in the centre of a small circle. The teacher also placed a set of numeral cards beside the pile of picture cards. The children were asked to take their favourite picture card and a number card. They were asked to work out how many they would have if they were given more (determined by the number card) of the same object (depicted by the picture card). When the children had worked out the answer, they were encouraged to replace those cards on the piles and to select another pair of cards. Each child worked independently within the small group, as no two combinations of cards were the same.

Children asked if they could represent their working using a ten frame. The children were told that they would be asked to explain how they worked out the answer. Jay answers the teacher’s questions to explain his thinking.

### Analysis of evidence

Jay has concretely represented two groups that matched the picture and symbol cards and determined a total. He explained his thinking (mental strategies when counting on, counting back, take away, finding the difference) when working out the basic number fact to match.

He explained the mental strategies he used to work out solutions to difference and take away problems. He demonstrated evidence of checking his answer by saying there was one space left on the ten frame.

### Evidence: Observation and interview

**Jay:**  
*Picks up a card with 5 leaves and a numeral card with 4. (He needs to explain how he would calculate the solution.)*

**Teacher:** How did you work it out?

**Jay:**  
*I like collecting coloured leaves. I have 5. Holds up the number card. 4 is 1 less than 5. I doubled 5 then took 1 away and that makes 9. Checks the solution using the 10 frame and responds. There is 1 space left on the ten frame. That’s 9.*

**Teacher:** Tell me, what is the difference between the number of blocks you have on the ten frame and the number of discs?

**Jay:** 1.

**Teacher:** How did you work that out?

**Jay:** I know 5 is one more than 4, so it’s 1.

**Teacher:** If I took all the discs away, how many blocks would be left on the ten frame?

**Jay:** There would be 5 blocks. They are really leaves, you know. I just took them off in my mind.
**Context: Play — Mathematics**

The class had been discussing strategies to use when adding and taking away. A small group of children sat round a dish containing six domino dice (two dice joined like a domino with different combinations of numbers on each face). Each child selected a die and worked independently, rolling the dice and creating adding and taking away stories. The children asked if they could record the number fact sentences. The children were encouraged to roll the dice again and create a different story. They were asked to replace the dice in the dish and select a different die to create number stories. The teacher challenged Madison to make taking away stories using the numbers she had rolled. These were not recorded by Madison.

**Analysis of evidence**

Madison has created adding stories. She represented them as number sentences. When prompted, she was able to demonstrate the adding story using actions. Madison created a taking away story and realised that she would have fewer apples than the teacher. She spontaneously created a difference problem to explain her thinking.

**Evidence: Observation and interview**

| Madison: | Rolls the die and chooses to record the adding stories using number fact sentences. She also chooses not to use drawings. |
| Teacher: | Asks her to show the adding story using actions. |
| Madison: | Claps her hands 6 times and then stomps her feet 4 times. I think that’s 10 actions. Refers to the written representation. Yes, 10. |
| Teacher: | Tell me a story about 6 take away 4? |
| Madison: | I had 6 apples and I gave you 4 to eat. There’s only 2 left for me then. Oh! |
| Teacher: | What’s wrong? |
| Madison: | You will have 2 more apples than me then. Mmmm! |
CE 1 vii

Create, solve and sort problems and visual images of problems involving:
- addition and subtraction using single-digit whole numbers in number expressions represented as drawings or actions, e.g. 2 jumps and 3 claps makes 5 actions
- inverse relationship between addition and subtraction
- arrays, groups and rows represented using materials and drawings for single- and two-digit numbers, e.g. 2 groups of 3 lily pads is equal to 6 lily pads, 6 lily pads can be shared by the pond life into groups of 2 or 3

Context: Investigation — The Arts

The class had been investigating different arrangements of objects and toys. The teacher told the children that their toy car arrangements would be used on a poster display for a car carnival the school was planning.

The teacher gave the children toy cars to arrange in rows and groups, and asked them to make different representations of the same number by changing the number in each row and the number of rows. The children selected a number up to 20. The teacher took photographs to help the children remember the arrangements they had made previously.

Each child worked independently to make their rows of cars. Elliott changed the arrangement of rows for 8 cars.

Analysis of evidence

Elliott has identified the number of rows and the number in each row in both arrangements.

Evidence: Partial transcript

This evidence shows the activity in progress. The final poster display for the car carnival at school is not in this evidence.

Elliott: I have 2 rows with 4 cars in each row and I can change it to 4 rows with 2 cars in each row. The number of cars stays the same. I still see 8 cars.

Teacher: Which way will you draw the cars on your poster for the car carnival?

Elliott: It is the same number, just different rows of cars with different numbers in the rows. I think my poster will have 2 groups of 4 cars. Then the cars will keep driving across my poster.

Note: Other objects could be used, depending on available resources, interests of the children or events that may be occurring in the school.
CE 1 vii

Create, solve and sort problems and visual images of problems involving:
- addition and subtraction using single-digit whole numbers in number expressions represented as drawings or actions, e.g. 2 jumps and 3 claps makes 5 actions
- inverse relationship between addition and subtraction
- arrays, groups and rows represented using materials and drawings for single- and two-digit numbers, e.g. 2 groups of 3 lily pads is equal to 6 lily pads, 6 lily pads can be shared by the pond life into groups of 2 or 3

Context: Focused teaching — HPE

The class had put a healthy eating plan into action. The teacher asked the children to use their own healthy lunches to represent situations involving groups of fruit, drinks or sandwiches.
The teacher gave out blank cards to guide the children’s thinking about groups and combining groups. Each child found a figurine to represent themself and placed this next to their card. This helped the children to identify their own fruit when it was placed on the card. Plums were in season and there was an opportunity to explore 2 groups of 2. Rebekah and Lily worked collaboratively with their fruit because they each had 2 plums.

Analysis of evidence
Rebekah and Lily have created and represented groups using the fruit from their lunch boxes. Rebekah and Lily’s explanations show they were thinking in groups. Rebekah also made connections to doubles facts. Lily was following Rebekah’s reasoning when she agreed. She showed her understanding of groups when she shared the 4 plums into 2 groups: 1 group for her and 1 group for Rebekah. They also checked that each group had the same number of plums.

Evidence: Transcript

Rebekah: I have a group of plums. There’s 2 in my group. Places plums on the card on the left. I’ll put them here.

Lily: I have a group of 2 plums too. I’ll put mine on this card.

Teacher: Can you combine the 2 groups of 2 plums and tell me the story about the groups?

Rebekah: Well. It’s like this. My group of 2 plums and Lily’s group of 2 plums makes 4 plums. That’s double 2.

Lily: Yeah! 2 groups of 2 plums make 4 plums in one big group. Points to the plums on the long card. There! And then if we share the plums back to me and Rebekah for lunch, I get 2 and Rebekah gets 2 — 2 groups of 2 plums.

Rebekah: Points to the 2 plums in each group to check Lily’s reasoning.
**Context: Role play — English**

The class was engaged in their regular show-and-tell activity. Lizzy had been talking about how she sorted the money in the piggy bank. The teacher saw an opportunity to assess the children’s understanding of the value of Australian coins and notes.

<table>
<thead>
<tr>
<th>Analysis of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lizzy ordered Australian coins and notes. She knew the difference between the different coins and notes. She included the one and two dollar coins with the notes when sequencing the value of notes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Evidence: Transcript</th>
</tr>
</thead>
</table>
| **Teacher:** Here is a handful of coins. Can you put your coins and notes in order of value? You can use the 100 board to check your thinking.  
**Lizzy:** Lizzy sorted through and found 5 c, 10c, then 20c, then 50c and stopped that row. She found $1, 2$ then $5, $10, $20, $50 and $100 and placed them in a new row in order of their value.  
**Teacher:** Tell me what you have done.  
**Lizzy:** Well, these are all the cents and they start at the 5c and go up to 50c. These (pointing to the dollars) are all the dollars and they are like the cents but they are dollars. Some dollars are coins and some are notes they start at $1 and go all the way to $100 which is the last note. |
## Recognising and using patterns and relationships

### PR 1 i

**Context:** Socio-dramatic play — SOSE

The children were working in a small group designing decorative and ceremonial necklaces. They had been investigating different cultural designs and were asked to create their own necklace design with a pattern that was increasing and then decreasing. The children were asked to create a rule for the pattern and use materials from within the classroom. They were asked to ensure that there were a number of repeats of the increasing pattern before decreasing the pattern.

Angela and Heath worked on developing a rule together. They used different materials to represent the same rule when constructing their necklaces. They asked if they could draw their increasing and decreasing patterns.

### Analysis of evidence

Angela and Heath have worked collaboratively to create the same rule, and used different materials to demonstrate their understanding of an increasing and decreasing pattern.

Angela and Heath also represented the rule with a drawing. Each child described the rule in words as they checked their drawings for accuracy.

Heath was able to maintain the rule for his pattern using different shapes in his drawing.

Note: More evidence is required to demonstrate using skip counting.

### Evidence: Work sample and transcript

**Teacher:** Think of a rule to make a pattern for a necklace. Use any materials and a shoelace to make the pattern into a necklace. The pattern has to be increasing to the middle of the necklace and then decreasing on the other side — just like the ones we looked at from different cultures. You can use any materials to try out your pattern. Tell me about your increasing and then decreasing pattern.

**Angela:** 1 red one, 1 orange one, 1 red one, 2 orange ones, 1 red one, 3 orange ones, then 1 red one and 2 orange ones, 1 red one and 1 orange one and 1 red one.

**Teacher:** How did you work out when to start decreasing your pattern?

**Angela:** *Puts the pattern against her neck.* Work out the middle and then start making the pattern go backwards. I went like this. That's decreasing isn't it? It makes it look like a real necklace, hey!

**Heath:** *Uses the purple and yellow beads to make his increasing and decreasing pattern.* He describes his pattern using words. He thinks drawing the 3D shapes would be difficult so asks if he can use different shapes to represent the increasing and decreasing pattern. He changes the cubes to circles when drawing his necklace.
Using fractions, decimals, percentages, ratios and rates

FDPR 1 i

| Identify and describe a half as either of the two equal parts of collections or lengths |

Context: Investigation — HPE

The class had been discussing healthy eating plans suggested by the CSIRO. As a whole group, they gathered data on their favourite fruits and vegetables. The teacher used this information to make resources for this assessment — coloured picture cards of fruits and vegetables for each small group. One small group worked with the fruit cards. Multiples of apple, pear, banana and orange cards were placed in separate dishes in the centre of the group. Children in the fruit group were asked to select their favourite fruit and say how many (up to 20) they would like to eat each week as part of their healthy diet. Odd and even numbers were used. They took the nominated number of that fruit from the relevant basket. Any number was accepted to ensure that each child worked individually on the assessment within the group. Sufficient cards were provided to allow for this.

The teacher asked, “Can you work out half of your fruit? You will share half of your fruit with a friend.” The children started to move the cards in different ways to make half of their collection. One child, (Abby) responded to making half of a collection of 7 apples.

Analysis of evidence

Abby has shown half as one of two equal parts of her collection of fruit.
She demonstrated how one piece of fruit could be cut into two equal parts to show understandings of half of a “whole”.

Evidence: Transcript

<table>
<thead>
<tr>
<th>Abby:</th>
<th>Teacher:</th>
<th>Abby:</th>
<th>Teacher:</th>
<th>Abby:</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like apples. I want 7 apples.</td>
<td>OK, take 7 apples from the apple basket. Work out what half of your collection is so you can share your fruit with a friend.</td>
<td>OK.</td>
<td>What can you do to make it half?</td>
<td>If I get scissors I could cut this apple. I’ll put one bit there and the other bit there. Then I would have half. Abby used a pair of scissors to cut the apple in half.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Abby gives half of her apples to a friend.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Note: Fresh fruit could be substituted, if preferred.</td>
</tr>
</tbody>
</table>
Using spatial reasoning

**Context:** Routines and transitions — Mathematics

The class had been using the blocks. During tidy up time, the teacher asked the children to pack the blocks into different storage containers. The teacher saw an opportunity for the children to identify the properties of the 3-D blocks. Cardboard boxes of various sizes were used to encourage different thinking about ways of packing the boxes. The children were asked to make sure that the blocks were tightly packed.

While the children tidied the blocks, the teacher engaged in conversation about the number of faces, corners and edges of the 3-D shapes. The teacher asked the children to describe the properties of 3D shapes.

**Analysis of evidence**

Cooper has used reasoning and mathematical language to describe his packing of 3-D prisms.

Cooper identified the number of faces, corners (vertices) and edges of the cube.

Note: More evidence is required to determine understanding of other 3-D shapes (pyramids) and 2D shapes embedded in the everyday environment.

**Evidence:** Interview transcript/work sample

**Teacher:** When you pack the blocks, tell me how you are using the faces and corners of the shapes so there will be no spaces in your box.

**Cooper:** The face of this rectangular prism matches these 2 faces of the cube. The corners go together and there’s no space left there.

**Teacher:** How many faces are on the cube?

**Cooper:** 6.

**Teacher:** How many corners?

**Cooper:** Counts them. 8.

**Teacher:** How many edges can you count?

**Cooper:** Counts them. 12 edges.
Classify 3-D objects (pyramids, prisms) using geometric properties, e.g. number of faces, vertices (corners) and edges.

Classification of 2-D shapes embedded in everyday environments using geometric properties

**Context:** Focused teaching — SOSE

The class had been discussing the built environment. The teacher provided the class with photographs of 3-D buildings, signs and objects found in built environments. The teacher asked the children to identify 2-D representations of triangles and rectangles including squares in the photographs provided.

Each child worked independently on a different photograph, tracing around shapes they found embedded in the environment.

Next, the teacher gave the children a second set of photographs that included images of rubbish bins, abstract sculptures, construction sites and safety barriers. Children were then asked to identify common 3D shapes within the built environments.

Mercedes, Bailey and Ty showed their understanding of 2-D representations of triangles and rectangles including squares.

**Analysis of evidence**

Mercedes has identified a variety of triangles and identified a square by putting two triangles together.

Bailey has identified a variety of triangles and saw rectangles in two different parts of his photograph.

Ty identified rectangles and squares and created triangles by inserting a diagonal line into one of the rectangles.

Note: More evidence is required to determine Bailey’s and Ty’s understanding of 3-D shapes.

**Evidence:** Work sample and transcript

**Teacher:** Trace around all the triangles or rectangles and squares you can find in your picture. Tell me the shapes you are tracing around.

**Mercedes:** Triangles and some squares. Two triangles can go together to make a square.

**Bailey:** Triangles and rectangles. This red sign is a rectangle. So are the marks on the road. See they have either 3 straight sides or 4 straight sides. The triangle has 3 vertices and the rectangle has 4 corners.

**Ty:** I have rectangles and squares on the bin. I don’t have triangles, but if I draw a line from this corner to that corner, I can make 2 triangles with 3 sides inside a rectangle, that has 4 sides.

Note: Similar photographs could be taken within the school’s built environment, if preferred.
Use positional language to describe:
- the position of an object in two different ways
- two different pathways to get to a familiar location

**Context:** Routines and transitions — English

The children were planning to be school guides during visitors’ day. They had planned to direct visitors from their classroom to key locations within the school: oval, tuckshop, library, and lunch area. These locations were written on cards and placed into a dish.

The teacher asked the class to think of directions to the various locations. They worked in pairs. One child selected a location, thought about the directions and told a friend. The friend listened to the directions and imagined how to get to the location and provided feedback on whether they thought the visitor would get lost or not.

Next, the teacher asked the class to think of a different pathway for the visitor to return to the classroom. The children took turns giving and receiving directions. The teacher listened to the directions and focused on the quality of the directional language used by the children to describe how to get to the various locations.

Alisha practised giving directions from the classroom to the oval.

**Analysis of evidence**

Alisha has described two pathways to get to the oval using positional language, such as “down”, “straight on”, “left”, “at”, “through”, “along”, “near”, “around”, and “between”.

She described the position of objects along the way using positional language, such as “at the gate”, “near the building”.

**Evidence:** Partial transcript

**Teacher:** Tell me how to get to the oval from our classroom.

**Alisha:** You walk down the stairs. Keep going and there’s more stairs. Then you go down, straight on, then you turn left. Then you just … pauses … There’s these orange things at the gate. Go through them and you are at the oval. Hands spread out with excitement.

**Teacher:** Tell me how to come back to the classroom a different way. Start at the oval.

**Alisha:** Come back the way you came. No! Go through the fence. Then go along the grass near the building. You might get into trouble, but if you go up there, my classroom is the last one. Just go around the end of the building or between the buildings.
Using measurement

**M 1 i**

Measure and compare, with and without the use of digital technologies:
- lengths, using multiple repeats of uniform informal units and attending to gaps and overlaps
- capacities of pairs of objects, using uniform informal units

**Context: Routines and transitions — Science**

The class had been investigating the needs, features and functions of a range of animals using non-fiction texts, audiovisual materials and toy animals. The toy animal features were in the same proportions as in the real animals. This routine game asked the children to individually examine a selected pair of either the same type of animal (one large and one small animal) or a pair of different animals from the same family (e.g. dinosaurs). They confirm their judgment about the lengths using their paper clips before leaving the group.

Each child was invited to choose a pair of animals from the display on the mat and to measure and compare pairs of animals using paper clips to measure the animals. The teacher assessed the child’s ability to measure the animals without gaps or overlaps.

**Analysis of evidence**

Heath described how he measured using uniform informal units. He also said his conclusions after comparing the measurements.

**Evidence: Transcript**

The evidence in this transcript shows one part of Heath’s action.

**Heath:** I have two dinosaurs. The orange one is longer than the pink one.

**Teacher:** Tell me why you think that!

**Heath:** Well! I measured both of them with the paper clips. This orange one was 3 paper clips long and the pink one was 2 paper clips long. So the orange one is longer!

**Teacher:** I watched you when you were measuring and you lined up the paper clips, one touching the end of the other.

**Heath:** Yeah! That’s how you measure. Just touch the end of each paper clip.
### Context: Investigation — SOSE

The class had been discussing the passage of time through their lives to assist their understanding of history. The teacher asked the children to independently select things they are involved in and work out whether they last for hours, days or weeks.

### Analysis of evidence

Taylor has worked out durations using hours and days. She worked out how long she was at school each day using her own way of counting the hours. She knew the start, lunch and finish o'clock times. She also worked out the number of days she came to school by chanting the sequence of days in the week. She did not include Saturday and Sunday showing that she understood the duration of days that she spent at school each week.

### Evidence: Partial transcript

**Teacher:** Think about the things you do every day and how long you do them for.

**Taylor:** I spend from 9 o'clock, 10 o'clock, 11 o'clock to 12 o'clock in school until lunch break (She was counting the hours on her fingers). That’s 3 hours. After lunch it is 1 o’clock, then 2 o’clock, then 3 o’clock and I can go home and play. That’s 2 hours. Now that is 3 hours and 2 more hours, that is 5 hours I am at school.

**Teacher:** Think about the days of the week that you come to school.

**Taylor:** I come to school every day in the week. Monday, Tuesday, Wednesday Thursday and Friday. That’s 5 days. So I spend 5 hours every day and 5 days every week at school.

Note: Additional evidence will need to be gathered to check understandings of months, and weeks.