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Task 1 • How many seeds?

**TASK 1**

**(Y1)**

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# Task overview

Students learn that grouping individual items into units 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:**

* **reSolve Garden PowerPoint**

**Each group:**

* A large quantity of items to represent ‘seeds’ (for example: counters or dried beans)

**Each student:**

* At least one ‘seed packet’ (for example: snap lock bags, brown paper bags, or envelopes). Each packet should be labelled with a different number between 25 and 99.
* **How many seeds? Student sheet**

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| Task phase | Estimated time | Task type |
| **Launch | Counting seeds** | 10 minutes | Whole class |
| **Explore | Fishbowl** | 15 minutes | Small group |
| **Connect | Class discussion** | 20 minutes | Whole class |
| **Summarise | Equal groups** | 5 minutes | Whole class |

# Teach this task

## Launch | Counting seeds

Using the **reSolve Garden PowerPoint**, establish the context of the reSolve Garden:

*Mr Sprout the gardener is organising all his seeds. He is putting the seeds into packets. Each packet has a number of seeds clearly written on the front. Mr Sprout needs to make sure that he puts exactly the right number of seeds in each packet. Mr Sprout needs our help!*

Provide each student with loose seeds (e.g. counters or dried beans) and a seed packet (e.g. snap lock bags, brown paper bags, or envelopes) with a 2-digit number clearly written on the front. Explain that the number written on each packet represents the number of seeds that need to be placed into that packet.

**Pose the task:** *Count out the correct number of seeds to put into your seed packet.*

## Explore | Fishbowl

Ask students to count out their seeds, ready to pack into their seed packet. They can organise and count in any way they choose.

Use a [Fishbowl](https://resolve.edu.au/pedagogical-tools/learning-community-tools/learning-each-other?utm_source=docx&utm_medium=task_1&utm_campaign=resolve_garden) to look at some of the different ways students are organising their counts. Encourage those watching to notice how students use grouping to ensure that they have the correct number of seeds.

Following the Fishbowl activity, allow students additional time to reorganise and recount their seeds based on what they have learnt from others if they choose.

Provide students with **How many seeds? Student sheet** and ask them to create a diagram of how they organised and counted their seeds.

### Noticing students’ thinking

**Ask students:** *Do you have the right number of seeds to go into your seed packet? How do you know?*

* **No organisation:** Students who do not organise their count may find it hard to keep track of their count and may miss some seeds or double count others. Prompt students to think about how they might arrange the seeds to make counting easier.
* **Using ones**: Lining up seeds facilitates counting in ones. Do these students keep track of their count, and are they saying numbers in the correct sequence? Prompt students to think about how they might arrange the seeds to make counting easier.
* **Creating groups**: Students may organise their seeds into small groups such as twos, fives, and tens.
	+ Does each group contain the same number of seeds? Prompt students’ inquiry by asking them to think about how they might arrange their groups to ensure each group has the same number of seeds.
	+ Do students skip count their groups to find the total number of seeds, or do they determine the total by counting in ones instead of utilising the group structure? Prompt students’ inquiry by asking them to think about how the group structure can support efficient counting.
* **Organised groups:** Organising each group of seeds makes it easy to see the number of seeds in each group. For example, students might arrange their seeds using subitisable patterns. Once students have counted the total number of seeds to go into their packet, there may be some seeds that do not form a complete group. Prompt students' inquiry by asking them to think about how they might deal with these seeds.

## Connect | Class discussion

Focus this Connect phase on the idea that a quantity can be organised into equal-sized groups. Making equal-sized groups of two or five means that it is easy to skip count the total. This idea is extended in the next task to making equal-sized groups of ten.

Select some students who changed their counting strategy after the Fishbowl activity and invite them to share their working with the class. Specifically focus on those who changed from counting in ones or using different-sized groups to using equal-sized groups.

**Ask these students:** *What was the first strategy that you used? What was the second strategy that you used? Why did you choose to change your counting strategy after looking at what others were doing?*

After selected students have shared, ask students to return to their seeds and to count the seeds using one or two of the different grouping strategies that were shared.

**Discuss as a class:** *Which strategy did you find most useful for counting out the right number of seeds to put into your seed packet? Why?*

## Summarise | Equal groups

Discuss how it is easier to count seeds that are organised into units of equal-sized groups.

**Explain**: *Organising collections into equal-sized groups makes it easier to count a collection without having to count every individual seed.*

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**(Y1)**

Task 2 • Making tens

**Task 2**

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# Task overview

Students learn to group 10 ones to form a unit of 1 ten.

## Learning Goals

10 ones can be grouped together to form a unit of 1 ten.

## Resources

**Whole class:**

* **reSolve Garden PowerPoint**

**Each group:**

* A large quantity of items to represent ‘seeds’ (for example: counters or dried beans)

**Each student:**

* At least one ‘seed packet’ (for example: snap lock bags, brown paper bags, or envelopes). Each packet should be labelled with a different number between 25 and 99.
* **Making tens Student sheet**

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| Task phase | Estimated time | Task type |
| **Launch | Groups of ten** | 5 minutes | Whole class |
| **Explore | Making tens** | 20 minutes | Small group or individual |
| **Explore | Gallery Walk** | 10 minutes | Individual |
| **Connect | Class discussion** | 10 minutes | Whole class |
| **Summarise | Making tens** | 5 minutes | Whole class |

# Teach this task

## Launch | Groups of ten

**Revise**: *In the last task we learnt that organising collections into equal-sized groups makes it easier to count a collection without having to count every individual seed. I wonder how Mr Sprout likes to count?*

Using the **reSolve Garden PowerPoint**, continue the story of the reSolve Garden:

*Mr Sprout the gardener is putting his seeds into packets. Each packet has a number of seeds clearly written on the front. He needs to make sure that he puts exactly the right number of seeds in each packet.*

*Mr Sprout decides to make groups of ten to help him count. He makes a smaller group with the seeds that are left over at the end.*

Provide each student with loose seeds and a seed packet. Explain that the number written on each packet represents the number of seeds that need to be placed into that packet.

**Pose the task:** *Count your seeds like Mr Sprout to make sure you have exactly the right number in your packet.*

## Explore | Making tens

Allow students time to count and organise their seeds using groups of ten like Mr Sprout.

Once students have organised their seeds, ask them to use **Making tens Student sheet** to make a poster showing how they organised and counted their seeds. Explain that the poster should make it clear how they counted and how many seeds are in their collection.

### Questioning to prompt student thinking

* *How did you group your count in the previous task (Task 1)? How was your previous strategy similar to counting in tens like Mr Sprout? How was your previous strategy different? Which do you prefer and why?*
	+ It is likely that both strategies involve equal-sized groups. The size of the group is what differs.

### Noticing students’ thinking

**Do students create equal groups of ten?**

**Ask students:** *Can you explain to me how your counting is like Mr Sprout's?*

* **Not creating equal groups of ten**: Prompt students to think about how they might arrange the seeds in each group, so that they can see at a glance that each group contains ten.
* **Creating equal groups of ten:** Prompt students to think about how they might arrange the seeds in each group so they see at a glance that there are ten in each group. Also, notice how the students are counting. Do they skip count the total in tens, or do they still 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.
* **Organised groups:** Organising the groups of ten makes it easy to see the number of seeds in each group. For example, students might use subitisable patterns to arrange their seeds. As students count the total number of seeds to go into the packet, they may end up with some seeds that do not form a complete group. Prompt students' inquiry by asking them to think about how they might deal with these seeds.

**How do the students use the group of ten to count the total number of seeds?**

**Ask students:** *Do you have the right number of seeds to go into your seed packet? How do you know that you do?*

* **Make tens but count the total in 1s, 2s or 5s** – Prompt students' thinking about how they might use the ten structure to facilitate their counting.
* **Count in tens** – Students trust the group structure and use the 10 structure to facilitate their counting.

## Explore | Gallery Walk

Ask students to display their student sheet next to their seeds.

Review the task that was posed (*Count your seeds like Mr Sprout*) and ask students to think about what they expect to see as they complete the [gallery walk](https://resolve.edu.au/pedagogical-tools/learning-community-tools/learning-each-other?utm_source=docx&utm_medium=task_2&utm_campaign=resolve_garden). 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?*

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 by other students.

## Connect | Class discussion

After the gallery walk, come together for a whole class discussion. The focus of the discussion is on the idea that 10 ones can be grouped to form a unit of 1 ten. The number of units of ten that can be made will differ in different students’ collections of seeds, but the size of the units that they make will always be “10”.

**Discuss:**

* *What were some of your noticings during the gallery walk?*
	+ Students may comment on how some collections arranged their groups of ten to make counting easier, or the different ways of recording that were used.
	+ Students may notice the place value pattern that occurs when grouping in tens. Allow students to share this noticing, but don’t focus on it as it will be explored in the next task.
* *What did you notice that was the same?*
	+ Everyone made groups of ten seeds and had some left-over seeds.
* *What did you notice that was different?*
	+ Everyone had a different number of tens and left-over ones, because they all had to count out a different number of seeds.

## Summarise | Making tens

Discuss with the students how using tens made it easier to see how many seeds there were. Ask students to reflect on the counting strategies that they used in the first task, and why ten may be a more helpful unit for counting.

**Explain**: *When we group 10 ones, we make a unit of 1 ten. Counting in tens is an efficient way to count a large collection.*

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Task 3 • Planting seeds

**Task 3**

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# Task overview

Students learn to connect the number of tens in a collection to the number of ones.

## Learning Goals

10 ones can be grouped to form a unit of 1 ten. This idea is central to the structure of two-digit numbers.

## Resources

**Whole class:**

* **reSolve Garden PowerPoint**

**Each group:**

* At least 10 10-cell seed punnets and/or ten frames to represent seed punnets

**Each student:**

* Filled ‘seed packets’ from Task 2. Students should use a different seed packet to the one they filled in Task 2.
* **Planting seeds Student sheet**

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| Task phase | Estimated time | Task type |
| **Launch | Seed punnets** | 10 minutes | Whole class |
| **Explore | Planting seeds** | 40 minutes | Small group or individual |
| **Connect | Class discussion** | 40 minutes | Whole class |
| **Summarise | Tens and ones** | 10 minutes | Whole class |

# Teach this task

## Launch | Seed punnets

Using the **reSolve Garden PowerPoint**,continue the story of the reSolve Garden:

*Mr Sprout is planting his seeds. He plants them into seed punnets that look like this.*

Show students a 10-cell seed punnet, or the picture of the punnet in the PowerPoint. Note the 10 cells for planting 10 individual seeds.

*Mr Sprout has a special record chart. Before he starts planting, Mr Sprout records his total number of seeds. Then Mr Sprout plants his seeds by putting one seed into each cell of the punnet. When every cell has a seed in it, he moves on to the next punnet. The last punnet might not get completely filled.*

*When he finishes planting all the seeds, he writes on his record chart the number of full punnets and the number of extra seeds in the last punnet.*

**Pose the task:** *Help Mr Sprout by planting your seeds. Make sure you keep an accurate record for Mr Sprout.*

## Explore | Planting seeds

Provide groups of students with at least 10 seed punnets, or ten-frames to model the punnets. Provide each student in each group with a seed packet. As they will be creating groups of ten again, it is preferable that they have a different numbered packet to the previous task.

Provide students with **Planting seeds Student sheet**, which shows Mr Sprout's Record Chart. Invite students to take turns planting their seeds into the punnets and working out how many full punnets and extra seeds they have. Each student in the group should record the results from all group members on their student sheet.

### Questioning to prompt student thinking

* *How is this task similar to the previous task? How is it different to the previous task?*
	+ Both tasks involve making equal-sized groups of ten. However, in this task, the groups of ten are organised using a ten-frame structure.

## Connect | Class discussion

Create a class version of Mr Sprout's Record Chart (one is provided in **reSolve Garden PowerPoint**). Record students’ results on the chart. As you collect data, don’t correct students’ mistakes. These mistakes provide a valuable context to explore whether the place value pattern is always present.

### Mr Sprout’s Record Chart

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| Total number of seeds | Full punnets | Extra seeds |
| 26 | 2 | 6 |
| 72 | 7 | 2 |
| 64 | 6 | 4 |
| 51 | 5 | 1 |
| 19 | 1 | 9 |

**Discuss:** *What do you notice about the data that we have collected for Mr Sprout?* Students will likely notice that the pattern of tens and ones represents the digits in the total number of seeds.

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

Redistribute the seed packets amongst the groups so that each student and group has new seed packets. Invite students to explore the pattern and see if it continues. Students should continue to record their results on their student sheet.

## Summarise | Tens and ones

After more results have been collected, gather students together again and add the data to the class version of Mr Sprout’s Record Chart. Look at how the pattern continues regardless of the numbers that are used.

**Explain**: *Two-digit numbers are made up of tens and ones. The first digit in a two-digit number represents the total number of tens and the second digit represents the number of ones.*

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 Task 4 • Planting 50

**Task 4**

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# Task overview

Students build their understanding that 10 ones can be grouped to form a unit of 1 ten.

## Learning Goals

10 ones can be grouped to form a unit of 1 ten. This idea is central to the structure of two-digit numbers.

## Resources

**Whole class:**

* **reSolve Garden PowerPoint**

**Each group:**

* Counters
* 6-sided die

**Each student:**

* **Planting 50 Gameboard**, printed on A3 card

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| Task phase | Estimated time | Task type |
| **Build | Planting 50** | 50 minutes | Pairs or small group |

## Build | Planting 50

**Revise**: *In the last task we saw that two-digit numbers are made up of tens and ones. The first digit in a two-digit number represents the total number of tens and the second digit represents the number of ones.*

Explain to students that they will be playing a game to build their understanding of tens and ones.

Show students how to play **Planting 50** in pairs:

1. Students take turns rolling a standard 6-sided die and collecting the number of seeds (counters) indicated. They place the seeds in the punnet (ten-frame) under the heading "Ones" on their gameboard.
2. When a punnet is filled, the student groups the 10 seeds together and places the seeds in a circle under the heading "Tens" on their gameboard.
3. The first player to collect 50 seeds is the winner.

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 Task 5 • Planting more seeds

**Task 5**

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# Task overview

Students learn to trust that a unit of 1 ten will always contain 10 ones.

## Learning Goals

We can trust that a unit of 1 ten will always contain 10 ones. This idea is central to the structure of two-digit numbers.

## Resources

**Whole class:**

* **reSolve Garden PowerPoint**
* A large collection of seeds (e.g. counters or dried beans) and 10-cell seed punnets (ten-frames) for students to use if they need

**Each student:**

* At least one **empty** ‘seed packet’ (for example: snap lock bags, brown paper bags, or envelopes). Each packet should be labelled with a different number between 25 and 99.
* 2 copies of **Planting more seeds Student sheet**

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| Task phase | Estimated time | Task type |
| **Launch | Packets and punnets** | 15 minutes | Whole class |
| **Explore | Planting seeds** | 35 minutes | Individual |
| **Connect | Class discussion** | 40 minutes | Whole class and individual |
| **Summarise | 10 ones is ten** | 10 minutes | Whole class |

# Teach this task

## Launch | Packets and punnets

Using the **reSolve Garden PowerPoint**,continue the story of the reSolve Garden:

*Mr Sprout continues to plant his seeds. When he picks up a packet of seeds, he knows exactly how many full seed punnets he will have and how many extra seeds there will be.*

Tell the students that they are going to continue to help Mr Sprout today by planting seeds.

Explain that today they will be given a seed packet with a number clearly printed on the front, but there will be no seeds in the packet.

**Pose the task:** *How many full punnets will you have and how many extra seeds will there be? Show your thinking on your student sheet.*

## Explore | Planting seeds

Provide each student with:

* an **empty** seed packet with a number printed on the front
* one copy of **Planting more seeds Student sheet**

Ask students to record on their student sheet how many punnets and extra seeds they will have when all their seeds are planted, and to show their thinking.

Have seeds and punnets available for students who choose to use them.

### Questioning to prompt student thinking

* *Can you predict how many full punnets you might have and how many extra seeds you might have?*
	+ Asking students to predict gives you a chance to see if they are developing a generalised understanding of the value of digits in a number.
* *Do you need to see all the seeds to know how many full punnets and extra seeds there will be when all the seeds are planted?*
	+ If you recognise the value of digits in a number, it is not necessary to see all the seeds.

### Noticing students’ thinking

* **All seeds represented:** Some students may continue to use concrete materials and/or draw all the seeds to determine how many full punnets and extra seeds there will be when their seeds are planted. Prompt these students to consider whether they need to see all the seeds to know how many full punnets there will be.
* **Not all seeds represented:** Do students recognise the connection between the punnets and extra seeds and the tens and ones digits in a two-digit number? Students may trust the fact that there are 10 in a punnet and choose to represent the number of tens as punnet without showing all 10 seeds contained in that punnet. Prompt these students to think about how many seeds they would have if they had another 5 full punnets, or if they had another 10 full punnets.

## Connect | Class discussion

Show students the three different representations of punnets and seeds in **reSolve Garden PowerPoint**.

**Discuss:**

* *Which representation is most like yours? Why?*
* *How are each of these representations similar? How are they different?*
	+ Each representation is similar in that they illustrate punnets of ten seeds and then a final punnet that is not completely full.
	+ Each representation shows the collection of ten seeds in a different way. The final representation does not illustrate all the seeds. It uses a punnet to represent collections of 10, reinforcing the idea that ten of these is equal to one of those.
* *Is it possible to represent the total number of seeds without drawing all the seeds?*
	+ Use the last representation to see how a punnet can be used to represent 10 seeds.

Redistribute the seed packets so that every student has a new packet, and provide students with another copy of **Planting more seeds Student sheet**. Ask students to once again record on their student sheet how many punnets and extra seeds they will have when all their seeds are planted, and to show their thinking.

## Summarise | 10 ones is 1 ten

Reflect on the reSolve Garden sequence with the students and invite them to share their key learnings.

**Explain**: *In the sequence we have learnt that two-digit numbers are made up of tens and ones. The first digit in a two-digit number represents the total number of tens and the second digit represents the number of ones. We can trust that a unit of 1 ten will always contain 10 ones. This idea is central to the structure of two-digit numbers*.

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