Halving and sharing



These activities encourage children to explore sharing fairly and finding half. These ideas are explored in many ways throughout all areas of the setting, building on children's everyday experience of sharing to help them understand that fair shares are equal. Connections with number ideas are made through sharing collections of up to 10 objects into two equal parts, including using Numicon Shape patterns. Developing the language for sharing, and the ideas of fair shares and halving, lays important foundations for children's later work on dividing and fractions.

Shape, space and measures focus: 2D and 3D shapes

Children continue to explore sharing by finding half by weighing, sharing liquids, and cutting fruit, cakes and sandwiches in half, noticing the resulting shapes.

Key mathematical ideas

Before teaching this activity group, refer to the Key mathematical ideas in the Teaching Guide:

Equivalence, Part-whole relationships, Fractions, Counting, Not-counting, Pattern and generalizing, Dividing, Measuring, Shape and space

Communicating

Use the following words and terms and listen for children using them:

number names (one, two, three, ...), whole, fair, share, equal parts, equal share, equal number of, half, halves, halve

Learning opportunities

- To create shares and equal shares of a whole or an amount.
- To understand that a 'whole' can be made up of different-sized parts or parts that are the same size.
- To identify and create two equal parts and know that each part is called a 'half'.
- To begin to realize that a whole shape can be halved in different ways.
- To halve collections of up to 10 objects accurately.
- To find 'half' of Numicon Shapes.
- To find two identical number rods that are equal in length to one larger rod.

Assessment opportunities

Look and listen for children who:

- Show understanding of the words and terms for communicating in what they say and do.
- Use structured apparatus to communicate their ideas.
- Share whole objects equally.
- Share collections of discrete objects equally.
- Divide a 'whole' into different-sized parts and parts that are equal in size.
- Halve whole shapes in different ways.

All doing maths together

Select from the activities suggested in:

- Activity Group A: Daily maths opportunities
- Activity Group B: Daily counting activities

Also:

 Talk with children about objects that can be shared easily and objects that cannot, including how some objects are made up of smaller parts. Look at a range of different items, e.g. a satsuma that breaks into segments; a wrapped loaf that breaks into slices of bread; a jug of juice that can be poured into beakers; an apple, cake or pizza; a collection of identical objects; a collection of ribbons; a bag of shells; a DVD.

Agree with children that some things have smaller parts that make it easier to share them, other things can be shared by cutting/separating and some things cannot be cut but can be 'shared' or enjoyed in a different way, e.g. all take turns to borrow a DVD or watch it together.

How could we share this?

- Give children sharing problems and talk about different possibilities, e.g. a share in (or part of or piece of) a cake or drink may vary in size. Some people like a small slice or a big drink, but sometimes everyone likes it to be fair and to have the same size, or an equal part.
- Set out a collection of interesting objects. Talk about how many children are going to share the collection and share it out.

Does it share fairly? How do you know?

Some children may decide to count to find out. Children group the objects into Numicon Shape patterns and check. Talk about how to make it fair. 1

 Discuss the word 'half' and invite children to share their ideas, e.g. 'half each', 'half past', 'halfway'.
Agree that 'half each' means that each of two people gets a fair share.

Activities with structured apparatus

Activity 1 Halving collections

Have ready: collections of interesting objects (initially up to 10) in different pots

Children have one pot between two and estimate how many objects are in their pot. They then share out the collection. Talk about whether it can be shared fairly and whether each child has an equal share or number. Children check by arranging their share into a Numicon Shape pattern to see if anyone has one more or one fewer. 2

Activity 2 Halving Numicon Shapes

Have ready: Numicon Shapes, Printable Numicon Shapes (available on the Oxford Owl website), extra paper Children choose a Shape and find the matching paper Shape. Discuss how they could cut it in half. They stick both halves onto paper. 3

Which Shapes can you cut in half exactly?

Activity 3 Sharing Pegs from Numicon Shape patterns

Have ready: Numicon Shapes, Numicon Coloured Pegs

Children choose a Shape and fill it with Pegs. They share out the Pegs with a few other children and decide whether everyone has an equal share or whether anyone has more or fewer Pegs. Discuss how to make it fair, so everyone has an equal share. Check by finding the corresponding Shapes.

Activity 4 Sharing collections

Have ready: Numicon Shapes, collections of interesting objects, selection of small pots

Children choose a pot and fill it with objects. They share out the objects with their friend(s) and decide whether everyone has an equal share or whether anyone has more or fewer.

Do they share fairly? How do you know?

How can you make it fair so everyone has an equal share?

Check by finding the corresponding Shapes.

Activity 5 Rod trains to match a longer rod

Have ready: number rods

Children choose a number rod and then experiment to find another rod that, when several are placed end to end, fits alongside the first rod exactly.

Do the red rods fit exactly along every other rod?

What about the light green rods?

Variation: children find out whether it is possible to use two identical rods that equal the length of the bigger rod.







Exploring maths all around us

Outdoor maths and physical play

• Play games where children run halfway around the hall or halfway around the outside area.

Discuss children's ideas about how they will know they have run halfway.

 Ask children to get into groups of six or eight (depending on their counting and social skills). Encourage them to arrange themselves so that half of each group sits down while the other half stands up tall, then half lies down while the other half kneels, and so on.

Challenge groups to arrange themselves into the Numicon Shape pattern for their number.

Does everyone have a partner?

- Cut pictures, e.g. old greetings cards, postcards, pictures from magazines (stuck onto card), in half. Hide the halves around the outside area for children to find two halves to complete a whole picture.
- Share out beanbags fairly for children to throw into Numicon buckets (see Activity Group 4, Fig. 5). Encourage children to throw two beanbags each, and add to find the total of their scores. Provide Numicon Shapes for children to use to help them add. 5

Can you find the total on a number line?

Sand, water and messy play

- Hide treasure in wet sand (or another suitable material) for children to find and then share with a friend.
- Put teacups and a teapot in the water tray. 6

Can you share the tea between two cups, one each for you and your friend?

What would happen if another friend wanted a drink?

- Give children cups and bottles to use with coloured water. Invite them to work in pairs. Set them the challenge of sharing a 'bottle of juice' fairly between two cups.
- Put containers of different sizes and shapes in the sand or water tray for children to work together to half-fill. **7**

How will you know when the container is half full?

- Provide modelling dough for children to share equally with a friend, checking the shares are equal using a pan balance (e.g. the Numicon Pan Balance). Encourage them to make different items or shapes to cut in half (or into fair shares) and share with a friend(s), e.g. a flat 'pizza', a cupcake, a pie.
- Provide tubs of interesting stones and shells for children to share, including sharing out equally.

Expressive arts and design

- Explore symmetrical printing using paint and a range of 3D shapes.
- Share interesting-shaped sponges or cut potatoes fairly between children. Invite them to make repeating or symmetrical patterns on paper or fabric to use as drapes in role play.
- Use chalks to create patterns on boards and the playground.
- Give children a range of media, such as lengths of paper, string, tinsel, paper shapes, that they can fold or cut in half to create their own collages. Invite them to make designs or repeating patterns with halved shapes. Encourage children to work with a partner, sharing their ideas and working together.









Activity Group 12

Games, puzzles and tabletop

- Provide a range of games and puzzles that involve matching two halves of a picture.
- Invite children to take photos of only half of various familiar objects. Share and discuss them, then print and laminate the photos. Encourage children to experiment with mirrors to make the reflection reveal the whole object.
- Help children to make their own books about half and sharing fairly. Start by folding sheets of paper in half and stapling them together into a booklet for them to illustrate with their own ideas.
- Make simple chocolate crispy buns with a group. Talk about the number of pieces in a bar of chocolate as children help to break it up.

Can we break the bar in half? How many squares in half a bar? How many paper cases will we need so everyone in the group can have two buns each?

Choose a child to share out the crispy buns for everyone to take home.

• Make simple biscuits with children. After rolling out the dough and cutting it into different shapes, ask children to cut the shapes in half.

What two shapes will you have if you cut your square biscuit in half?

Can you cut it in half in a different way to make different shapes?

- Make simple, healthy sandwiches using a slice of bread with a choice of grated cheese and carrot, sliced tomatoes, cucumber and salad leaves. Put filling on half of the slice of bread, fold the bread over and then slice in half, talking about what 'a half' means.
- Ask children to work on the next number in their counting and number ideas book.

Role play, small world and construction

- Provide children with plastic food that has hook and loop fastenings so that it can be 'cut' in half and 'stuck' back together.
- Provide a marble run with 10 marbles and a Numicon 10-shape. Choose different numbers of children to play and encourage them to share the marbles fairly. 'How many marbles will you have each if you share them with a friend?', 'How many each if you share them between five friends?'
- Set up a role-play bakery making 'cakes'. Children share counters and cut straws (to represent cherries and candles, respectively) between two or more cakes. Encourage children to share the decorations in different ways.

Can you count out ten cherries and share them equally between two cakes?

How many cherries would be on each cake if you shared the ten cherries between three or four cakes?

- In role play, share out equipment and dressing up resources and encourage children to take turns to play.
- Set up a picnic where children share equipment out between picnickers to lay places and share food fairly.
- With small-world resources, encourage children to share 'special' pieces fairly, e.g. trains and carriages, cars and special creatures or play people.

Stories, songs and rhymes

- Encourage children to share stories with a friend, taking turns to 'read', talk about the story and ask questions. 10
- Use counting songs like Four Fine Flags, Six Ice Creams and Nine Shells on the Beach from *Numicon at the Seaside* as a starting point to discuss sharing in different ways.

- Invite children to compile their photographs of halves of familiar classroom objects into a class puzzle book, then share and discuss what the objects are.
- Read stories about sharing.

Other curriculum links

Physical development – Health and self-care:

- Healthy diet.
- Basic hygiene when cooking.

Personal, social and emotional development – Making relationships:

• Working as part of a group, sharing and cooperating.

Understanding the world – The world:

• Learning about changes when cooking.

Understanding the world – Technology:

• Taking photographs using a tablet or digital camera and sharing them.





