

Lesson Topic: Multiplication and Division – Making Equal Groups

Concept/s in Focus:

- Objects are the same when one of their attributes matches. The attribute can be any feature of the object e.g. colour, size, length, material, quantity
- It is possible to see how many objects are in a collection without needing to count them (small quantities and quantities in particular / familiar arrangements) (*subitising*)
- A group of objects is the same as another group when the quantity in each group matches. This can be checked by looking (*subitising*), physically matching objects from each group or by counting
- When the quantity of a group is the same as the quantity in another group they are equal groups
- When making equal groups there will be two pieces of information needed to describe the situation – the number OF groups and the number IN EACH group.
- A group of objects can be regarded as a unit e.g. * * * is 3 and is also 1 group of three or 1 three (*countable unit*)
- It is possible to have multiples of equal groups e.g. *** ** shows 2 threes

Introduction / Teacher Background Information:

Most students come to school with the basic ideas needed to develop additive thinking including counting. Students generally need assistance to think multiplicatively. This can start in very early stages of school but can take many years to develop. Multiplicative thinking is more complex than additive thinking. It involves being able to think of and work with groups as units. Making and identifying equal groups is an early skill that assists students to develop multiplicative thinking. Subitising (being able to identify a quantity without needing to count) is a vital early number skill. When groups of objects are small or are familiar arrangements, students can develop confidence to identify the quantity by sight. Subitising is a more efficient way to identify if the quantity in different groups is equal than counting.

This lesson involves students simply identifying if groups of objects / pictures have equal quantities or not. There is no focus on identifying the total number of objects or doing any multiplication or division as such. Students will be introduced to the word equal and through repeated exposure to the word orally and in written form will develop and understanding of it.

Australian Curriculum links: ACMNA003, ACMNA289, ACMNA004

Resources:

Whole Class Activity:

- The students in an open space where they can move around to make groups
- A whiteboard and marker pens

Hands-On Activity:


- One copy of the Making Equal Groups Activity – cut into individual strips
- Collections of objects for students to make equal groups e.g. counters, blocks..

Independent Activity:


- One copy of the Equal or Not Equal Groups Worksheet per student
- Access to scissors and glue
- A small container e.g. plastic bowl or plate could be helpful to contain the cut out labels for each student

Whole Class Activity:


- Gather the class in an open space in the classroom or outside.
- Have the students sit in one large groups (rather than in a circle). Being aware of the number of students will help with choosing group sizes so minimal students are left out. Include yourself or other adults in the room in the activity if it helps make more equal groups.
- Write the word 'Equal' on the whiteboard.

 *Can someone read this word for me?*


- If the students can't read the word, read it to them but don't explain it.

 *What does the word EQUAL mean?*


- Listen to responses and identify the students' ideas. Don't tell them what it means. The activity to follow will help them see what it means for themselves.

 *Everyone please stand up. Please get into groups with 2 people in each group. When you have made a group of 2 please sit down together. Go.*


- Watch how the students make groups and assist any students who get left out and help them find a pair. Be their partner if needed.

 *Tell me about the groups you have made?*

- Accept all answers and listen for responses that mention "equal" or "all the same" or "same number in each".

 *All the groups are equal. What does the word equal mean?*


- Listen for repeats of ideas about equality of the groups already shared or for new insights/ understandings. Repetition helps reinforce ideas especially with young children.
- Repeat the activity with a different size group.. Choose the group size to make equal groups where possible.

 *Everyone please stand up again. This time can you make groups with 3 people in each group. When you have your group of 3 please sit down together. Go.*

- Assist any students left over to find others to make a group of 3 if possible.
- Have any students left who don't make equal groups of 3 keep standing – so the students sitting are definitely in equal groups.

 *Tell me about the groups we have made this time.*

- Listen again for mention of equal groups or all groups have 3 people etc.
- Challenge the students understandings using questioning e.g.

 *So we made groups of 2 first and these groups were equal. Now we have made groups of 3 and these are equal too. First there were 2 people in each group, then there were 3 people in each group? How can the groups be equal both times?*

- Let the students be a little confused so they think through the challenge. Listen for explanations that mention the number IN EACH group was the same so the groups were equal.

- Repeat the group making activity with another number in each group. Choose a group size that will leave a minimum (preferably no) students left over e.g. 6 or 5 or 10.
- Have any leftover students stand while the equal groups sit on the floor.
- Reflect on the groups being equal again but having a different number in each group.
- Have all the students sit back on the floor.
- Include the teacher and or other adults in the room to ensure the total number of people is a composite number (able to make equal groups of some size).

? *Now your challenge is to make EQUAL groups so we include everyone in the room? (Clarify who is included if needed)*

- There is likely to be some initial confusion because the number in each group has not been stated. Watch how the students manage the challenge and what size groups they choose to make.
- If the class makes equal groups of a size already made in the first activities challenge them further (if the numbers work) to make equal groups of a size that hasn't been done yet.
- Finish this section of the lesson by reflecting on the meaning of the word equal.

? *So what does the word EQUAL mean again?*

- Listen for a develop understanding of the concept compared to the start of the lesson.

? *Just to check if you know what EQUAL groups look like.. could someone come and draw some equal groups on the whiteboard?*


- Select a student volunteer and suggest they draw small circles or something easy.
- Watch how the selected student checks that the groups they have drawn are equal – did they count, subitise or draw the same arrangement.. or something else.

? *Are the groups that [Student Name] drew equal? How do you know they are equal? How many groups did [Student Name] draw? How many are IN EACH group that [Student Name] drew?*


- Record the number of groups and the number in each group in the following format beside the drawing e.g. **3 groups of 2**
- Assist the students to see the connection between what was drawn and the label.
- Ask another student to draw a different example of equal groups.
- Write a label in the same format and ensure the class sees the connection.
- This label format will be used in the Hands On section of the lesson. Introducing it here will assist the next section of the lesson.

Hands On Activity:


- This activity will work with the whole class but would also work as a small group / rotation activity.
- Print one copy of the Making Equal Groups Activity. There are 30 labels in this file. Print enough for the class to have one each label each. Having some spares could be a benefit for early finishers. Cut the print out into individual label strips.
- This activity will work well with the students sitting in groups at a table where a collection of materials can be placed in the middle for sharing and the students sitting around the outside with a clear working space in front of them.
- Gather the students together to explain the activity (particularly if working with the whole class)
- Provide each student with one of the label strips.

 *What do you notice on the strip you have in front of you?*


- Listen for mention of there being two numbers and the word 'groups'. Because each strip is different the numbers won't match.
- Invite a student to read their strip aloud.

 *What do you think you would do to show (re-read the students' strip)?*

- Listen for a description that mentions making a number OF groups with the given number IN EACH group.
- Write the word EQUAL on a whiteboard and draw the student's attention to the word.

 *What is this word? What does it mean?*

- Listen for responses that describe the concept of same quantity. If the students are unsure, review the activity done in the Whole Class where the students made groups that were equal – with the same quantity in each group.
- Ensure the students understand that the groups they will make in this activity need to be equal.
- Ask another student to read their strip to the class (assist them if needed)
- Rephrase what is on their strip to highlight the number OF EQUAL groups and the number IN EACH group.

 *Take your strip back to a table and use what you can find there to show the number OF EQUAL groups with the right number IN EACH group.*

- Observe the students as they work and assist as needed so they understand the first number is the number OF groups to make and the second number tells them how many objects to have IN EACH group.
- When the students have finished making their groups have them move to find a classmate who has also finished.
- Have the students swap strips and return to their place to try the new set of equal groups.
- Continue swapping strips and making equal groups until the students as needed to reinforce the concept of equal.
- When all students have made a few sets of equal groups, move around the room and collect all the strips but have the students leave the objects in the configuration of their last task.
- Randomly hand the strips to different students.
- Have the students move around the room looking for the collection that matches the strip they have been given. This will assist in reinforcing the concept.

Independent Activity:

- This activity could be done as a whole class or in as a small group/rotation activity.
- Provide each student with a copy of the Equal or Not Equal Worksheet.
- Ensure each student has access to scissors and glue.
- Ensure the students understand the two terms used on the worksheet before they start.

? *What do you see on this worksheet? (Pictures and words) What are the words at the bottom of the page? (Equal and Not Equal)*

- Ensure the students identify the word equal. If needed revise the concept of equal as the same number (to match the context in this lesson).

? *What are the other words at the bottom of the page? (Not Equal) What do you think not equal means?*

- Explain how the worksheet needs to be approached.

? *Each picture needs a label from the bottom of the page. You need to choose if you will use the Equal or Not Equal label for each picture. Then cut it out and glue it under the picture.*

- It could be helpful to provide a small container for the cut out words for each student so they don't get lost or mixed up with students working nearby.
- Move around the room as the students work observing and assisting as needed.
- When the students have completed the task it can be collected for assessment purposes or their responses can be shared as a small group or whole class.

Understandings to look for:

- Students who can identify the term equal.
- Students who can make equal groups.
- Students who can identify a group as a unit i.e can see a group of 3 objects and make multiples of these groups to match a written direction e.g. 4 groups of 3