RICH MATHEMATICAL TASK BOOKLET

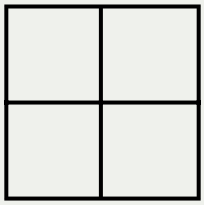
NUMBER Multiplication & Division

YEAR 1

Teacher Booklet

Task 1

Kiri and John are playing with tiles. They make a pattern, so the tiles join together.



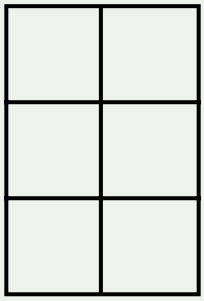
Can you make a pattern with your tiles the same as they have?
Can you draw your pattern?

Kiri and John make another grid:

How did they make this? What could we call it?

Make the grid using the square tiles.
How many tiles did you need? Record this.

They made another grid:



How many squares in this grid?
How is it related to the first grid?
Make the grid using the square tiles.

Copy both grids and draw these.

Big Ideas

Objects in a set can be grouped and counted to get a final total.
Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.

There are patterns to the ways numbers are formed.
Objects in a set can be grouped in twos or fours to get a final total.

Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.

An array can represent a group.

Curriculum Links

Join and separate groups of up to a total of 10 objects by grouping and counting

Partition up to 5 objects, and then up to 10 objects, using a systematic approach and noticing patterns

Teacher Notes

Have 2-D tiles or cardboard squares available for students to manipulate.

During first task progression, facilitate the students to replicate the grid using the squares or tiles and count these in a group.

Support students to use language to describe groups of in their explanations.

Draw student attention to the grid being the same no matter which direction they are placed.

Ask students to draw their grid representation and compare to the model. Repeat until drawing is accurate.

The focus of this activity is for the students to develop structural thinking.

For the independent activity, have squares, tiles, and ice-block sticks.

Shareback

For the first task, select students to share who have represented the square with four tiles and drawn this in a structured way. Have all students practice drawing until it is accurate.

For the second task, begin by selecting students to share who have counted the squares in groups and described the grid as having six squares because it has either two groups of three or three groups of two. If no students, describe it in this way then introduce this language and description to the students. Model how to record this.

For the second task, select students to share who notice that the grid has the same number of squares without counting but is in a different orientation.

When students have drawn the grid representation, ask them to compare it to the model. Repeat until the drawing is accurate.

Connect

Remove the grids and ask students to draw on a blank piece of paper what the second two grids looked like. Ask students to describe how what they have drawn is the same or different to the grid. Ask them to draw it again from memory until it is accurate.

Mathematical Language

Squares, side, row, column, horizontal, vertical, groups.

Anticipations

Solutions, Misconceptions

Task 2

Chenyu and Lili are playing with tiles. They have eight square tiles that are the same. They make a grid so the tiles join together, can you make a grid with your tiles so that they are joined together?

Can you draw the pattern you have made with your tiles?

Have a go at drawing these grids:

A grid that is 4 by 3
A grid that is 2 by 5
A grid that is 3 by 3
A grid that is 5 by 2

Teacher Notes

Have 2-D tiles or cardboard squares available for students to manipulate.

Provide grid paper for those who are struggling to draw representations.

During first task progression, notice whether students have placed the tiles horizontally or vertically and whether they are in a line.

Ask students whether the horizontal and vertical representation is the same or different. Draw their attention to it being the same no matter which direction it is placed in.

Ask students to draw their grid representation and compare to the model. Repeat until drawing is accurate.

Provide students with grid paper or squares if they have difficulty drawing the grids.

Big Ideas

Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.

An array can represent a group.

Curriculum Links

Partition and regroup up to 20 objects in different ways, using a systematic approach and noticing patterns

Shareback

Begin by selecting students to share the two different ways (horizontal, vertical) they have oriented the tiles. Model describing the groups of tiles using language such as 8 by 1, 2 by 4, 4 by 2, 1 by 8.

Ask students to draw their grid representation and compare it to the model.

Repeat until drawing is accurate.

Select students to share how to draw the grid in a structured manner.

Connect

Can you use these sticks to make the same grids you made with the tiles?

Provide students with ice-block sticks.

Suggested Learning Outcomes

Describe how an array represents a group.

Represent a grid in a structured way.

Independent Tasks

Draw these grids first and then make them with the ice-block sticks.

A grid that is 2 by 4

A grid that is 4 by 2

A grid that is 3 by 4

A grid that is 6 by 2

Mathematical Language

Squares, side, row, column, horizontal, vertical, groups.

Anticipations

Solutions, Misconceptions

Task 3

How many dots are there?

Draw a picture of the array and record the numbers you used to find the number of dots.

Teacher Notes

Before you launch the task, write doubles on the board up to 5 and ask the students to solve the equations

1 + 1 =
2 + 2 =
3 + 3 =
4 + 4 =
5 + 5 =

Ask students to solve each equation before writing up the next equation. Ask the students to identify patterns in the answers

Begin by using the array of ten dots. Ask the students how many dots there are in total by imagining pulling the dots apart into a number of identical pieces. Ask, what is the quickest way to do this? Expect the students to group in twos.

Show students a 3 by 3 array of dots. Ask the students to imagine how to pull this apart to find the total number of dots.

Provide students with dot cards and ask them to work out how many dots there are using grouping strategies.

Support students to group beyond counting by ones. Encourage and notice students who count or add using groups. Highlight this to all students.

Model how to use number sentences including multiplication to record the groupings.

For the independent activity, have counters available.

Big Ideas

Objects in a set can be grouped and counted to get a final total.

Quantity is an attribute of a set of objects and we use numbers (represented by words and symbols) to name specific quantities.

A quantity (whole) can be decomposed into different parts, the parts can be composed to form the whole.

Curriculum Links

Partition and regroup up to 20 objects in different ways, using a systematic approach and noticing patterns

Group objects in a collection of at least 10, subitise the number of objects in each part, and find the total number in the collection using the parts

Shareback

For the tens frame, select students who represent the ten as five columns of two or two columns of five squares. If no students suggest this, then model how the ten could be represented in this way.

For the dot cards, select students to share who have used groups in their solutions. Record the groups using number sentences- and multiplication.

Connect

Can you draw two arrays of dots to represent 5 by 3. Use small dots for one and big dots for the other.

What is the same and what is different?

Suggested Learning Outcomes

Describe how an array represents a group.

Use grouping, repeated addition or multiplication to work out how many dots are in an array.

Represent an array in a structured way.

Independent Tasks

Can you make these arrays using counters and draw them? Record a matching number sentence.

8 by 2

3 by 5

4 by 5

6 by 3

Mathematical Language

Number words, row, column, array, multiply, groups of.

Anticipations

Solutions, Misconceptions

Task 4

Tali has made some cupcakes. On each plate she has 4 cupcakes.

If there were 3 plates, how many cupcakes would there be altogether?

If there were 5 plates, how many cupcakes would there be altogether?

If there were 9 plates, how many cupcakes would there be altogether?

Teacher Notes

Use the term grouping or chunking to indicate to the students that they are using units rather than counting by one.

Have available a range of different discrete materials which students can use to group in chunks/sets.

Notice whether the students organise the materials in an array rather than discrete sets.

XXXX
XXXX

Notice the students who use 'lots of' to describe the chunks and reinforce this language. Use this to introduce the multiplication symbol to represent lots of in the connect.

For the independent task, have counters available for the students to use.

Shareback

Select students to share who have used grouping or repeated addition to solve the multiplication tasks rather than counting.

Connect

Use an array to represent each of the tasks. Write a matching addition and multiplication equations [model this for students if they do not know how to do this].

Big Ideas

Numbers can be partitioned and combined to solve more complex addition and subtraction and simple multiplication and division problems.

Numbers can be represented in a variety of ways.

Equations show relationships of equality between parts on either side of the equal sign.

Patterns and relationships can be used, represented and generalised in a variety of ways.

Repeated addition is the same as multiplication.

Curriculum Links

Multiply and divide using equal grouping or counting

Multiply and divide using equal grouping or skip counting (e.g. in 2s, 5s, and 10s)

Identify the relationship between skip counting and multiplication facts for 2s, 5s, and 10s

Suggested Learning Outcomes

Use grouping to solve addition and multiplication problems without counting each object.

Make and identify groupings.

Describe how an array represents a group.

Represent an array in a structured way.

Represent, explain, and justify groupings using pictures, numbers, symbols, and words.

Independent Tasks

Can you make these arrays using counters and draw them? Record a matching number sentence.

8 by 2

3 by 5

4 by 5

6 by 3

Mathematical Language

Times, multiply, equals, groups of, chunking, multiplication, sets of, array.

Anticipations

Solutions, Misconceptions

Task 5

Peni likes to collect pinecones and put them in rows to count them.

If there are 3 rows of pinecones and 6 pinecones in each row. How many pinecones are there altogether?

If there are 6 rows of pinecones and 5 pinecones in each row. How many pinecones are there altogether?

If there are 8 rows of pinecones and 3 pinecones in each row. How many pinecones are there altogether?

Teacher Notes

During the launch, do choral counting by two starting from 0-30. Record as they are said and draw student attention to the way the pattern repeats after ten in the digits. Support the students to notice the patterns when counting by twos and generalise that the ones digit will always be 0, 2, 4, 6, 8

Use the term grouping or chunking to indicate to the students that they are using units rather than counting by one.

Have available a range of different discrete materials which students can use to group in chunks/sets.

Facilitate the students to organise the materials in an array rather than discrete sets.

Notice the students who use 'lots of' to describe the chunks and reinforce this language. Use this to introduce the multiplication symbol to represent lots of.

Take notice of students who use gesturing to indicate the commutative property and build on their reasoning.

Big Ideas

Numbers can be partitioned and combined to solve more complex addition and subtraction and simple multiplication and division problems.

Numbers can be represented in a variety of ways.

Equations show relationships of equality between parts on either side of the equal sign.

Patterns and relationships can be used, represented and generalised in a variety of ways.

Repeated addition is the same as multiplication.

Curriculum Links

Multiply and divide using equal grouping or counting

Multiply and divide using equal grouping or skip counting (e.g. in 2s, 5s, and 10s)

Shareback

Select students to share who have used grouping or repeated addition to solve the multiplication tasks rather than counting.

Connect

Peni has 3 pinecones in each row and there were 5 rows. Draw an array to match. How many does Peni have altogether?

Peni has 5 pinecones in each row and there are 3 rows. How many does Peni have altogether?

What do you notice?

Suggested Learning Outcomes

Use grouping to solve addition and multiplication problems without counting each object.

Make and identify groupings.

Describe how an array represents a group.

Represent an array in a structured way.

Represent, explain, and justify groupings using pictures, numbers, symbols, and words.

Independent Tasks

Peni likes to collect pinecones and put them in rows to count them.

If there are 2 rows of pinecones and 9 pinecones in each row. How many pinecones are there altogether?

If there are 5 rows of pinecones and 5 pinecones in each row. How many pinecones are there altogether?

If there are 4 rows of pinecones and 8 pinecones in each row. How many pinecones are there altogether?

Mathematical Language

Times, multiply, equals, groups of, chunking, multiplication, sets of, array.

Anticipations

Solutions, Misconceptions

Task 6

Litea and Nat are sharing a bag of 12 marbles. If they shared them fairly, how many would they each get?

Show how you can solve the task in different ways.

If Timo joined them as well, how many would they each get?

Show how you can solve the task in different ways.

If there were four friends in total, how many would they each get?

Show how you can solve the task in different ways.

Teacher Notes

Before you launch the task, ask the students to discuss what they noticed about the ones digit when doing the choral count in the previous lesson. Ask them to start counting from

50 52 54 56 58
60 62 64 66 68... Continue up to 90 or 100

For the launch have counters under a card and let children see them for only 3 seconds before covering them (so they do not have time to count them) and ask them how many counters they saw. Place the counters in groupings of two rather than randomly.

Have counters or beads available for the students to use to model the problem.

Facilitate the students to notice that using structure to solve the tasks is quicker and easier than counting or using trial and error.

For the second task, support students to notice that the structure for dividing into 3 groups is different than dividing into 2 groups.

Facilitate students to use structured ways of dividing for the second and third task.

Expect students to represent using an array in the connect. Teacher record symbols to represent the groupings.

This task focuses on dividing a collection of objects into a given number of equal groups. This is called sharing division or partitive division.

For the independent task, have counters or beads available.

Big Ideas

Objects in a set can be grouped and counted to get a final total.

Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.

There are patterns to the ways numbers are formed.

Objects in a set can be grouped in twos or fours to get a final total.

An array can represent a group.

Curriculum Links

Multiply and divide using equal grouping or counting

Multiply and divide using equal grouping or skip counting (e.g. in 2s, 5s, and 10s)

Identify the relationship between skip counting and multiplication facts for 2s, 5s, and 10s

Shareback

For the first task, students may solve the task in different ways as below. Select students to share who have used a structured way to split the marbles. If no students solve the task in a structured way, then model this for the students.

For the second task, select students to share who have solved the task in a structured way. If no students solve the task in a structured way, then model this for the students.

For the third task, select students to share who have solved the task in a structured way. If no students solve the task in a structured way, then model this for the students.

Students may share the marbles out 1 or 2 at a time.

Students may make 2 groups of marbles and count how many is in each.

Students may put the marbles in a row and split them in the middle.

Students may make a 2 by 6 array showing two groups of 6 (structured).

Students might recall that two 6s make 12 (structured).

Connect

Draw a picture of how you shared the 12 marbles between 2, 3, and 4 children. If no students draw an array then model this.
[Teacher to model recording this as division under the picture for the children e.g., 12 ÷ 2 = 6; 12 ÷ 3 = 4, 12 ÷ 4 = 3]

What happens if you try and share 12 marbles fairly between 5 children?

Suggested Learning Outcomes

Divide a set of objects by two and three.

Use grouping to solve division problems without counting each object.

Count in groups.

Describe how an array represents a group.

Represent an array in a structured way.

Mathematical Language

Divide, equal groups, chunking, array, sets.

Independent Tasks

Peni likes to collect pinecones and put them in rows to count them.

If there are 2 rows of pinecones and 9 pinecones in each row. How many pinecones are there altogether?

If there are 5 rows of pinecones and 5 pinecones in each row. How many pinecones are there altogether?

If there are 4 rows of pinecones and 8 pinecones in each row. How many pinecones are there altogether?

Anticipations

Solutions, Misconceptions

Task 7

There are 10 tama in the sasa group. The faiaoga wants them to sit in five equal groups. How many tama will be in each group?

What if the faiaoga only wanted them to sit in two equal groups? How many tama would be in each group?

There are 9 tama in the drumming group. Each tama plays one instrument – a large drum, a shaker, or a small drum. The same number of tama play each instrument.
How many tama play each instrument?

Teacher Notes

Before the launch, do a choral count in 10's starting from zero up to 100. Record on the board like this:

10 20 30 40 50 60 70 80 90 100

Ask students to identify the patterns in the count.

Continue doing this warm-up activity and ask students to count in 2s or 10s starting from any number up to 100 throughout the year as a warm-up.

Have counters available for the students to use to model the problem.

Facilitate the students to notice that using structure and an array to solve the tasks is quicker and easier than counting or using trial and error.

For the second task, drawing or different coloured counters (to represent the different instruments) could be used.

Facilitate students to use structured ways of dividing.

This task focuses on dividing a collection of objects into a given number of equal groups. This is called sharing division or partitive division.

For the independent task, have counters available.

Big Ideas

Objects in a set can be grouped and counted to get a final total.

Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.

There are patterns to the ways numbers are formed.

Objects in a set can be grouped in twos or fours to get a final total.

An array can represent a group.

Curriculum Links

Multiply and divide using equal grouping or counting

Count forwards or backwards in 2s, 3s, 5s, and 10s from any whole number between 1 and 1,000

Multiply and divide using equal grouping or skip counting (e.g. in 2s, 5s, and 10s)

Identify the relationship between skip counting and multiplication facts for 2s, 5s, and 10s

Shareback

For the first task, select students to share who have either visualised five groups of two or have arranged the counters into an array using a 2 x 5 structure. This structure will also help them see that if there were only 2 groups, there would be 5 in each. If no students have used an array, model this for them.

For the second task, select students to share who have either visualised three groups of three or have arranged the counters into an array using a 3 x 3 structure.

Connect

How is division the same as multiplication?
How is division different than multiplication?
How can you divide two numbers?

Support students to notice that both operations involve equal groups, however, with multiplication the groups are put together and for division they are split apart. This means that multiplication and division are opposite or inverse. Use this notion to highlight that if you know 3 groups of 3 are 9 then you also know that 9 divided by 3 is 3.

Suggested Learning Outcomes

Divide a set of objects by two and three.

Use grouping to solve division problems without counting each object.

Describe how an array represents a group.

Represent an array in a structured way.

Recognise and describe the relationship between multiplication and division.

Mathematical Language

Divide, equal groups, chunking, array, sets.

Independent Tasks

There are 14 tama in the sasa group. The faiaoga wants them to sit in two equal groups. How many tama will be in each group?

What if the faiaoga only wanted them to sit in two equal groups? How many tama would be in each group?

There are 12 tama in drumming group. Each tama plays one instrument – a large drum, a shaker, or a small drum. The same number of tama play each instrument.

How many tama play each instrument?

Mathematical Language

Divide, equal groups, chunking, array, sets.

Anticipations

Solutions, Misconceptions

Task 8

Teejay has 12 jellybeans. He wants to share them with his friends and give them 2 each. How many friends can he share them with?

How many friends could Teejay share his jellybeans with if he decides to give them 3 each instead?

How many friends could Teejay share his jellybeans with if he decides to give them 4 each instead?

Teacher Notes

Before you launch the task, write the equations up on the board one by one and ask the students to solve the equations before writing the next one

10 - 5 =
8 - 4 =
6 - 3 =
4 - 2 =
2 - 1 =

Ask students what they notice and to identify any patterns in the equations

Have available counters or jellybeans for the students to model the problem.

Facilitate the students to notice that using structure to solve the tasks is quicker and easier than sharing by twos or using trial and error.

Facilitate students to use structured ways of dividing for the second and third task.

This task focuses on repeatedly subtracting a group from a total number until nothing is left. This is called subtraction division or quotitive division.

For the independent task, have counters or jellybeans available.

Shareback

For the first task, students may solve the task in different ways as below. Select students to share who have used a structured way to split the jellybeans. If no students solve the task in a structured way, then model this for the students.

For the second task, select students to share who have solved the task in a structured way. If no students solve the task in a structured way, then model this for the students.

For the third task, select students to share who have solved the task in a structured way.

Big Ideas

Objects in a set can be grouped and counted to get a final total.

Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.

There are patterns to the ways numbers are formed.

Objects in a set can be grouped in twos or fours to get a final total.

An array can represent a group.

Curriculum Links

Multiply and divide using equal grouping or counting

Count forwards or backwards in 2s, 3s, 5s, and 10s from any whole number between 1 and 1,000

Multiply and divide using equal grouping or skip counting (e.g. in 2s, 5s, and 10s)

Identify the relationship between skip counting and multiplication facts for 2s, 5s, and 10s

Shareback Continued

If no students solve the task in a structured way, then model this for the students.

Students may share the jellybeans out 2 at a time.
Students may count the jellybeans in 2s and keep track of the groups they counted.
Students may make a 2 by 6 array showing six groups of 2 (structured).
Students might recall that six 2s make 12 (structured).

Connect

Draw a picture of how you shared the 12 jellybeans by giving each 2, 3, and 4 jellybeans. If no students draw an array then model this.
[Teacher to model recording this as division under the picture for the children e.g., 12 ÷ 2 = 6; 12 ÷ 3 = 4, 12 ÷ 4 = 3]

What was the same and different when you shared the jellybeans out by 2, 3, and 4?

Expect students to represent using an array. If necessary, students could model the array with the counters and then draw this. Teacher record symbols to represent the groupings.

Suggested Learning Outcomes

Divide a set of objects by two, three, and four.
Use grouping to solve division problems without counting each object.
Count in groups.
Describe how an array represents a group.
Represent an array in a structured way.

Independent Tasks

Teejay has 6 jellybeans. He wants to share them with his friends and give them 2 each. How many friends can he share them with?

How many friends could Teejay share his jellybeans with if he decides to give them 3 each instead?

Teejay has 8 jellybeans. He wants to share them with his friends and give them 2 each. How many friends can he share them with?

How many friends could Teejay share his jellybeans with if he decides to give them 4 each instead?

Mathematical Language

Divide, equal groups, chunking, array, sets.

Anticipations

Solutions, Misconceptions

Task 9

Lotu has $16 in two dollar coins. How many coins does she have?

Draw how you solved the problem.

Lotu has 15 marbles. She wants to give her friends 3 marbles each. How many friends can she give marbles to?

Draw how you solved the problem.

Teacher Notes

Before you launch the task, write the equations up on the board one by one and ask the students to solve the equations before writing the next one

5 + 5 =
10 - 5 =

8 - 4 =
4 + 4

3 + 3 =
6 - 3 =

4 - 2 =
2 + 2 =

1 + 2 =
2 - 1 =

Ask students what they notice and to identify any patterns in the equations Have counters available for the students to use to model the problem.

Facilitate the students to notice that using structure and an array or relating the task to multiplication (groups of) is quicker and easier than counting or using trial and error.

Facilitate students to use structured ways of dividing.

This task focuses on repeatedly subtracting a group from a total number until nothing is left. This is called subtraction division or quotitive division.

For the independent task, have counters available.

Big Ideas

Objects in a set can be grouped and counted to get a final total.

Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.

There are patterns to the ways numbers are formed.

Objects in a set can be grouped in twos or fours to get a final total.

An array can represent a group.

Curriculum Links

Multiply and divide using equal grouping or counting

Count forwards or backwards in 2s, 3s, 5s, and 10s from any whole number between 1 and 1,000

Multiply and divide using equal grouping or skip counting (e.g. in 2s, 5s, and 10s)

Identify the relationship between skip counting and multiplication facts for 2s, 5s, and 10s

Shareback

For the first task, select students to share who have either visualised six groups of two or have recalled that six 2s are twelve. If no students have used these solutions, model this for them.

For the second task, select students to share who have either visualised three groups of five or have arranged the counters into an array using a 3 x 5 structure.

Connect

How is division the same as the division in the earlier tasks?

How is division different than the division in the earlier tasks?

How can an array help you solve division and multiplication problems?

Support students to notice that both types of division problems involved partitioning objects into equal groups, however, with these division problems we knew the size of the groups and in the previous tasks, we knew the number of groups. In both kinds of division, multiplication can be used to solve the problems.

Suggested Learning Outcomes

Divide a set of objects by two, three, and four.
Use grouping to solve division problems without counting each object.
Describe how an array represents a group.
Represent an array in a structured way.
Recognise and describe the relationship between multiplication and division.

Independent Tasks

Lotu has $20 in two dollar coins. How many coins does she have?

Draw how you solved the problem.

Lotu has 12 marbles. She wants to give her friends 3 marbles each. How many friends can she give marbles to?

Draw how you solved the problem.

Lotu has 16 marbles. She wants to give her friends 4 marbles each. How many friends can she give marbles to?

Draw how you solved the problem.

Mathematical Language

Divide, equal groups, chunking, array, sets.

Anticipations

Solutions, Misconceptions

Task 10

Can you make these arrays using counters and draw them?

5 by 4

3 by 7

5 by 5

10 by 3

Record number sentences that use multiplication and division to match each one.

Teacher Notes

Before you launch the task, engage the students in a choral count by tens ... start from 42 and record as:

32 42
52 62
72 82
92 102..

Support the students to notice the patterns and ask them to predict further terms using the patterns ... eg. what would be after 132?

Have available counters for the students to make the arrays.

Support students to check whether their drawing matches the array. Ask students to redraw until the drawing and array match. Provide students with grid, or dot paper if needed.

Notice whether can verbalise the multiplication and division relationships and write corresponding number sentences.

For the independent task, have counters available.

Shareback

Select students to share who can use an array to represent the group and write matching number sentences.

If no students write the number sentences, then model this for them.

Big Ideas

Objects in a set can be grouped and counted to get a final total.

Numbers can be grouped in an infinite number of ways - the number in a set stays the same no matter how it is arranged or represented.

There are patterns to the ways numbers are formed.

Objects in a set can be grouped in twos or fours to get a final total.

An array can represent a group.

Curriculum Links

Multiply and divide using equal grouping or counting

Multiply and divide using equal grouping or skip counting (e.g. in 2s, 5s, and 10s)

Connect

Make an array for 3 by 9.

Write the matching number sentences.

Suggested Learning Outcomes

Use grouping to solve multiplication problems without counting each object.

Describe how an array represents a group.

Represent an array in a structured way.

Record number sentences using multiplication and division to match an array.

Independent Tasks

Sepi has 16 marbles.

Help her arrange them into rows that have the same amount in each.

How many rows can you make?

How many marbles are in each row?

Record your ideas using drawings and write the number sentences to match.

Mathematical Language

Times, multiply, equal groups, multiplication, lots of, divide, division, array.

Anticipations

Solutions, Misconceptions

Task 11

Ade is decorating his birthday cake with his Dad with jellybeans.

First his Dad divides the cake into 2 sections.

Ade has 18 jellybeans which he carefully shares fairly on each section.

How many jellybeans does he put on each section?

Ade is decorating his birthday cake with his Dad with jellybeans.

First his Dad divides the cake into 4 sections.

Ade has 16 jellybeans which he carefully shares fairly on each section.

How many jellybeans does he put on each section?

Teacher Notes

Facilitate the students to notice that when you are talking about a set of jellybeans.

Notice students who can group or chunk when dividing the set of jellybeans.

Shareback

After the first question, select students to share who have divided the sets of jellybeans using grouping, chunking, or structure rather than sharing individually. Model the division sentence for that set on the board.

Repeat for the second question.

Connect

If we have 12 jellybeans to share fairly on two sides of a small cake, how many jellybeans would there be on each side?

Record as $12 \div 2 = 6$

What do you notice?
Facilitate the students to notice that $12 \div 2 = 6 \times 2 = 6 + 6$

If we have 20 jellybeans to share fairly on two sides of a small cake, how many jellybeans would there be on each side?

What do you notice?
Facilitate the students to notice that $20 \div 2 = 10 \times 2 = 10 + 10$

Big Ideas

Numbers can be partitioned and combined to solve more complex addition and subtraction and simple multiplication and division problems.

Numbers can be represented in a variety of ways.

Equations show relationships of equality between parts on either side of the equal sign.

Patterns and relationships can be used, represented and generalised in a variety of ways.

Repeated addition is the same as multiplication. Repeated subtraction is the same as division.

Curriculum Links

Multiply and divide using equal grouping or counting

Multiply and divide using equal grouping or skip counting (e.g. in 2s, 5s, and 10s)

Suggested Learning Outcomes

Use equal sharing to solve division of sets of problems without counting every object.

Use grouping to solve problems without counting each object.

Identify the link between division and multiplication.

Mathematical Language

Times, multiply, equals, multiplication, lots of, sets of, divide, half, division, quarter, fair share, fraction

Independent Tasks

Ade is decorating his birthday cake with his Dad with jellybeans.
First his Dad divides the cake into 2 sections.
Ade has 14 jellybeans which he carefully shares fairly on each section.
How many jellybeans does he put on each section?

Ade is decorating his birthday cake with his Dad with jellybeans.
First his Dad divides the cake into 2 sections.
Ade has 18 jellybeans which he carefully shares fairly on each section.
How many jellybeans does he put on each section?

Ade is decorating his birthday cake with his Dad with jellybeans.
First his Dad divides the cake into 4 sections.
Ade has 12 jellybeans which he carefully shares fairly on each section.
How many jellybeans does he put on each section?

Anticipations

Solutions, Misconceptions

Task 12

Nikita has a bowl of M&Ms. She wants to count how many she has so she puts them into rows.

She has 20 M&Ms.

What are all the different ways that she can organise them?

Record a multiplication, division sentence to describe each array.

Teacher Notes

Have paper and pens available. Also have discrete materials but only if the students need it. Instead press students to draw and use arrays and notate using numbers as number sentences.

Facilitate the students to notice that there is a relationship between multiplication and division - division undoes multiplication as the inverse.

Notice students who can identify the relationships between multiplication, and division of a set.

Shareback

Select students to share who have found different factors for 20 and connected these to multiplication and division.

Connect

What are the different ways you could organise 30 M&Ms?

Record the different ways for example as

2 x 15 and 15 x 2;

30 ÷ 2 and 30 ÷ 15;

What patterns and relationships do you notice?

Big Ideas

Numbers can be partitioned and combined to solve more complex addition and subtraction and simple multiplication and division problems.

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Patterns and relationships can be used, represented and generalised in a variety of ways.

Repeated addition is the same as multiplication. Repeated subtraction is the same as division.

Curriculum Links

Multiply and divide using equal grouping or counting

Multiply and divide using equal grouping or skip counting (e.g. in 2s, 5s, and 10s)

Suggested Learning Outcomes

Use equal sharing to solve division of sets of problems without counting every object.

Use grouping to solve problems without counting each object.

Write number sentences to represent multiplication and division.

Independent Tasks

Select one of the following assessment tasks (attached at the end of the document) as the independent activity:

Task 1: Multiplication and division array.

Task 2: Multiplication and division problems to solve.

Task 3: Multiplication and division problems to solve.

Mathematical Language

Times, multiply, equals, multiplication, lots of, sets of, divide, half, division, quarter, fair share, fraction

Anticipations

Solutions, Misconceptions

Assessment Task 1 - Multiplication and Division - Year 1

There are 24 children in the classroom. The teacher asks them to get into groups which are the same size.

Show all the different ways that they could get into groups. Record matching number sentences.

Assessment Task 2 - Multiplication and Division - Year 1

George had 5 sheets of stickers with 5 stickers on each sheet. How many stickers did he have altogether?

There are 28 shells to share fairly with four friends. How many shells does each friend get?

In the carpark there are 7 rows with 12 carparks in each row. How many carparks are there altogether?

Write your own multiplication or division problems. Show how you would solve them.

Assessment Task 3 - Multiplication and Division - Year 1

George had 6 sheets of stamps with 5 stamps on each sheet. How many stamps did he have altogether?

There are 24 strawberries to share fairly with four friends. How many strawberries does each friend get?

In the carpark there are 12 rows with 6 carparks in each row. How many carparks are there altogether?

Write your own multiplication or division problems. Show how you would solve them.