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Task 1 • Packing lollies

**TASK 1**

**(Y2)**

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# Task overview

Students learn that making groups helps us to keep track of the count and facilitates efficient counting strategies.

## Learning Goals

A collection of ones can be grouped together to form a unit.

## Resources

**Whole class:**

* **Lolly Shop PowerPoint**

**Each group:**

* A large quantity of Unifix or interlocking cubes (ideally 2cm). Each group of 2-3 students needs at least 120 cubes.

**Each student:**

* **Packing lollies Student sheet**

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| Task phase | Estimated time | Task type |
| **Launch | How many lollies?** | 5 minutes | Whole class |
| **Explore | Organising lollies** | 20 minutes | Small group and individual |
| **Explore | Gallery Walk** | 10 minutes | Individual |
| **Connect | Class discussion** | 10 minutes | Whole class |
| **Summarise | Using groups** | 5 minutes | Whole class |

# Teach this task

## Launch | How many lollies?

Use **Lolly Shop PowerPoint** to establish the context of Ms Fizz and her Lolly Shop:

*Ms Fizz owns a very popular lolly shop. She sells lots of different lollies. Sometimes there are so many lollies in her shop it is hard to keep track of them all.*

*Ms Fizz needs to organise her lollies to make it easier to work out how many there are altogether. She needs our help!*

Explain to the students that they will be provided with interlocking cubes representing the lollies in Ms Fizz's shop.

**Pose the task:** *Organise your lollies so that it is easy to work out how many there are. How many lollies do you have altogether?*

## Explore | Organising lollies

Provide groups of 2-3 students with a large quantity of Unifix or interlocking cubes (at least 120 cubes). Allow students time to organise and count their collection of lollies in any way they choose.

Provide students with **Packing lollies Student sheet** and ask them to create a diagram of how they organised and counted their collection.

### Noticing students’ thinking

**Ask students:** *Can you explain how you’ve organised your lollies? How does this strategy help you work out how many lollies you have?*

* **Not equal sized groups or using ones:** Students may recognise that groups are helpful but use groups that are not equal in size. These students will likely count the total in ones. Prompt students to think about how they might make counting easier using groups.
* **Creating equal-sized groups:** Students may stack the cubes in small groups, such as twos or fives.
	+ Do students count the cubes, or do they use measurement to ensure that the same number of cubes are in each stack? The more cubes that are in a stack the more likely it is that students measure using direct comparison. Ask students why measuring is helpful in this context.
	+ Do the students skip count the groups to find the total, or do they determine the total by counting in ones (not utilising the group structure)? Prompt students’ inquiry by asking them to think about how the group structure can support efficient counting.
* **Groups of 10:** Students may group in tens. Ask students to consider whether tens are the most helpful way to group. Are tens more or less helpful than twos or fives? Why?

## Explore | Gallery Walk

Ask students to display their student sheet next to their cubes in preparation for a [gallery walk](https://resolve.edu.au/pedagogical-tools/learning-community-tools/learning-each-other?utm_source=docx&utm_medium=task_1&utm_campaign=lolly_shop).

Review the task that was posed and ask students to think about what they expect to see as they complete the gallery walk. Ask students to consider the following questions as they look at others’ work:

* *What do you notice that is the same? What do you notice that is different?*
* *How many lollies are in each collection? Which strategy/strategies do you find most helpful for working out the total in the collection? Why?*

Conduct the class gallery walk. At the end of the class gallery walk, allow students time to read and reflect on any post-it notes left on their work. They may rearrange their cubes if they would like to. Ask students to record any changes they make on their student sheet.

## Connect | Class discussion

Ask students to reflect on the gallery walk and the different strategies they saw.

**Discuss:**

* *What do you notice that is the same? What do you notice that is different?*
	+ Similarity may be evident in the use of equal-sized groups. Difference may be seen in the size of these groups. There will also be difference in the number of groups that were made and the total in each collection.
* *How many lollies are in each collection? Which strategy/strategies do you find most helpful for working out the total in the collection? Why?*
	+ Equal-sized groups can be used as a counting unit. This is an efficient way to count large collections.

## Summarise | Using groups

Ask students for any advice they have for Ms Fizz on how she might organise her lollies. Discuss that some ways of counting are easier than others. For example, it is easier to count a large quantity by fives rather than by threes. The power of ten may emerge in this discussion.

**Explain**: *We can group a collection of ones together to create a new unit. This unit can then be used for counting.*

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**(Y2)**

 Task 2 • Rolls and boxes

**Task 2**

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# Task overview

Students learn to group ones to make tens and group tens to make hundreds, and develop the idea of “10 of these is 1 of those”.

## Learning Goals

10 of these is one of those:

* 10 ones are a unit of 1 ten
* 10 tens are a unit of 1 hundred

## Resources

**Whole class:**

* **Lolly Shop PowerPoint**

**Each group:**

* A large quantity of Unifix or interlocking cubes (ideally 2cm). Each group of 2-3 students needs at least 120 cubes.

**Each student:**

* **Rolls and boxes Student sheet**

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| Task phase | Estimated time | Task type |
| **Launch | Rolls and boxes** | 15 minutes | Whole class |
| **Explore | Packing rolls and boxes** | 35 minutes | Small group and individual |
| **Connect | Class discussion** | 40 minutes | Whole class |
| **Summarise | Hundreds, tens and ones** | 10 minutes | Whole class |

# Teach this task

## Launch | Rolls and boxes

**Revise**: *In the last task we learnt that we can group a collection of ones together to create a new unit. This unit can then be used for counting. I wonder how Ms Fizz groups when she is counting?*

Use **Lolly Shop PowerPoint** to continue the story of Ms Fizz’s Lolly Shop:

*Ms Fizz decides to use units of 10 to organise the lollies in her shop. She creates rolls of 10 lollies. She then puts 10 rolls of 10 lollies into a box.*

*Ms Fizz has a special record chart. When she has finished packing all the lollies, she records on her chart the number of full boxes, the number of extra rolls not in boxes, and then the number of loose lollies that are not in rolls. She then records the total number of lollies in her collection.*

**Pose the task:** *Pack your lollies into rolls and boxes to go into Ms Fizz’s Lolly Shop. When you finish packing your lollies, record the number of boxes, rolls, and loose lollies you have, and the total number of lollies.*

## Explore | Packing rolls and boxes

Provide groups of 2-3 students with a large quantity of Unifix or interlocking cubes (at least 120 cubes). Ask students to create rolls of 10 lollies by stacking 10 Unifix cubes and then create a box by grouping 10 stacks of cubes.

Provide students with **Rolls and boxes Student sheet**, which shows Ms Fizz’s Record Chart. Ask students to create a diagram of their lollies in rolls and boxes and to record their results on their student sheet.

### Questioning to prompt student thinking

* *How did you organise your count in the previous task (Task 1)? How was your previous strategy similar to organising the lollies like Ms Fizz? How was your previous strategy different? Which do you prefer and why?*
	+ It is likely that both strategies involved equal-sized groups. The size of the group may have differed.

### Noticing students’ thinking

**Ask students:** *How many lollies do you have in your collection? How do you know?*

Take note of how the students determine the total in their collection. Do they:

* **Make tens but count in ones:** If students count in ones, ask them to consider how the rolls and boxes might help them determine the total in the collection.
* **Use the groups of tens and hundreds to count:** Students trust the group structure and use it to facilitate efficient counting. You might ask students how many lollies there would be if another 5 rolls were added to their collection.
* **Use the groups of tens and hundreds to name the number:** Students recognise the place value pattern that emerges when making tens and hundreds. This is investigated in the next phase of the task. Again, you might ask students how many lollies there would be if another 5 rolls were added to their collection.

## Connect | Class discussion

Focus this Connect phase on the fact that 10 ones are equal to a unit of 1 ten and that 10 tens are equal to a unit of 1 hundred. These powerful ideas help us understand structure of two- and three-digit numbers.

Create a class version of Ms Fizz's Record Chart (you can use the slide provided in the **Lolly Shop PowerPoint**). Record data on how many boxes, rolls and loose lollies students had in their collection, and the total number of lollies in their collection. Don’t correct errors at this stage.

### Ms Fizz’s Record Chart

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| --- | --- | --- | --- |
| Total number of lollies | Boxes | Rolls | Loose lollies |
| 178 | 1 | 7 | 8 |
| 235 | 2 | 3 | 5 |
| 308 | 3 | 0 | 8 |
| 146 | 1 | 4 | 6 |

**Discuss:** *What do you notice about the data that we have collected for Ms Fizz?* Students may notice that the number of boxes, rolls and loose lollies are represented by each digit in the total number of lollies.

**Pose the question:** *Will this pattern always occur?*

Invite students to explore these patterns using different collections of cubes. This further exploration time is also a chance to revisit any incorrect counts. Students should continue to record their results on their student sheet.

## Summarise | Hundreds, tens and, ones

Gather students together again and add the new data to the class chart. Look at how the pattern continues, regardless of the numbers that are used.

**Explain**: *Three-digit numbers are made up of hundreds, tens, and ones. We group 10 ones together to make 1 ten, and 10 tens together to make 1 hundred.*

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**(Y2)**

 Task 3 • Filling boxes

**Task 3**

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# Task overview

Students play a simple game to build their understanding of “10 of these is equal to 1 of those”.

## Learning Goals

10 of these is one of those:

* 10 ones are a unit of 1 ten
* 10 tens are a unit of 1 hundred

## Resources

**Whole class:**

* **Lolly Shop PowerPoint**

**Each group:**

* 2 dice
* A large quantity of cubes

**Each student:**

* **Filling Boxes gameboard** printed onto A3 paper or card

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| Task phase | Estimated time | Task type |
| **Build | Filling Boxes** | 50 minutes | Pairs and small groups  |

# Teach this task

## Build | Filling Boxes

**Revise**: *In the previous task we learnt that three-digit numbers are made up of hundreds, tens, and ones. We group 10 ones together to make 1 ten, and 10 tens together to make 1 hundred.*

Explain to students that they will be playing a game to build this understanding. Show students how to play **Filling Boxes** in pairs:

1. Students take turns rolling two dice, adding together the numbers shown and collecting that many lollies (cubes). They place their lollies in the "Loose lollies" column of their gameboard.
2. When a student has 10 lollies in their "Loose lollies" column, they stack the lollies together as a roll and place the stack in the "Rolls" column of their gameboard.
3. When a student has 10 rolls in their "Rolls" column, the student groups their rolls into a box.
4. The first player to collect a box is the winner.

Variations:

* The player with the most lollies after a given number of turns wins the game.
* The player with the fewest lollies after a given number of turns wins the game.
* The player who is closest to 200 lollies after 20 turns each wins the game.

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**(Y2)**

 Task 4 • How many?

**Task 4**

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# Task overview

Students learn that numbers can be represented in different but equivalent ways.

## Learning Goals

Numbers can be represented using standard base-ten groupings and non-standard groupings.

Different representations of the same number are equivalent in value.

## Resources

**Whole class:**

* **Lolly Shop PowerPoint**
* A large quantity of Unifix or interlocking cubes (ideally 2cm). Each group of 2-3 students needs at least 120 cubes.

**Each student:**

* **How many? Student sheet**

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| Task phase | Estimated time | Task type |
| **Launch | Boxes, rolls and lollies** | 10 minutes | Whole class |
| **Explore | Tens and hundreds** | 40 minutes | Small group and individual |
| **Connect | Class discussion** | 35 minutes | Whole class |
| **Summarise | Different groupings** | 15 minutes | Whole class |

# Teach this task

## Launch | Boxes, rolls and lollies

**Revise**: *We have learnt that three-digit numbers are made up of hundreds, tens, and ones. We group 10 ones together to make 1 ten, and 10 tens together to make 1 hundred*.

Use **Lolly Shop PowerPoint** to continue the story of Ms Fizz:

*Ms Fizz is writing down how many boxes, rolls and loose lollies she has for four different collections in her shop. This is what her record chart says:*

### Ms Fizz’s Record Chart

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| --- | --- | --- | --- |
| Total number of lollies | Boxes | Rolls | Loose lollies |
|  | 1 | 9 | 14 |
|  | 2 | 0 | 4 |
|  | 1 | 8 | 24 |
|  | 1 | 5 | 54 |

*Ms Fizz needs to record the total number of lollies in each row.*

**Pose the problem:** *What is the total number of lollies in each row on Ms Fizz's Record Chart?*

## Explore | Tens and hundreds

Provide students with **How many? Student sheet** and allow students time to explore the problem. Have interlocking cubes available for students to use if they would like to.

Students will notice that the total number of lollies in each row adds up to 204.

### Questioning to prompt student inquiry

* *How many rolls of 10 are there in 204? Why is there a zero in the “rolls” column on Ms Fizz’s Record Chart?*
	+ There are 20 rolls of 10 in 204. The zero represents that there are no loose rolls. Zero holds value in a number.
* *How can four different representations add up to the same number?*
	+ Numbers can be represented in different yet equivalent ways. It is possible to show that each of these representations are the same by grouping and ungrouping lollies.
* *Can you see connections between the different collections of boxes, rolls and loose lollies?*
	+ Students may notice that in each row, it is possible to make 10 tens by adding the tens that appear in the “loose lollies” column with the tens that appear in the “rolls” column. 10 tens can then be grouped to form 1 hundred.

### Noticing students’ thinking

Observe how students work out the total number of lollies in each row. Do they:

* **Represent with cubes then count:** If students count to find the total, prompt them to think about how they might use the rolls and box structure to support counting.
* **Represent with cubes then regroup:** Students may group 10 ones to make 1 ten and 10 tens to make a hundred. Ask them to consider if they are changing the value of the number by regrouping. We want them to have confidence that the different representations are equivalent in value.
* **Don’t represent with cubes:** Students working fluently with the numbers presented in the chart are working abstractly. It is likely that they have generalised the idea that 10 of these is equal to 1 of those. Ask them if all numbers are equivalent in value and how they can show that they are.

## Connect | Class discussion

Invite some students to share the strategies they used to work out the total number of lollies in each row.

**Discuss:**

* *How many rolls of 10 are in 204? How do you know?*
	+ There are 20 rolls of 10 in 204. These 20 rolls can be packed into 2 boxes, however this does not change that there 20 rolls. Emphasise that zero holds value in a number.
* *What connections can you see between the different representations? Can you show how they each equal 204 lollies?*
	+ For each of the rows with only one box recorded, it is possible to make a collection of 10 rolls by adding together the number in the “rolls” column and then the tens digit in the loose lollies column. These 10 lollies can then be placed in a box to create two boxes.
* *How can four different representations add up to the same number?*
	+ Numbers can be represented using standard base-ten groupings and non-standard groupings. These different representations of the same number are equivalent in value.

## Summarise | Different groupings

**Pose the question**: *Can you find another way to represent 204 lollies?*

Allow students time to explore other possible representations of 204. Record as a class some of the different representations that are found. There are many possible answers to the problem.

**Explain:** *Numbers can be represented in different ways. The different representations of the same number all have the same value.*

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**(Y2)**

 Task 5 • Different ways

**Task 5**

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# Task overview

Students play a game building their understanding of different yet equivalent ways to represent a two-digit number.

## Learning Goals

Numbers can be represented using standard base-ten groupings and non-standard groupings. These different representations of the same number are equivalent in value.

## Resources

**Whole class:**

* Lolly Shop PowerPoint

**Each group:**

* 2 dice
* A collection of Unifix or interlocking cubes, some in stacks of 10 and some loose.

**Each student:**

* Different ways Student sheet

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| Task phase | Estimated time | Task type |
| **Build | Different ways** | 50 minutes | Pairs and small groups  |

# Teach this task

## Build | Different Ways

Show students how to play **Different Ways** in pairs:

1. Students take turns rolling two dice. One die represents the number of rolls in their collection and one die represents the number of loose lollies in their collection (students can pick which is which each turn). The student uses cubes to represent the total number of lollies.
2. Both students record the total number of lollies on **Different Ways Student sheet.**
3. The other student uses cubes to represent the same number in a different way.
4. If both students agree that the two representations look different but are equal in value, they both record the two different representations and the total number of lollies on their student sheet.

### Example of play:

* Annika rolls two dice and gets a 2 and a 4. She decides that this represents 2 rolls and 4 loose lollies. She gathers 2 rolls of 10 cubes and 4 loose cubes from the collection of cubes.
* Annika and Beau both record the total number of lollies on their student sheets: 24.
* Beau needs to find another way to represent 24. He uses 1 roll and 14 loose cubes.
* Annika and Beau agree that their representations are different but equivalent in value. They record the two different representations on their student sheets.
* They play again, this time with Beau rolling the dice.

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**(Y2)**

 Task 6 • Counting lollies

**Task 6**

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# Task overview

Students learn to use ‘10 of these is equal to 1 of those’ to make sense of place value patterns and different but equivalent representations.

## Learning Goals

‘10 of these is equal to 1 of those’ helps us to make sense of the place value patterns that occur when counting in 1s, 10s, and 100s.

Numbers can be represented using standard base-ten groupings and non-standard groupings. These different representations of the same number are equivalent in value.

## Resources

**Whole class:**

* Lolly Shop PowerPoint
* A large quantity of Unifix or interlocking cubes.

**Each group:**

* **Counting lollies Number cards**, ideally printed on A4 paper or card

**Each student:**

* **Counting lollies Student sheet**

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| Task phase | Estimated time | Task type |
| **Launch | Counting lollies** | 15 minutes | Whole class |
| **Explore | Equivalent values** | 20 minutes | Small group and individual |
| **Connect | Class discussion** | 10 minutes | Whole class |
| **Summarise | Hundreds, tens and ones** | 5 minutes | Whole class |

# Teach this task

## Launch | Counting lollies

Use the **Lolly Shop PowerPoint** to continue telling the story of Ms Fizz:

*Ms Fizz is counting the lollies in her shop. She counts 1 for each loose lolly. She counts 10 for each roll. She counts 100 for each box of lollies.*

Students will be helping Ms Fizz count the lollies in her shop by counting as a class, using the numbers shown on Ms Fizz’s clipboard.

Click on Ms Fizz’s clipboard (the mouse will change to a hand). Each mouse click will change the screen to a new number.

Skip count as a class according to the numbers shown on Ms Fizz's clipboard. Stop counting after an appropriate point, such as 1,000.

Repeat the counting activity two or three times. On the final count, record the total on the board.

**Pose the question:** *We counted to [total]. How many boxes, rolls and loose lollies might be in Ms Fizz’s shop?*

### Troubleshooting PowerPoint

In this task, the PowerPoint uses a **macro** to randomly show numbers.

Based on your computer's settings, PowerPoint macros may be disabled by default. You may need to click the "**enable content" button** in PowerPoint for this macro to work.

You can find more information about enabling macros on the [Microsoft Support website](https://support.microsoft.com/en-au/office/enable-or-disable-macros-in-microsoft-365-files-12b036fd-d140-4e74-b45e-16fed1a7e5c6).

An alternative is to use the **Counting lollies Number cards** with your class instead. Show the cards in a random order.

## Explore | Equivalent values

Invite students to work in pairs to determine how many boxes, rolls and loose lollies may have been in Ms Fizz’s collection. Provide students with **Counting lollies Student sheet** and ask them to record their solution/s.

As students complete the task, they can generate new numbers to explore using **Counting lollies Number cards.**

### Questioning to prompt students’ thinking

* *What are some other combinations of 100s, 10s and 1s that could have been on Ms Fizz’s cards?*
	+ There are multiple ways that one number can be represented. This draws on the learning goals for Task 4 and Task 5.
* *Can you use one of your solutions to find another possible solution?*
	+ For example, 10 tens can be grouped to form 1 hundred, or 1 ten could be ungrouped to form 10 ones.
* *What if there were ten 100s cards? What number would Ms Fizz have counted to?*
	+ This introduces the idea that 10 hundreds is equal to a unit of 1 thousand.

### Noticing students’ thinking

Observe students’ activity:

* **Not grouping and ungrouping –** Prompt these students to think about how they could group 10 of these to make 1 of those to find multiple answers.
* **Grouping and ungrouping –** Do students make groups of 10 of these and exchange it for 1 of those? Do students take 1 of these and exchange it for 10 of those? Prompt these students to consider if they have found all answers.

## Connect | Class discussion

Select pairs of students to share the different numbers that Ms Fizz could have shown to get to the total in the count. Record the different combinations that these students found.

**Discuss:**

* *Which of the solutions use the greatest number of cards?*
	+ Students who used more than 10 of any one number will have the most.
* *Which option uses the least number of cards?*
	+ The least number of cards will always be the collection of cards that represents the place value neatly without needing regrouping. For example, 987 is most efficiently represented using nine 100s, eight 10s and seven 1s.
* *Does each different combinations of cards show the same number? How do we know?*
	+ This goes back to the learning goals for Task 4 and Task 5, that is, numbers can be represented in different yet equivalent ways. Where possible, exchange “10 of these cards for one of those cards” to show that all the different representations are equivalent.

## Summarise | Hundreds, tens, and ones

Reflect on the Lolly Shop sequence with the students and invite them to share their key learnings.

**Explain**: *In the sequence we have learnt that three-digit numbers are made up of hundreds, tens, and ones. We can represent numbers using normal base-ten groupings and also non-standard groupings. These different representations of the same number have the same value.*

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| To read the most recent version of this task, download associated resources, and view embedded professional learning including classroom videos and work samples, visit: [https://resolve.edu.au/teaching-sequences/year-2/place-value-lolly-shop/task-6-counting-lollies](https://resolve.edu.au/teaching-sequences/year-2/place-value-lolly-shop/task-6-counting-lollies?utm_source=docx&utm_medium=task_6&utm_campaign=lolly_shop) |