The National
Numeracy *Strategy*

Guidance

Curriculum & Standards

Mathematical activities for the Foundation Stage
Reception

Early years practitioners

Early years settings and schools with nursery and reception aged children

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Excellence in schools

Contents

Introduction

Purpose of the booklets

The aim of these booklets is to help Foundation Stage practitioners to plan mathematical activities that are linked to the Stepping Stones identified in the *Curriculum Guidance for the Foundation Stage* (QCA/DFEE), progressing towards the Early Learning Goals. The Early Learning Goals are the same as the Key Objectives in the *Framework for teaching mathematics from Reception to Year 6* (*National* Numeracy *Strategy*/DFEE). References to one or both of these documents are written at the foot of each page in the booklets. These booklets should be read in conjunction with the *Curriculum Guidance for the Foundation Stage.*

There are two booklets: one for nursery-aged children (typically three- and four-year olds) and one for reception-aged children (typically four- and five-year olds). The two booklets overlap in terms of pitch and content to cater for groups of children working across the Stepping Stones. It is intended that these booklets should be of help to practitioners across the range of Foundation Stage settings including local authority nurseries, nursery centres, playgroups, pre-schools, accredited childminders in approved child-minding networks and schools in the independent, private or voluntary sectors and maintained schools.

Objectives for the activities

The objectives for the activities are taken from the *Curriculum Guidance for the Foundation Stage* (CGFS) by turning the Stepping Stones and statements from the 'what the practitioner does' section into teaching objectives. The same colour coding system as that used in CGFS is used to indicate the stage in the Stepping Stones progressing towards the Early Learning Goal/Key Objective. The appropriate Early Learning Goal is added to the top of each page in both the Nursery and the Reception booklets to indicate where the Stepping Stones are leading. The activities relating to the Early Learning Goals themselves are only in the Reception booklet.

The activities

The activities are organised to help practitioners choose activities for three specific teaching and learning contexts:

- large group (which might be the whole group in a nursery or reception class);
- small group (of similar aged children from a range of Foundation Stage settings); or
- planned play and cooking activities (many of these would be appropriate for children in any setting, including playgroups).

The proportion of time spent in these teaching contexts will change during the Foundation Stage and so the proportion of activities under these headings in the Nursery booklet differs from that in the Reception booklet. For example, older children who have been in school for several terms will spend more time in large group settings than children who are at the beginning of the Foundation Stage.

These well-tried activities support the teaching of mathematics in the Foundation Stage. They are not meant to be exhaustive; there will be other opportunities for mathematical learning which children plan or initiate themselves. On the bottom of each page, there is space to note modifications for future reference or other ideas for activities. The booklets do not attempt to cover every statement in the Stepping Stones towards the Early Learning Goals. The National Numeracy Strategy *Framework for teaching mathematics from Reception to Year 6* provides other objectives (section 3 and supplement of examples, section 4) in addition to the Key Objectives for settings such as reception classes. They offer additional breadth in the second year of the Foundation Stage. Reception teachers should also look ahead to the Year 1 objectives, particularly for more able children.

The activities require resources that should be readily available in many settings. If any are unavailable they can easily and effectively be substituted by others. There are some photocopiable resource sheets at the back of the booklets.

An Overview of the Foundation Stage Activities

	Nursery booklet			Reception booklet		
Stepping stones	**Yellow band**	**Blue band**	**Green band**	**Blue band**	**Green band**	**Early learning goal/ Key objective**
Large group activities	Counting and recognising numbers page 8–17 Early addition and subtraction page 38–41 Measures page 50–53 Shape and space page 66–67			Counting and recognising numbers page 12–21 Early addition and subtraction page 34–39 Measures page 48–53 Shape and space page 62–65		
Small group activities	Counting and recognising numbers page 18–27 Early addition and subtraction page 42–45 Measures page 54–59 Shape and space page 68–71			Counting and recognising numbers page 22–29 Early addition and subtraction page 40–43 Measures page 54–55 Shape and space page 66–69		
Planned play and cooking activities	Counting and recognising numbers page 28–37 Early addition and subtraction page 46–49 Measures page 60–65 Shape and space page 72–78			Counting and recognising numbers page 30–33 Early addition and subtraction page 44–47 Measures page 58–61 Shape and space page 70–71		

	Counting and recognising numbers	**Early addition and subtraction**	**Measures**	**Shape and space**
Early Learning Goals	• Say and use the number names in order in familiar contexts. • Count reliably up to 10 everyday objects. • Recognise numerals 1 to 9. • Use developing mathematical ideas and methods to solve practical problems.	• In practical activities and discussion, begin to to use the vocabulary involved in adding and subtracting. • Find one more or one less than a number from 1 to 10. • Begin to relate addition to combining two groups of objects, and subtraction to 'taking away'. • Use developing mathematical ideas and methods to solve practical problems.	• Use language such as circle or bigger to describe the shape and size of solids and flat shapes. • Use developing mathematical ideas and methods to solve practical problems.	• Talk about, recognise and recreate simple patterns. • Use language such as circle or bigger to describe the shape and size of solids and flat shapes. • Use everyday words to describe position.

Other supporting materials

There are two training sessions to support the use of these materials. They will typically be delivered by Early Years advisers/Early Years Development and Childcare Partnership trainers. Practitioners attending this training will receive an introductory pack which includes:

- video footage of children engaged in number activities at the beginning, middle and end of the Foundation Stage;
- video footage of children engaged in shape activities at the beginning, middle and end of the Foundation Stage;
- a leaflet suggesting how these materials might be used.

Also included in the pack will be guidance on how teachers might organise their teaching in mixed Reception/Year 1 classes.

Further copies of the two booklets can be obtained from DfES Publications (see reference details on the back of this booklet).

Other related National Numeracy Strategy materials

Title	Content
Mathematical vocabulary booklet & CD ROM	Advice on developing mathematical vocabulary, questioning techniques, vocabulary checklist for reception, vocabulary in flash card form on the CD ROM
Professional Development Materials 1 and 2 (yellow box) Video 2: Effective teaching and the approaches to calculation	Video clip 2 (part 1) key resources for teaching early number work
QCA booklet: *Standards in mathematics: Exemplification of key learning objectives from reception to year 6*	Explanation of key objectives with use of children's work to exemplify the standards expected from reception to Year 6
Guide for your professional development book 4 Raising standards in mathematics in the early years, in KS1 and in special schools	Chapter 5 – Mathematics in reception and video clip 3 Chapter 6 – Mathematics in nursery and video clip 4
Professional development materials 3 and 4 (green box) CD ROM Support for planning and teaching mathematics	Mathematics from stories – suggestions of stories that link with mathematics
Progression charts: Reception to Year 7 (Additional copies of materials distributed to headteachers at conferences held in Autumn Term)	Progression chart for problem solving Progression chart for subtraction Progression chart for addition and subtraction

Guidance on the organisation of the daily mathematics lesson in reception classes

This guidance reinforces and expands on the section 'How can we work in reception?' in the Introduction to the *Framework for Teaching Mathematics from reception to Year 6.* This advice has previously been given in the form of a leaflet to headteachers, mathematics coordinators and reception teachers attending National Numeracy Strategy training courses.

The background to the *Framework* for reception

- **Children start school at different times of the year,** with very mixed experiences and understanding. They may vary in age from being 'just 4' to '5 plus'. Local policies for entry for school vary widely across the country. Some children start in the September of the reception year; others start in January or April at rising five and will complete one or two terms in the class before moving on to Year 1. Some summer-born children may have no time at all in a reception class and will start school in the September of Year 1. The number of children in this situation may have reduced as a result of the changes in early years funding but the variations in children's understanding remain. Children will also arrive from a variety of different settings – nursery, playgroup, child-minder, home – and therefore will have had very different learning experiences.

- **The examples illustrate what the oldest reception children should be able to do by the end of the year.** The *Framework's,* supplement of examples for reception illustrates what a child who reaches the age of five in the autumn term, and who spends a whole year in reception, should know and be able to do by the end of the summer term.

- **Reception teachers need to tailor the examples in the *Framework* to their own circumstances.** The objectives and examples for reception may continue to apply to some children in Year 1, including those who have not had a full year in reception, so Year 1 teachers will need to refer to the *Framework* for reception when planning. Similarly, reception teachers and assistants should refer regularly to the *Framework* for Year 1 so that they are clear about where work is heading.

- **Reception teachers need to take account of what children already know, understand and can do.** When beginning to plan for mathematics in reception, schools will need to consider carefully:

  – information gained from their own observations and assessments;

  – records passed on from nurseries and playgroups; and

  – the comments which parents/carers make about their child's progress in mathematics.

  The examples for reception (Section 4 of the *Framework*) are phrased to reflect children's wide range of experience. For example:

  – page 4: Begin to understand in practical contexts: *count, how many . . . ?*

  – page 7: Begin to understand and use in practical contexts: *odd, even, every other . . .*

  – page 8: Begin to understand and use in practical contexts: *guess how many, estimate . . .*

  – page 9: Begin to read the first few number names, including zero.

  – page 23: Be aware of the language of clock times of the day, such as: we go to assembly at 10 o'clock . . .

  – page 24: Start to become aware of some properties of solid shapes when looking at, talking about and comparing them.

- **Reception teachers have an important role to play in identifying children's individual needs.** Early years teachers have a key role to play in identifying children who need additional support and planning interventions to support their learning.

- **The planning grids are suitable for use in any reception class,** since they indicate topics, and the balance between them, not levels of difficulty. They differ from the planning grids for other years in that:
  - the number of teaching days is missing and can be determined once children have settled into school;
  - each termly grid is different, to reflect the need, each term, to cater for children who have just started school and those who have been in the Reception class in the preceding term(s).

The yearly teaching programme for reception (Section 3, page 2) is in line with the Early Learning Goals and provides a bridge from the goals to the National Curriculum which begins in Year 1. Remember that although the Foundation Stage prepares children for the beginning of Key Stage 1, it is also a distinct phase of education and one in which play is vital.

The daily mathematics lesson in reception

In reception classes, **a wide range of activities supports the teaching and learning of mathematics** including:

- observation of number and pattern in the environment and daily routines;
- board games;
- large and small construction;
- stories, songs, rhymes and finger games;
- sand and water;
- two- and three-dimensional work with a range of materials;
- imaginative play;
- cooking and shopping;
- outdoor play and 'playground' games.

Lessons will often include, or be based upon, well-planned opportunities for children's play. Examples of this will be found in the QCA/DfEE document – *Curriculum guidance for the foundation stage.*

Planning and organising this range of activities is important for the promotion of social skills as well as for the teaching of mathematics. An important role for reception staff is to help children begin to recognise that school is where learning takes place. They provide a wide range of opportunities for children to develop their independence and ability to concentrate and persevere. These will include:

- listening in small and large group settings;
- finding and using the equipment that they need;
- taking turns;
- playing games, for example, becoming familiar with the repetitive structures of throwing dice and collecting objects.

To make sure that children experience a range of activities, the daily mathematics lesson in reception can be planned in the following ways:

- a whole class activity which will almost always include some counting;
- some teaching of the whole class on the main mathematics topic of the day;
- group activities:
  either one or more activities, linked to the theme of the lesson, worked on by groups in turn during the day, usually supported by an adult;
  or mathematical activities for everyone, simultaneously in groups;
- a plenary with the whole class after the group activities are ended.

The lesson should always begin with an oral and mental starter, followed by some direct teaching to the whole class, and there should always be a plenary session. Sometimes the plenary can be at a time when follow-up discussion on numeracy and literacy activities can take place together. The middle part of the lesson will change over the course of the year and sometimes from topic to topic. Initially, during the main teaching activity, children not working on an adult-directed activity may be working on activities of their own choice (not necessarily mathematical) in various areas of the classroom. If there is another adult in the room, she or he may draw out mathematical opportunities from their play, when there is an appropriate moment.

Towards the end of the reception year, it is important that the lesson structure gradually becomes more like that of lessons in Years 1 to 6. This will mean longer periods of whole class teaching and children working in groups simultaneously. Over time, the elements of the daily mathematics lesson can be drawn together to form a 45-minute lesson.

Teachers will need to make decisions about the organisation of daily mathematics lessons taking into account:

- the range of age, experience and maturity of the children;
- the needs of individual children who may require additional support;
- the number in the class;
- the mathematical topic being taught – new learning, practice and consolidation, something children have found difficult in the past . . . ;
- the level of support from teaching assistants.

The sample lessons for reception (from *More numeracy lessons,* DfEE 1999), provide examples of different forms of organisation. The lessons include role-play, outdoor play, rhymes, games, and group work undertaken with a teaching assistant.

Schools need to plan carefully the role and contribution of teaching assistants in reception. Assistants need to know the teacher's objectives for the children's mathematical learning so that both are working towards the same end. Assistants can then observe or join in children's play and subsequently feed back to the teacher.

During whole class sessions assistants can:

- focus on particular children and monitor their responses to the discussion;
- sit near children who need help, and do this quietly and discreetly;
- help a particular group feed back to the whole group in a plenary session.

During group work assistants can:

- observe and talk with the children to inform future planning;
- ask the children questions to get them thinking;
- help them to work together sociably;
- help them to understand an activity;
- introduce/reinforce mathematical vocabulary;
- give children the chance to discuss the mathematics they are doing.

Conclusion

Children in reception are expected to:

- receive some direct teaching;
- work as a whole class, in groups and as pairs or individuals;
- develop an understanding of the number system through counting in varied contexts;
- have many opportunities to talk about mathematical ideas;
- explore those ideas through well-planned play and practical work.

References

Early Learning Goals	QCA/DfEE 1999
Curriculum guidance for the foundation stage	QCA/DfEE 2000 Ref: QCA/00/587
More Numeracy Lessons	NNS/DfEE 1999 Ref: 0599/2001
The Framework for teaching mathematics: Reception to Year 6	NNS/DfEE 1999 Ref: NNFT
Guide for your professional development: Raising standards in mathematics in the early years, in Key Stage 1 and in special schools. Book 4, Chapter 5 *(included in the Professional development materials 3 and 4 delivered to schools Dec 2000)*	NNS/DfEE 1999 Ref: NNS65

Mathematical activities

Large group activities

Say and use number names in order in familiar contexts

Model counting to five and beyond

You will need: a soft-toy rabbit.

- Chant the following rhyme, matching each verse by the appropriate number of fingers and a suitable action.
  One big bunny rabbit bouncing just like you,
  Along came another one and then there were two.
  Two big bunny rabbits digging by a tree,
  Along came another one and then there were three.
  Three big bunny rabbits eating even more . . .
  Four big bunny rabbits glad to be alive . . .
  Five big bunny rabbits jumping over bricks . . .
  Six big bunny rabbits living down in Devon . . .
  Seven big bunny rabbits squeezing through the gate . . .
  Eight big bunny rabbits hopping in a line . . .
  Nine big bunny rabbits sitting in a pen . . .
  Ten big bunny rabbits running in the furrow
  Out came the moon so they went down in their burrow.
- Use the toy rabbit to match fingers to spoken numerals. **Bunny says he has five friends! Show me five bunnies on your fingers.** The children show five fingers. Say the appropriate verse: **Five big bunny rabbits jumping over bricks; Along came another one and then there were six.** Use the rabbit again. **Bunny says he has . . .** pause to add suspense . . . **three friends.** As fast as possible children show you three fingers! Praise those who were quick! Repeat.

Provide opportunities for children to count to ten and more

You will need: a puppet, number line 1 to 20.

- Count in unison to ten, holding up one finger for each number spoken. **One,** holding up a thumb, **two,** holding up a finger as well, **three,** holding up a third finger, **four,** holding up a fourth finger, and **five** (said loudly), holding up the fifth finger and shaking the whole hand in the air. Then, starting on the next hand, **six,** holding up a thumb, **seven,** holding up a finger as well, **eight,** holding up another finger, **nine,** holding up a fourth finger and **ten** (said loudly), holding up both hands and shaking them in the air.
- Repeat this count frequently, so that the children are very confident.
- Extend the count to twenty, folding down all the fingers on both hands after **'ten'** and starting at **'eleven'** by holding up a thumb as for **one.**
- Count to twenty along the number line. Then make the puppet count to twenty along the line but he does it wrong and misses out one number! The children should correct him. Can they point to the number on the line that the puppet left out? Repeat making the puppet miss out a different number each time!

Model numbers in stories on a number line

You will need: a low hanging number line 1 to 20, three large rubber flies, a spider and a drawing of a spider's nest.

- Set out the number line, hanging it where children can reach the numbers. Stick the flies on numbers 3, 8 and 12 and the nest before number 1. Show children the spider. **Mr spider is hungry. He is going to catch a fly! How many hops will he have to make along the number line to catch a fly?** Point at the first fly on number 3. Encourage suggestions. Then make the spider hop out of his nest, counting **one, two, three. Three hops. Mr Fly was on number three.** Make the spider eat up the fly, gobble, gobble!
- Point at the number line. **Where is the next fly? How many hops will Spider have to make?** Continue like this until the spider has eaten all the flies.

Other ideas for activities/notes for next time

Large group activities

Count reliably up to 10 (and more) everyday objects

Encourage instant recognition of one, two or three dots

You will need: a large spotty dice and lots of large bricks.

- Build a tower with six large bricks. Encourage the children to count the bricks as you build the tower. **One, two, three, four, five, six. Six bricks.**
- Repeat this, building towers with five bricks, with four bricks, with three bricks, with two bricks, and with one brick.
- Line up the towers. Label each one with a large numeral. Point to the numerals. **One, two, three, four, five, six.** Repeat this several times so that the children recognise each tower.
- Choose a child to throw the dice. Make sure all the children can see the dice. If the number thrown is 1, 2 or 3 dots ask the children to point straight-away at the tower with a matching number of bricks. If the number thrown is 4, 5 or 6 dots count the dots on the dice first, then ask children to point to the matching tower. **Do you always have to count the dots?**

Model touching or moving objects in order to count them

You will need: a puppet, a variety of toy animals and lots of number cards 1 to 10.

- Place nine animals in a heap in the middle of the carpet and say that there are between one and ten animals. **How many animals do you think there are?** Encourage the children to work in pairs/threes to have a guess. Each pair takes a number card to match their guess.
- **How can the farmer find out how many there are? He will count them.** Make the 'farmer' (puppet) start counting. Ensure that he does not move the animals but tries to count them in their pile and gets thoroughly confused. **'Did I count that sheep? Or was it that cow?'** Tell the puppet. **We need to move the animals to count them properly.** Choose a child to move the animals in pairs. The whole class counts as they move them. **One, two** (putting two animals to one side) **three, four** (putting two more on one side) **five, six** (moving another two) **seven, eight** (moving another two) **and nine** (moving the last animal). **Nine animals.** Encourage each pair to look at their number card. **How close were you? Who guessed nine?**
- Repeat, placing a different number of animals in the middle of the carpet.

Model how arranging objects in rows of 5 or 10 helps when counting them

You will need: lots of large bricks and number cards 1 to 30.

- Count in unison to 30. Use fingers to match the count, stressing 'five', one whole hand, and 'ten', two hands. Help the children to continue the count to 30, marking the units with their fingers.
- Place 24 bricks in a large pile where they can be seen. **How many bricks?** Ask the children to suggest how we are going to find out. **We shall count them.** Start trying to count the bricks, getting in a muddle and counting the same brick twice. Consult the children. **Why am I getting in such a muddle? What do I need to do to help me count the bricks correctly?** Encourage the children to suggest that we need to move the bricks to help us count them. Demonstrate how to count the bricks in fives. **One, two, three, four, five** – moving five bricks into a pile in front of a child. **Six, seven, eight, nine, ten** – moving the next five bricks into a pile in front of another child and so on. **Twenty-four bricks.** Show the right number card.
- Ask for two volunteers. Turn their backs to the class and blindfold them. With the rest of the class, silently count nineteen bricks into a pile. Turn the two children round and remove the blindfolds. They guess how many bricks. Then they count, grouping in fives. **How close was their guess?**

Other ideas for activities/notes for next time

Model counting to five and beyond

You will need: large number mats laid in a track 1 to 10 along the middle of the carpet. Each mat is turned upside down so that the number cannot be seen.

- Choose a child to jump along the number track.
- Altogether, in unison, count the child's jumps. **One, two, three, four. How many jumps? Four.** Choose another child to turn over the number mat. Point out that it says four.
- Repeat this process, choosing another child to jump along the track whilst the other children count in unison. Ask the children how many jumps have been made and then turn over the mat to match the number of jumps to the written numeral.
- Keep going like this until all the number mats are turned over.
- Together count along the number track made of mats pointing to each number as it is spoken.
- Choose a child. Ask her to take a mat. She should clap that number of times. The rest of the class count her claps. **Does the number match the mat she is holding?**
- Repeat this, choosing another child.

Encourage counting of things that cannot be touched

You will need: enough biscuits for one per child.

- Ask the children to put their hands behind their backs. Tell them to bring their hands from behind their back and hold up the right number of fingers when you say a number. **Nine!** Repeat this for other numbers.
- Ask the children to shut their eyes. **I want you to pretend that someone is being very kind to you. They have given you three biscuits. Keep your eyes tight shut. Show me on your fingers how many biscuits they have given you.** The children show you three fingers and open their eyes.
- Repeat this activity, asking children to imagine a number of objects and then to show you the correct number of fingers.
- Show the children three biscuits. **How many biscuits?** Encourage the children to recognise three without touching them!
- **How many bites do you think will be needed to eat one of the biscuits?** Choose a child to eat one of the biscuits. Ask the children to count how many bites (not chews) are taken. Give each child a biscuit. Ask them to count how many bites it takes to eat their biscuits.

Model various counting activities on the number line

You will need: a cloth bag, a number line 1 to 20 and twenty wooden bricks.

- Count to twenty pointing to each number on the number line as you do so. Ask the children to use fingers to match the count, stressing five, ten, then fifteen (holding up five fingers) and twenty (holding up ten fingers).
- Show the children the cloth bag. **I am going to put a number of bricks in the bag. You have to guess how many!** Place seven bricks in the bag without the children being able to see how many there are. Point at 7 on the number line. **This is how many bricks. Show me on your fingers.** Count along the number line – the children all hold up one finger for each number pointed at and said. **Seven fingers.** Point at the number 7 on the line. **Number seven.** Take out the bricks from the bag, one at a time, to check how many. Give one child the number 7 from the line. All the children should clap that number of times.
- Choose a child to place some bricks in the bag without the others being able to see how many they put in. Then repeat the activity. Match the number of bricks to the number on the line, and to fingers. Clap that number of times.

Other ideas for activities/notes for next time

Provide number labels for children to use

You will need: large piece of paper, large numerals 1 to 9, six large dotty cards with 1, 2, 3, 4, 5 and 6 dots and low-tack tape.

- Everyone holds their hands behind their back. Hold up a numeral 7. Say 'seven' and children bring out their hands with seven fingers standing up. Repeat, so everyone can do this. Look at different ways of holding up seven fingers, e.g. 3 and 4 or 5 and 2.
- Repeat with a new numeral, 8. Eight. Children bring out their hands with that number of fingers standing up. Compare different ways of doing this, e.g. 5 and 3 or 4 and 4.
- Choose a child. Tape a card on her back. Turn her round so the rest of the class can see. The children match the number of dots on the card with their fingers, i.e. if there are 4 dots on the card they hold up 4 fingers. They try to do this in different ways, e.g. 3 fingers on one hand, 1 on the other, 2 on each, etc. Turn the child round so she can see their fingers. She selects the matching numeral. Then she draws that number of dots on the paper. Remove the card from her back. Has she drawn the same number of spots? If yes, she chooses another child to have a go. Repeat.

Display numerals in the environment

You will need: large numerals 1 to 10 pegged in order on a washing line, large bright pieces of paper and ten extra pegs.

- Choose a child. Ask him to show you a number of fingers. Consult the class. How many fingers is he holding up? Choose another child to select the matching numeral. Point to this number on the line. Everyone holds up a matching number of fingers.
- Ask the children to look around the class. Can anyone see something which matches that number? For example, if the number is 4, four panes in a window, or four pictures on a board. If there is no obvious quantity in the classroom to match the number, can the children think of something else – e.g. Sally has ten goldfish. Be inventive – perhaps including things like 'it is three more days until our outing to the farm'. Write or draw this on a bright piece of paper and peg it to the bottom of the correct numeral on the line.
- Choose another child to hold up a different number of fingers and repeat the process, matching the number of fingers to a numeral, displaying it, and then thinking of a quantity to go with it. Continue until several numerals have pieces of paper attached to them.

Use missing number problems

You will need: large numbers 1 to 20, pegs, a washing line and a puppet.

- Count in unison to twenty, matching fingers to units and stressing the multiples of five.
- Give out all the numbers except 9 and 19 so that each number is held by a child or pair of children. Pick up a peg. Point at the washing line. I am going to peg out the numbers – which one will I need to peg first? Encourage the pair/child holding '1' to bring it out and peg it up. Which number will I need next? Encourage the child/pair holding the '2' to bring it out and peg it up. Continue this process until you reach the space for '9'. Who has this number? The children consult each other. It has gone missing! Bring out the puppet holding the number 9. This is Timmy! He is very naughty. He stole our number nine! Choose a child to help Timmy peg the 9 in the right place on the line.
- Continue like this till you reach 19. Again, find out that Timmy has stolen this number! Peg up 19 and 20. All the children close their eyes. Timmy steals a number from the line. Consult the class. Which number is missing? Repeat this several times.

Other ideas for activities/notes for next time

Large group activities

Model the use of mathematical language, e.g. 'how many?'

You will need: a basket containing 12 soft toys and at least five extra soft toys.

- Show the children the basket. How many toys do you think are in my basket? Have I got enough to give everyone in the class a toy? Help the children discuss this in pairs. Ask them to vote 'yes' or 'no'. How will we find out? Count the toys out of the basket, counting in unison and handing each toy to a different child as you count. Encourage the children to hold up one finger for each number spoken. One, two, three, four . . . until all the toys are out of the basket and are handed to different children. Were there enough for every child? No! Discuss the fact that there were twelve toys and there are more than twelve children! Then count the toys back into the basket.
- Put some more toys in the basket and ask again how many there are and if there is enough for each child. How will we find out? Draw out that you could give them out, or you could count them and compare this number with the number of children.

Model and encourage the use of mathematical language, e.g. 'have you enough to give me three?'

You will need: a plate with sixteen small cheese snacks, about 50 extra snacks, a reusable sticky note and lots of 1 to 20 number cards.

- Show the class the plate. How many snacks do you think there are on the plate? Encourage the children to work in pairs to guess. Each pair takes a number card to match it. Put an empty plate on the carpet. We shall count the snacks onto this plate. Start counting snacks from your plate to the empty plate. The children count in unison as you do so. When they have all been counted, write the number on the sticky note and stick it on the plate. How many snacks? Reply in unison.
- Point at the full plate. Choose a pair of children. Consult the class. Have we got enough snacks to give Annie and Jane two snacks each? Discuss this, and give those two children two snacks each. One, two, three, four. Four snacks in all. Repeat this process, choosing two different children. Keep going like this until the snacks have run out. Use the extra snacks to give the remaining children two snacks each.

Encourage children to talk and think about quantity

You will need: a see-through jug, a handful of small stones and a handful of larger stones, individual whiteboards or paper and number cards 1 to 25.

- Put the children in pairs. Put a handful of small stones in the jug and show the children. How many stones are there in the jug? Ask the children to talk to their partners, and write/draw their guesses on a whiteboard/piece of paper. Give help to some pairs. Ask them to show you their guesses. Discuss these and ask some children to explain their guesses. Now together count the stones. Whose guesses were close? Which is the biggest guess? The smallest?
- Repeat but this time put larger stones in the jug trying to get them to come up to the same level in the jug. Discuss how many there might be before children record their guesses. Do you think there are the same number? More? Less? Again ask children to show their guesses and discuss them. Whose guesses were close? Was anyone one away from the answer? Can you fit as many big stones in this jug as little ones?

Other ideas for activities/notes for next time

Model counting to five and beyond

You will need: a number track 1 to 10, a coin and a different coloured counter for each child.

- Show the children the number track. Count along it together, pointing at each number as you say it.
- Give each child a counter. They each put this on number 1 and say the number, **'one'.**
- The children take it in turns to spin a coin. If it lands heads, help them to move two spaces forward. If it lands tails, they move one space forward. Before they move, encourage the child to count up to where they are and then on two or one, e.g. if a child is on 5 and throws heads, they count up to five, pointing at each number on the track as they do so, and then they count on two more to seven.
- Who will reach 10 first?
- As the children take it in turns and play, encourage lots of discussion.
  Who is closest to 10? What number are you on? How many will you need to move to catch her up? How many spaces have you got to go?

Provide opportunities for children to count to ten and more

You will need: a number track 1 to 20, a coin and a different coloured counter for each child.

- Show the children the number track. Count along it together, pointing at each number as you say it.
- Give each child a counter. They each put this on number 10 and say the number, **'ten'.**
- The children take it in turns to spin a coin. If it lands heads, help them to move one space forward. If it lands tails, they move one space backward. Before they move they should say the number they will be moving to, e.g. if a child is on 12 and throws heads, they say **'thirteen'.** Providing the child is correct in the number they say, they can move. If they are not, they stay put. Help the children by encouraging them to count from the start of the track if they cannot remember the number they need to say.
- Who will fall off one end of the number track first?

Model the numbers in various counting activities on a number line

You will need: number cards 1 to 20 and a number line 1 to 20.

- Play this game with four children. Deal out the cards so that each child has five cards.
- Ask the child who is holding card number '10' to put the card down in the middle of the table. Discuss where 10 is in the number line. **What comes just before 10? What's the next number?**
- The next child, moving clockwise round the group, must lay down either 11 or 9 – since these are the numbers which fit next to 10 on the number line. Encourage the children to look at the number line if they are not sure of the number before and the number after. If the child does not have either number, they miss a go!
- The children keep taking it in turns to lay down a card or miss a turn, moving clockwise round the group. **Who will get rid of all their cards first?**
- Count along the finished track, shuffle the cards and play again.

Other ideas for activities/notes for next time

Encourage instant recognition of one, two or three spots

You will need: six cards each with one, two, three, four, five or six spots arranged as on a dice, and three smaller cards for each child with one, two or three spots arranged as on a dice.

- Spread the six cards out and agree how many spots are on each.
- Collect the cards back in and hold them facing towards you. Find the card with two spots on and any other card. Hold these two cards up so that the children can see them and ask them to point quickly to the one with two spots. **Did you have to count the two spots?**
- Now find the card with three spots and any other card. Show the children. **Point really quickly to the card with three spots.**
- Repeat this process always choosing a card with one, two or three spots. Encourage the children to recognise one, two and three spots without counting them.
- Give each child a set of the three smaller cards. Say one, two or three and ask the children to show you the corresponding card. See how quickly they can do this!

Model touching or moving objects in order to count them

You will need: lots of crayons, a mug per child, and several sets of cards 10 to 20.

- Take a handful of crayons (between 10 and 20) crayons and place them in a mug. Ask the children to guess how many are in the mug. Discuss their answers. Demonstrate how to count them by taking one out at a time and laying them in a row. **How close were your guesses?**
- Ask each child to take a big handful of crayons and place them in a mug. Each child should then guess the number of crayons in their mug and choose the right number card to show this.
- Go round the group asking children to count their crayons. Give each child a number card to represent the actual number.
- When everyone has counted all their crayons, compare estimates and the actual numbers. **Who was closest?** Use a number track to see whether their estimates were close or far away from the actual number.

Model how arranging objects in rows of 5 or 10 helps when counting them

You will need: one purse per child containing between ten and twenty 1p coins, several sets of number cards 1 to 20 and a number line/track to at least 20.

- Lay out several sets of cards in a line 1 to 20.
- Show the children the purses and give them one each. Each child should open their purse and guess how many coins are in it. They are not allowed to tip them out! Ask the children to take number cards to show their guesses.
- The children then take turns to count the number of coins in their purse. They tip the coins out. Then they count the coins, moving each coin as they say the number and putting the coins in piles of five. **One, two, three, four, five** (putting the coins in pile of five), **six, seven, eight, nine, ten** (finishing another pile of five). All children should join in saying the number names. Each child takes a card to represent the actual number of coins.
- **Whose guess was closest? How far away was your guess from the actual number?** Help the children to find out using a number track counting on or back from the guess to the actual number.

Other ideas for activities/notes for next time

Provide number labels for children to use

You will need: 10 containers, each with one of the numbers 1 to 10 stuck to it.

- Arrange the containers in a line so that the numbers are in order. Together say the numbers as you point to them.
- Ask each child to choose a container and find the correct number of items to fit in it according to its label. For example, one child might choose to find four play people to fit in their container.
- When they return, count their objects together to check they've collected the right amount.
- Put the containers filled so far in order and give out the other containers to fill.
- Check the contents of each container when they return, and order all 10 containers in a line.
- Talk about one container, its contents and label. **This container has the number five on it. Inside there are five crayons. Help the children to talk about the objects they collected and the numbers on the containers.**

Display numerals in the environment

You will need: number cards 1 to 20, finger paints, large cards to paint on, sequins, glue, washing line and pegs.

- Lay out the cards 1 to 20 in a line. Count along the line with the children. Point out that some numbers, such as 12, have two digits not just one.
- Each child chooses two numbers, one with one digit and one with two digits, e.g. they could choose 2 and 13. They take two cards and use the finger paints to paint these numbers. Stress that we start at the top when painting numbers.
- Each child says the numbers they have painted. Help them to count and glue a matching number of sequins to each card.
- Help the children to peg their numbers in the right order on the washing line pinned to a wall. Say that you will be able to use these for future number activities. Help the children to leave spaces for any missing numbers. **What's the biggest number in our line? And the smallest? What numbers should I ask the next group to do?**

Use missing number problems

You will need: a washing line with numbers 1 to 20 on it, number cards 1 to 20 and interconnecting cubes/bricks.

- Count in unison to twenty, pointing along the washing line as you do so.
- Shuffle the number cards and place them in a pile face down. Children play in two pairs. Share the cards between the two pairs and ask them to spread their cards out in front of them so that they can see the numbers.
- Ask them to close their eyes. Whilst their eyes are closed turn round two numbers on the washing line. Ask the children to open their eyes and say which numbers you've turned around. **How do you know? What clues are there?** If they can find one of the two numbers in their cards they can collect a cube. Turn the numbers on the washing line back again to see if they are right.
- Keep playing. **Who's collected the most cubes? Make your cubes into a tower. Whose tower is highest? Whose tower has more than four cubes?**

Other ideas for activities/notes for next time

Model the use of mathematical language, e.g. 'how many?'

You will need: a number track each (1 to 10), number cards 1 to 10, lots of 1p coins and some interconnecting cubes/bricks.

- Give a number track to each child.
- Shuffle the number cards and place them face down in a pile.
- In turn each child takes a card and says the number. They then take a number of 1p coins to match their cards.
- The children each lay their coins along their number tracks starting at 1. Compare amounts. Who has the most money? Who has the least? Whose line of coins is the longest? You have the most money. Whose line of cards is the shortest? You have the least money. The child with the least and the child with the most both take a cube/brick.
- The children replace the coins and put the cards on the bottom of the pile.
- They take another card each from the top of the pile and play again.
- Continue like this. Ask the children to use their cubes/bricks to build towers. Who has the tallest tower?

Model and encourage the use of mathematical language, e.g. 'have you enough to give me three?'

You will need: twelve 1p coins for each child, number cards 1 to 10.

- Give out twelve 1p coins to each child. They place them in a line in front of them.
- Shuffle the number cards and place them face down in the middle of the table. Turn over a card from the pile in the middle. Say the number, e.g. 4. Choose a child. Have you enough coins to give me four? If they have, they hand over four. If not, they take another 1p coin. Replace the card on the bottom of the pile.
- Take another card from the top of the pile and say the number. Choose a second child and ask them if they have enough coins to give you that many. If they have, they pass over the matching number. If not, they take another 1p coin.
- Keep playing, going round the group like this until one child has no coins left.

Encourage children to talk and think about quantity

You will need: a 1 to 100 number grid that will lie flat on the table, some coloured counters, a container of paper clips (between 30 and 50).

- Help the children to say together the numbers from 1 to 50, pointing to each number on the grid as you do so.
- Look at the 1 to 100 grid. Point at some numbers less than 50 and discuss how to say them.
- Tip out the paper clips. Ask the children how many they think there are.
- Each child makes a guess. Encourage sensible and considered estimates. Each child says their estimate and places a counter on the grid on the number they guess. Help them to find their number if necessary.
- Count the clips together, grouping them in tens as you count them. Choose different children to count each ten, moving them into a pile of ten. How many clips?
- Place a paper clip on the grid on the actual number. Whose guess was closest?
- Put the paper clips back into the container. Ask the children to close their eyes while you take some out. Repeat the activity.

Other ideas for activities/notes for next time

Planned play and cooking activities

Say and use number names in order in familiar contexts

Model counting to five and beyond

You will need: up to ten soft toys and use of the home corner.

- Play having a tea party and decide which toys you are going to invite. Count how many toys will be there. Discuss how the toys will sit, and how they will fit around the table. Lay out matching numbers of plates and cups etc. How many cups do we need? How many plates do we need? Make invitations. How many do we need?
- As you discuss the plans for the party encourage children to count to find out how many of each thing you will need. What do we need to do if one of the toys can't come? What if one brings a friend? Will we have enough cakes?

Encourage counting of things that cannot be touched

You will need: an outside area to play in, bikes, trikes and other vehicles to push/ride around.

- Work with a group of four or five children with a vehicle each. Set specific tasks.
  Ride round the mats three times.
  Ride up to the fence and back four times.
  Ride five times between the tree and me.
- Help the children to keep count as they take up each challenge.
- Encourage one child to set the other children a challenge involving a numbered set of rides. Get the child to count the rides to check.

Use comments when children create large structures to encourage them to think about quantity

You will need: small bricks and toy animals.

- Ask the children to plan how they will build barns for the animals. Discuss how many bricks they might need.
  How high do you think the barn should be so that the cows will fit in? How long? How wide? Can you guess how many bricks you might need altogether?
- Ask the children to build the barns and see how close their guesses were.
- Now ask them to think about building a fence around all the barns. How many bricks do you think you'll need? Do you think you'll need more than 20? More than 50?
- After it is built help the children to count the number of bricks.

Other ideas for activities/notes for next time

Provide number labels for children to use

You will need: some large plastic or wooden numerals 1 to 9, some card numerals 1 to 9, glue, use of the sand pit and some reusable adhesive.

- Bury the wooden numerals in the sand pit. Children play in the sand and dig them up. Which ones have you found? Which ones must be still buried? This could be a nine, what else could it be? (six)
- Each child chooses a card numeral and paints the numeral with glue. Then they cover the glue with sand and let it dry.
- Help the children to display their numerals above the sand pit with reusable adhesive. Point to a sand numeral and ask questions related to it. Can you build this number of sand castles? Bury this number of bricks in the sand. Can we find them all?

Display numerals in the environment

You will need: tin of condensed milk, peppermint essence, lemon juice, food colouring, 400g icing sugar, small sweets and number cutters or plastic knives.

- Mix the condensed milk, the lemon juice, the peppermint essence and the food colouring in a large bowl. Stir well. Then sieve in the icing sugar, stirring all the time to make a smooth mixture which turns into a dough.
- Roll out the dough and ask children to cut out different numerals. Tell them to push the corresponding number of sweets into each numeral. Place the numerals on a tray to dry out overnight and then share them with other children in the morning. What is this number? Children who identify the number can have a piece of it!

Model estimating number in very large groups

You will need: containers of small items such as bricks, cubes, crayons, pieces of track, a see through plastic jar containing 100 items (e.g. dried peas) and a 1 to 100 grid.

- When playing with these items or tidying them away, ask the children to guess how many pieces there are in the container. Model the use of large numbers.Do you think there are more than 50? More than 100? This jar holds 100 peas. The 1 to 100 grid has 100 numbers on it.
- Ask the children to think of where there might be even more things. Introduce the names of large numbers. We would need 10 jars to make a thousand. A million is a thousand times bigger! How many people do you think there are in our schools? Do you think it might be hundreds or thousands? What about grains of sand in the sand pit? Hundreds or millions? How many stars do you think might be in the sky?

Other ideas for activities/notes for next time

Find one more or one less than a number from one to 10

Pose problems such as 'how many will there be when one more . . . ?'

You will need: a ladder made of rope or card with numbered rungs 1 to 10, a dice numbered 5 to 10 and a small toy (preferably with velcro hands).

- Ask the children to count up the ladder as you point to each rung – **one, two, three . . .** up to the top rung, **ten.**
- Choose a child to throw the dice. Read the number together. Encourage the children to show you that many fingers, e.g. 6, **six fingers.**
- Choose a child to move the toy onto the matching number on the ladder (wrapping its arms around the rung if the toy has velcro hands). **He is on number 6.**
- **What number will the toy be on if I move him one rung up the ladder?** Encourage the children to hold up one more finger, saying **'six, seven'.** Then move the toy one rung further up. **Were they right? What number is the toy on? He is on number seven.**
- Repeat this process, throwing the dice, matching to fingers and placing the toy on the matching number on the ladder. Then hold up one more finger and predict where the toy will be if we move him up one rung. Repeat two or three times.
- Now make the toy move down the ladder asking each time which rung he will be on next.

Encourage children to say the number that is one more than a given number

You will need: ten biscuits and a tin.

- Count together to ten, matching the count to fingers.
- **I am going to place some biscuits in the tin. Count with me so we know how many I have put in the tin.** As the children count with you, place eight biscuits in the tin. **One, two, three, four . . . How many biscuits? Eight. Show me eight fingers.**
- Hold up another biscuit. **How many biscuits will I have in the tin if I put another one in?**
- Encourage the children to hold up their eight fingers, saying **'eight'** and to hold up another saying **'nine'. Eight and one more is nine.**
- Add the biscuit to the tin.
- **We will tip them out to check.** Tip them out and count them, grouping in twos. **One two, three four, five six, seven eight, nine. There are nine biscuits. Eight and one more is nine.**
- Repeat this process, placing six biscuits in the tin, matching this to six fingers, and then holding up one more finger to make seven. Add one more biscuit to the tin.
- Now take a biscuit out of the tin. **Now we have one less biscuit. How many do we have?** Repeat several times.

Give opportunities for children to find one more or less than a number up to 10

You will need: 12 mats or seats arranged to make a pretend 'bus', a flip chart and a number line 1 to 20.

- Choose a child to be the conductor.
- Show the children the number 7. **How many people get on our bus at this stop? Seven.** Write '7' on a flip chart. Choose seven children to get on the bus. The conductor gives each one a 'ticket'. Choose another child. **At this stop, you are going to get on the bus.** Consult the class. **How many children will be on the bus then?** Write 7+ 1 = on the flip chart. **Seven and one more is?** Encourage the children to look at the number line to help them realise that it is eight. The child gets on the 'bus' and is given her ticket. Count to check. **Eight people on the bus.** Write 8 to complete the number sentence. Read this together. **Seven and one more is eight.**
- At the next stop ask one child to get off. **How many people are on the bus? So one less than eight is seven. Write 8 – 1 = 7 on the flip chart.**
- Continue adding and subtracting one person at a time. If the children are secure with this, add/subtract two people.

Other ideas for activities/notes for next time

Large group activities

Use language such as ‘more’ and ‘less’ to compare two numbers

Model and encourage the use of mathematical language, e.g. ‘more’ and ‘less’

You will need: a washing line, pegs and spotty cards 1 to 10.

- Spread out the spotty cards face up where the children can see them. Choose a child to find the card with just one spot. They peg it on the line at the left-hand side. Choose a different child to find the card with two spots and peg this next to ‘1’ on the line. Keep going like this until all the cards are pegged on the line.
- Count along the line, pointing at each card as you say the matching number. **One, two, three . . .**
- Point at the card with five spots. Choose a child to hold this card. Choose another child to hold the card with three spots. Consult the class. **Which card has more spots?** Count the spots on both cards. Point at the 5-spot card. **This card has more spots. Five is more than three. Three is less than five.**
- Repeat this process, choosing the 6-spot card and the 3-spot card. Ask the children to use the word ‘more’ to compare the two cards. **Which is right? Six is more than three, or three is more than six? Which is less?**

Provide experiences of reciting number names from other starting points than one, to help children ‘count on’

You will need: a large pegged number line 1 to 12, some pictures of children in the class, a picture of a 10-year old girl and an 8-year old boy.

- Show the children a picture of one of the children in the class. **Who is this? Annie. How old is she?** Ask the child whose picture you have shown to find the number representing her age on the number line and to un-peg it. Point at the space. **How old will Annie be in one more year?** Point at the next number on the line. Encourage the children by whispering the previous two numbers to give a clue, e.g. **‘three, four . . . ?’ Annie will be five.** Replace Annie’s number on the line.
- Show the children the picture of the 8-year old boy. Explain that this is Sohail. **Sohail is eight.** Choose a child to find ‘8’ on the number line and un-peg it. The children then have to say how old Sohail will be in one year’s time. If necessary whisper the previous two numbers to help, **‘seven, eight . . . ?’ Sohail will be nine.** Demonstrate that 9 is the number one more along the line.
- Repeat this process using the children the picture of the 10-year old girl.

Give opportunities for children to use ‘more’ and ‘less’ to compare numbers

You will need: large number cards 1 to 20.

- Give out the cards to 20 of the children. Say the numbers one to twenty in order very slowly. As you say each number, the child holding that number card has to line up, starting at the left side, facing you and the rest of the class. By the end, twenty children will form a number line to 20.
- Choose a child sitting by you to find number nine. **Point to number nine.** Ask the class to say the number, **nine.**
- Point to all the children holding numbers that are more than 9 and ask them to kneel down, still holding their number so it can be seen. **All these numbers are further up the line than nine. These numbers are all more than nine.** Ask those children to stand up again. Choose another number, e.g. 14. Choose a child to point to number 14. **This is fourteen.** Ask all the children with numbers that are less than 14 to kneel. **All these numbers are further down the line. They are less than fourteen.**
- Repeat for other numbers.

Other ideas for activities/notes for next time

Large group activities

Begin to relate addition to combining two groups of objects and subtraction to 'taking away'

Help children to recognise that when a group of objects is separated in different ways the total is the same

You will need: six red scarves and six blue scarves and a flip chart.

- Put six chairs at the front of the class and choose six children to sit on them. Give out scarves, counting as you give them out. Make sure you give out three red and three blue. **'One, two, three, four, five, six. Six scarves. How many red scarves?** Count together. **Three. How many blue scarves? Three. Three and three make? Six.** Write 3 + 3 = 6 on the flip chart. Demonstrate that there are three red and three blue and that there are six scarves in all.
- Repeat this process, choosing six new children and giving out four red scarves and two blue scarves. Count six scarves and then count four and two. Write 4 + 2 = 6 on the flip chart. Demonstrate that there are four red and two blue and that this is six in all.
- Repeat this process, choosing six new children and demonstrating five and one.
- Return to the number sentences on the flip chart. **What did we do to get 4 + 2 = 6? And 5 + 1 = 6?**

Encourage children to count how many there are altogether

You will need: a large cardboard spider body, eight pipe-cleaner legs, reusable adhesive, a large card with 8 written on it and a flip chart.

- Hang up the spider body without its legs. **This is Sydney spider. He has lost all his legs! We are going to help him find them. How many legs do spiders have? Eight.** Choose a child to hold the large card, 8, so the rest can see it. All the children show you eight fingers.
- Stick seven legs on one side of the spider and one on the other. Count each leg as you do so. **One, two, three . . . eight. Eight legs.** Consult the class. **Is Sydney happy? No! Because most of his legs are on one side! Count the legs on one side. One, two, three . . . seven.** Write 7 on the flip chart. **Count the legs on the other side. One.** Write 7 + 1 on the flip chart. **Seven and one is?** Remind them that spiders have eight legs. **Eight.** Complete the sentence. 7 + 1 = 8.
- **Let's make Sydney happier.** Move a leg from one side to the other. **Count the legs on the first side. Six. Count those on the second side. Two.** Write 6 + 2 on the flip chart. Children say the total. Write the 8.
- Repeat for 5 + 3 and finally 4 + 4.

Encourage children to use the vocabulary of addition and subtraction

You will need: a piece of plywood/strong card with a road and ten parking spaces drawn on it, ten cars and some reusable adhesive.

- Place the plywood on a table, sloping slightly so that all the children can see it. Choose a child to 'drive' a car along the road and into one of the parking spaces. **How many cars on the road? One.** Stick one car in place. Repeat this so that there are two cars, then three, then four, then five, all parked. **How many cars? Five.** Write 5 on the flip chart.
- Line up the other cars along the floor. **How many cars here? Count them with the children. One, two, three, four, five. Point at the road. How many cars will we have parked on the road if all these five drive up?** Write 5 + 5 = on the flip chart. Encourage the children to point at the five parked cars, and then count along another five spaces. **Five here. Six, seven, eight, nine, ten.** Drive each car up and count on as you do so. **Ten cars.** Write 10 to complete the number sentence on the flip chart.
- Repeat this process with other combinations, e.g. parking six, then adding four more.
- Park 10 cars. Choose a child to 'drive' one away. **How many are left? How many spaces?** Write 10 – 1 = 9 on the flip chart.
- Repeat this for other combinations, always starting with 10, driving some cars away and counting the spaces and cars left.

Other ideas for activities/notes for next time

Find one more or one less than a number from one to 10

Pose problems such as 'how many will there be when one more . . . ?'

You will need: a number track 1 to 10, building bricks and a different coloured counter for each child.

- Lay out the number track along the middle of the table. Count along it together. Choose a child. Choose a number on the track. **What number is this?** Help the child to count along the track to confirm what number it is. Ask her to find that number of bricks. Show all the children. **How many bricks will she have if she takes one more?** Encourage the children to look at the number track to help them work this out. If they can say correctly, that child can place a counter on that number on the track. The child adds one brick to her collection of bricks and makes them into a tower.
- Choose another child and repeat the process.
- Continue playing like this until every number (except one) on the track is covered with counters. **Who has collected the most bricks? Which tower is the tallest?**

Encourage children to say the number that is one more than a given number

You will need: a cardboard ladder with rungs numbered 1 to 10, a small toy cat (such as ones available filled with beans) and a flip chart.

- Lay out the ladder on the table/floor. Count along the ladder all together.
- Place the cat on the bottom rung. Choose a child and ask them where the cat will be if we move him up one rung. **Cat is on number one. What is one and one more?** Encourage them to use their fingers to help them. Write the matching number sentence, 1 + 1 = 2 on the flip chart. The child moves the cat and checks that we got the sentence right. Read the sentence together.
- Continue playing like this, moving the cat one space at a time and writing a matching number sentence.
- Place the cat on the fifth rung. **Cat is on number five. He's going to move up one rung. Where will he be? Which is the matching number sentence?** Read the number sentence together.
- Choose other rungs, help the children to find the matching number sentence and read it together.

Give opportunities for children to find one more or less than a number up to 10

You will need: a blanket, ten soft toys and number cards 1 to 10.

- Together, count the toys onto the folded blanket. **How many toys are hiding under the blanket? Ten.** Remove the toys, spread out the blanket and choose a child to select a card, e.g. 5. Count five toys and place them, one at a time, under the blanket and place the number card on top of the blanket. Move one more toy under the blanket. **Now there is one more toy under the blanket. How many toys are there now?** Encourage children to count from five, one more. If necessary, whisper a couple of numbers, **'four, five . . . ',** so that they can say the next number. Move the blanket to check.
- Choose another number card and put this number of toys under the blanket. This time remove one and ask how many are left. **There is one less toy under the blanket now. How many are left?**
- Repeat this process, choosing different cards so that you move different numbers of soft toys under the blanket. Count on two more if children find counting on one easy.

Other ideas for activities/notes for next time

Small group activities

Use language such as ‘more’ and ‘less’ to compare two numbers

Model and use mathematical language, e.g. ‘more’ and ‘less’

You will need: two large pieces of paper, pencils, scissors and similar sized shoes.

- Choose a tall child and a short child. Help both to each lie on a large piece of paper. Carefully draw round them and then cut out the outlines. **Which outline has used more paper? Which has used less? If we painted them which would need less paint?**
- **How many shoes will fit along each one? Which will need more?** Encourage the children to take a guess. Give each child a number card to match their guess. The children then work in pairs to lay shoes along each outline. **How many shoes? Which outline fitted more shoes? Why?**
- Compare two children’s shoes. **Which is longer? Wider? If we drew around them on paper and cut out the shapes, which would need less paper? If we painted the shapes which would need more paint?**

Provide experiences of reciting number names from other starting points than one, to help children ‘count on’

You will need: a vase, eight large artificial flowers, a flip chart and number cards 1 to 10.

- The children work in pairs. Give a pair a number card, e.g. 4. They count four flowers into the vase. Show the children another two flowers. **How many will we have in the vase if we add these two flowers?** Each pair has to work it out, using fingers if necessary. (They hold up four fingers and then two more. **How many in all?)** Write each pair’s answer on the flip chart.
- Point at the vase. **Four flowers.** Count on, adding a flower to the vase as you do so. **Five, six.**
- Compare this to the children’s answers with this total. **Who was correct?**
- Write 4 + 2 = 6 on the flip chart. Read it together.
- Repeat this process, choosing a different pair to give a number card to, and again adding two to the number on the card.

Give opportunities for children to find one more or less than a number up to 10

You will need: a set of number cards 1 to 10 for each pair of children, a tin, some 10p coins.

- The children work in pairs. Give each pair a set of cards 1 to 10 and ask them to arrange them to make a number track. Count along each track.
- Ask the children to listen very carefully. Drop some coins into the tin. As they listen they count along their tracks. Each pair then places a counter on the space on the track that matches the number of coins they heard go into the tin. When every pair has placed their counter, tip the coins out of the tin and count them. **Who has their counter on the right space?**
- Replace the coins in the tin, and check that all pairs have their counters on the correct space.
- Take a coin out of the tin. **There is one less coin in the tin. How many are there now?** Choose a pair to tell you.
- Continue playing like this, either adding one more coin, or taking one coin out.

Other ideas for activities/notes for next time

Planned play and cooking activities

Find one more or one less than a number from one to 10

Model and encourage use of related mathematical language such as 'each', 'more', 'less' and 'fewer'

You will need: 50g butter, 50g sugar, 50g self-raising flour, one egg, different coloured icing, a baking tray and paper cases.

- With three or four children, make little cakes. In a large bowl, beat the butter and the sugar. The butter needs to be soft, i.e. having been kept at room temperature. Beat in the egg, and then fold in the flour. Place the mixture in paper cases and bake the cakes at 375°F/190°C/gas mark 5 for 15 to 20 minutes.
- Give each child a few cakes to ice using the different coloured icing.
  How many cakes do you have each?
  How many would you have if you had one more?
  If you ate one, you would have one less. How many would you have?
  Are there more with yellow icing or pink?
  Are there fewer cakes with blue icing or green icing?
  Have you used more blue icing than Sam or less?

Encourage children to say the number that is one more than a given number

You will need: chairs and several teddies, a pretend ticket machine, a bus driver's cap.

- Arrange the chairs to make a pretend bus.
  How many seats on our bus?
  How many if we add one more? Two more?
  One less?
- Ask a child to be the bus driver and use toys as the passengers. Ask the 'bus driver' to give the toys tickets as they get onto the bus.
  How many passengers are there on our bus?
  How many will there be if one more gets on at the next stop? How many if one toy gets off?
- Continue to play buses. Encourage children to say the number that is one more without counting all of the toys.

Give opportunities for children to find one more or less than a number up to 10

You will need: newspaper, sticky tape, sticky labels and some toy monkeys.

- Make a ladder from rolls of newspaper.
  How many rungs will you make?
  How many if you make one more? How many if you make another two rungs?
- Number each rung using a sticky label.
- Use toy monkeys and make these play on the ladder.
  What rung will the monkey be on if he climbs anther rung? If he climbs another two rungs.
  What if he slips down one rung?

Other ideas for activities/notes for next time

Planned play and cooking activities

Begin to relate addition to combining two groups of objects and subtraction to 'taking away'

Help children to recognise that when a group of objects is separated in different ways the total is the same

You will need: the sand pit, plastic toy farm animals and a piece of blue ribbon.

- Use your finger to draw a line down the centre of the sand pit and place the blue ribbon to form a river. Explain to the children that you are going to make a field for each sort of animal on either side of the river. Use your finger to draw a field on either side for the sheep. Count how many sheep there are and put these in the two fields on either side of the river. How many sheep are there on this side? How many on the other side? How many altogether? What if we move some from this side to the other field? How many will there be altogether then?
- Repeat this process with other farm animals.

Encourage children to find the total number of items in two groups by counting all of them

You will need: 100g margarine, 2tbsp golden syrup, 1 tbsp sugar, 2 tbsp cocoa, 100g biscuits and two small baking tins.

- Work with four or five children to make chocolate fudge cake.
- Heat the margarine, the syrup, the sugar, and the cocoa in a saucepan over a low heat. Remove from the heat when the mixture has all melted and stir in the broken biscuits. Press the mixture into the baking tin. Place in the fridge for several hours.
- Ask the children to help you cut this into pieces. How many pieces so far in each tin? How many altogether? How many if we cut two more? How many if we eat one piece? How many if we cut out three more?

Encourage children to use the vocabulary of addition and subtraction

You will need: acrylic paints, varnish, hard-boiled eggs (cooked for 30 minutes) and an egg box.

- Help children to paint the hard eggs with acrylic paints. Place a couple of eggs in the box. How many eggs have we painted? How many spaces do we have left? How many eggs would fit in this box altogether? Help the children to answer in a full sentence using the word 'altogether'.
- Continue to discuss addition and subtraction facts using the egg box as a context. Help the children to say full number sentences using the vocabulary of addition and subtraction. If there are four eggs in the box, how many more could we put in? Four and two more is six. How many will we have if we put another in the box? Four and one more is five. How many will be left if you take your egg home? Four take away one is three. How many colours have we used?
- Varnish the eggs to make them glossy.

Other ideas for activities/notes for next time

Large group activities

Use language such as ‘greater’, ‘smaller’, ‘heavier’ or ‘lighter’ to compare quantities

Encourage children to use size language such as ‘long’ and ‘short’

You will need: one pair adult long socks, one pair medium length socks and one pair short socks.

- Hold up the long socks to show the children. Choose a child to put them on (over their own socks). These are very long socks – look they come up over her knees!
- Show the children the pair of short socks. Choose another child to put these on. Look, these are very short socks. They only reach his ankles.
- Stand the two children together. These socks are long. These socks are short.
- Show the children the third pair of socks. Are these socks long or short?
- Choose a third child to wear these. Compare this child with the child in the short socks. These socks are longer than these. Compare her with the child in the long socks. These socks are shorter than these.
- Encourage the children to look at their own socks. Are they longer or shorter than these very long socks?

Help children to order two items by length

You will need: two ribbons, one long and one short, some crayons (all the same length), reusable adhesive and a flip chart.

- Choose a child and give her the long ribbon, showing the class. This is a long ribbon. Give another child the short ribbon. This one is short.
- Take the long ribbon and choose two children to hold the ends, stretching it along the wall. Show the children the crayons. How many of these will fit along the ribbon? Take guesses from the children, noting some sensible guesses on the flip chart.
- Stick the crayons end to end along the wall beside the ribbon. Count as you go. One crayon, two crayons, three crayons . . . Ten crayons fit along my ribbon.
- Choose two other children to hold the short ribbon and repeat this process, taking guesses and then sticking crayons along the wall beside the ribbon, counting as you go. Five crayons fit along the ribbon.
- Point at the two ribbons. Ten crayons fit along this ribbon. Five crayons fit along this ribbon. Which is longer? Which is shorter?

Help children to compare heights using the language of taller and shorter

You will need: Straws (all the same length), a large teddy bear and reusable adhesive.

- Point to the door. How tall is the door? Show the children the large teddy. Is teddy as tall as the door? No! Choose a child. Ask her to stand up. Is Seema as tall as the door? No! Stand up yourself. Am I as tall as the door? No!
- Show the children the straws. How many straws will fit up the door? How many straws tall is the door? Take guesses from the children, noting some sensible guesses on the flip chart.
- Stick straws up the side of the door, counting as you go. One straw, two straws, three straws, and so on. The door is twelve straws tall. Write this on the flip chart and compare this with their guesses. Whose guess was closest?
- Choose the child again. How many straws tall is Seema? Stand Seema against the wall, and stick straws up the wall beside her, counting as you go. Seema is nearly six straws tall!
- Repeat to measure how tall teddy is.
- Who is taller? Teddy or Seema? Who is shorter? They are both shorter than the door.

Other ideas for activities/notes for next time

Large group activities

Use language such as ‘greater’, ‘smaller’, ‘heavier’ or ‘lighter’ to compare quantities

Encourage children to use size language such as ‘heavy’ and ‘light’

You will need: balances, a shopping bag containing a heavy book (e.g. a dictionary), a large bag of cotton wool and a packet of biscuits.

- Show the children the balances. **These help us to find out how heavy something is.** Show the children your shopping bag. **This is my shopping bag. It is quite heavy to carry.** Let some children carry it a short way to feel how heavy it is. Take the three objects out of the bag. **One of these three things is really heavy. It is making my bag heavy.** Pass the items round so the children can feel their weights and encourage them to guess which one is the heaviest.
- Place the cotton wool and the biscuits on the balances. Point out that the biscuit side goes down. **This means that the biscuits are heavier than the cotton wool. The cotton wool is lighter than the biscuits.** Discuss the fact that because the bag of cotton wool is large, it does not mean it is heavy.
- Place the biscuits and the book on the balances. Point out that the book side goes down and the biscuits go up. **Which is heavier?** Encourage children to answer in a sentence, e.g. the book is heavier than the biscuits. **Which is lighter? Which is the lightest thing in my bag?**

Encourage the children to order two (or more) items by weight

You will need: balances, three identical plastic jars, one filled with cotton wool, one with sugar and one with dried beans.

- Show the children the jars. **They are all the same size. But they are not the same weight.** Whilst the children are sitting on the carpet, pass round the jars so they can carefully feel their weights. **One jar is heavier than others. Which jar is the heaviest?** Ask the children to guess. Encourage them to answer in sentences.
- Show the children the balances. **These help us to work out which jar is heaviest.** Place the jar the children believe to be heaviest on one side and another jar (beans) on the other side. **Which side goes down? The jar of sugar is heavier.** Put the jar of sugar to one side.
- Place the jar of beans and the jar of cotton wool on either side of the balances. **Which side goes down? Which is heavier?** Place the jar of beans next to the jar of sugar. Then place the jar of cotton wool alongside that. Point at each jar in turn. **This jar is the heaviest. This jar is the lightest.**

Help children to compare weights using the language of ‘heavier’ and ‘lighter’

You will need: balances, ten apples and a large bag of flour. The jar should weigh less than ten apples.

- Show the children the balances. **These help us to weigh different things to find out which is heavier.**
- Give an apple to a child. Ask her not to eat it! Choose another child and give him the bag of flour. **Be very careful not to drop it!** Consult the class. **Who is holding the heavier thing? Who holds the lighter thing?**
- Place both the apple and the flour on the balances. The flour side goes down. **Which is heavier? The apple is lighter than the bag of flour.**
- Consult the class again. **Suppose we put two apples on the scale. Would two apples be heavier than the flour?** Encourage children to voice an opinion. Place another apple on the opposite side of the scales to the flour. **Do the apples go down? No. Two apples are still not as heavy as the flour.** Try three apples, and then four, and so on, until the apples are as heavy as the flour. Point out how many apples weigh the same as the flour. **The bag of flour is as heavy as eight apples.**

Other ideas for activities/notes for next time

Encourage children to order two items by capacity

You will need: a vacuum flask, a mug, a teapot of water and a bowl.

- Show the children the flask and the mug. **This is my mug. I drink my tea out of this. This is my flask. When I go on a journey, I fill this with tea and take it with me.** Discuss whether the children have seen/used a flask.
- **Does my flask hold more tea than my mug?** Let the children pass them round and peer into the flask. Show children the teapot of water. **We will pretend that this is tea! First we fill the mug.** Choose a child to hold the mug over the bowl. Tip water into the mug. Check that the children agree that it is full. **Now we will tip this mug of tea into the flask to see if it is too much and spills over the top, or if there is not enough to fill it.** Choose a child to hold the flask over the bowl and tip the mug of water into the flask. Show the class. **The flask is not full. The mug does not hold as much tea as the flask. One mug does not fill the flask.** Demonstrate that the flask holds more by filling it and tipping water into the mug. **The mug overflows because the flask holds more than the mug.**

Encourage children to use language such as 'full'/'empty', 'more'/'less'

You will need: a large and a small shampoo bottle with green and red water in them (these should be different shapes and not too different in capacity), a jug, a small bowl and two dolls (with hair!).

- Show one doll and the large green shampoo bottle. **This is Dolly's green apple shampoo.** Show the children the second doll and the smaller red bottle. **This is Janey's cherry shampoo. Whose bottle holds more shampoo? Which bottle will last longest?** Help the children to guess which bottle holds more shampoo. Help them to answer in sentences using the word 'more'. Talk about how the tallest might not hold the most.
- Tip the water from the green bottle into a jug. Choose a child to hold the empty bottle over a small bowl. Pick up the second bottle, which is still full of 'shampoo'. **We shall tip this into the empty bottle and see if it fills it up. What do you think will happen? Why?** Pour the red 'shampoo' into the green bottle. **Look, the bottle is not full. There was not enough shampoo to fill it. This bottle holds more shampoo than this one.** Tip the red shampoo away and then tip the green shampoo back into its bottle. **What do you think will happen? Why?** Now tip the green shampoo into the smaller bottle and watch it spill. **There was too much. Which bottle holds more shampoo?**

Help children to use the idea of capacity when solving practical problems

You will need: a teddy, a number line 1 to 20, a plastic bottle full of coloured water, an eggcup and a bowl.

- Show the children the bottle. **This is teddy's special honey-fruit drink. He loves it. But he has ten special friends for tea. He wants to know how many cupfuls of his special drink there are in this jar so he will know if they can all have a drink each and if there will be any left over for him!**
- Show the children the eggcup. Ask them to guess how many cups of teddy's drink there are in the bottle. Record their guesses on the flip chart. Carefully pour out the drink, one cup at a time, counting together the cups as you go and tipping them into the bowl.
- **How many cups? Seventeen. There were 17 cupfuls of special drink in teddy's bottle.** Compare with the children's guesses. **Whose guess was closest?** Use the number line to help you see how far away children's different guesses were.
- **Was there enough for his friends? Was there any left over? How could we find out how many cups were left over?**

Other ideas for activities/notes for next time

Small group activities

Use language such as ‘greater’, ‘smaller’, ‘heavier’ or ‘lighter’ to compare quantities

Encourage children to use size language such as ‘long’ and ‘short’

You will need: paper or light card fish of different lengths, some large pieces of blue paper, green fabric or paper strips for weed, scissors and glue.

- Ask each child can choose three fish of different lengths. They each need to end up with one long fish, one short fish and one in between the other two. Discuss how they will do this. The children can help each other.
- Put those two fish side-by-side. Which one is longer?
- Lay this fish on top of that fish. Which one is shorter?
- Each child takes a large sheet of blue paper and organises their fish so that the short fish is swimming along the top of the sea, the middle-sized fish is swimming along the middle and the longest fish is swimming along the bottom of the sea.
  Which is the longest fish?
  Which is the shortest fish?
  Which fish is swimming along the bottom?
- They stick their fish onto the paper and decorate their pictures with weed to make fishy pictures.

Encourage children to order two items by length

You will need: paper snakes of different lengths, crayons (all the same length) paints, glue and sequins.

- Ask each child to choose a snake. The children compare snakes and talk about their lengths. Which do you think is longer? Which is shorter?
- Take the longest snake. How many crayons long do we think he is? Write down children’s guesses.
- Help the child whose snake we are currently measuring to lay crayons along the length of their snake. How many crayons long is your snake? He is seven crayons long. Compare his length with the children’s guesses. Who was closest?
- Repeat this process with the other children each measuring their snakes using crayons.
- The children then paint their snakes and decorate them by sticking sequins down their length. On which snake can you fit more sequins?

Help children to compare distances using the language of further, longer and shorter

You will need: a beanbag, a class set of 30cm rulers and room to throw the beanbag.

- Show the children a ruler and tell them that they are going to throw the beanbag as far as they can. If we put these rulers in a line how many rulers do you think we’d use to measure how far you can throw the beanbag? Do you think it will be further than 5 rulers? 10 rulers?
- Take some guesses. Write down the smallest guess and the biggest guess.
- Help the children to take it in turns to throw the beanbag. Together arrange the rulers in a line from the throwing position to the beanbag and write down the answer. Repeat for all the children.
- Who threw the beanbag the furthest? Which was the shortest throw? Compare the throws with the smallest estimate. Did we all throw the beanbag further than that? Compare the throws with the largest estimate. Did we throw the beanbag as far as that?

Other ideas for activities/notes for next time

Encourage children to use size language such as 'tall' and 'short'

You will need: lots of pictures of different buildings – tall and short buildings (e.g. tower blocks, bungalows), two hoops, labels 'tall buildings' and 'short buildings'.

- Spread all the pictures out on the table face up. Let the children look at these and talk about them. Discuss what the different buildings are, and perhaps, where they are.
- Show the children the two hoops. Label one hoop 'tall buildings' and the other hoop 'short buildings'. Explain that we shall put the pictures of tall buildings in this hoop, and the pictures of short buildings in that hoop.
- Choose a child. They select their favourite picture and decide which hoop to place it in. The other children decide if they were right. **Is the building tall? Yes. Is it short? No. Then it goes in the 'tall buildings' hoop.**
- Choose another child and continue like this.
- When all the buildings are in the hoops, discuss which ones were hard to place. **Why was this?**

Encourage children to order two items by weight

You will need: four tins of different weights, balances, two labels, 'heavy' and 'light'.

- Spread out the tins and allow the children to spend some time feeling the tins. **Which do you think is the heaviest? The lightest?** Each child has a guess at which tin is the heaviest and which is the lightest.
- Show the children the balances. **Remember that we can use these to help us find out which tin is the heaviest and which is the lightest.** Place two labels on the table, 'heavy' and 'light'. **Choose the two tins you think are heaviest. Put these on the balances. Which side goes down? Which is heavier?** Place the heavier of the two tins nearest the 'heavy' label.
- Now take the two lighter tins. Ask the children to predict which will be the lighter of the two. Use the balances to find out. Place the lighter of the two by the 'light' label.
- Finally use the balances to find out which is heavier of the two remaining tins. Place these in between the heaviest tin and the lightest tin according to the weight.
- **Which tin/tins are heavier than this one? Which tin/tins are lighter?**

Help the children to compare capacities when solving practical problems

You will need: several plastic jugs, some children's teacups, a set of number cards 1 to 10 for each pair of children and a sandpit.

- The children work in pairs to find how many cups will fill the jug. Give each pair a set of cards 1 to 10, a jug and a teacup. Each pair fills their jug with sand.
- Ask each pair to estimate how many cups their jug will fill. They find a number card to match their considered estimate. Help each pair to think about this part carefully, looking at the jug and the cup, and to make a sensible guess.
- Each pair then pours the sand in their jug from the jug to the cups, taking turns and counting the cups as they go. **How many cups did your jug fill?** They find the number from their number cards.
- Compare each pair's estimate with the actual number. **Whose guess was only one or two away?**

Other ideas for activities/notes for next time

Planned play and cooking activities

Use developing mathematical ideas and methods to solve practical problems

Encourage children to use size language such as 'long' and 'short'

You will need: construction straws.

- Play with the construction straws to make big models. Encourage the children to think about what they are making. Is it a space station? Is it an underwater submarine? Is it an aeroplane?
- How many straws long is your model?
  Is it longer or shorter than mine?
  Is your model shorter than Ben's?
  Is it longer than Yousef's?
  Lay all the models end to end. Are they longer than the table?

Encourage children to order two items by length

You will need: two eggs, caster sugar, currants and liquorice strings.

- Work with children to make sugar mice. Whisk the egg whites till they are really stiff. Then stir in the sugar. Put in a bag and pipe into rough mouse shapes. Form ears and decorate with currants for eyes. Bake at 350°F/180°C/gas mark 4 for two hours. Add liquorice stick tails.
- Line up the mice. Make sure that all their noses are lined up.
  Which mice are longest?
  Which are shortest?
  Choose a long mouse and a short mouse. Can you find a mouse that is between the two?
  Which have long tails? Short tails? Can you find a mouse with a longer tail than this one?

Help children to compare lengths using the language of longer and shorter

You will need: different lengths of string, paint and paper.

- Each child takes a piece of string. Who has a long piece of string? Which is the longest? Which is the shortest?
- They paint the string. Then they curl the painty string on one side of a piece of paper and fold the paper over, placing their hand gently on top. With the other hand they find the end of the string and pull it gently out from between the sheets of paper. Look at the curly patterns the painty string makes. Which works best, a long string or a short string? Whose curls are longest on their page?

Other ideas for activities/notes for next time

Planned play and cooking activities

Use developing mathematical ideas and methods to solve practical problems

Help children to use size language such as ‘long’ and ‘short’

You will need: the sand pit and a range of toy cars and boats.

- Children build ditches and roads in the sand. They put small boats on the ditches and cars or tractors on the roads. They make the roads and ditches wind around the sand pit and then move the cars and boats along them.
  Whose road is longest?
  Is your ditch longer than mine?
  Is this ditch longer or shorter than this road?
  How can we make the road really long?
  Let’s make it really winding.

Encourage children to order two items by weight

You will need: lots of things to buy in the shop that need weighing (apples, oranges, lentils, dried beans or peas, sugar, salt), balance, a 100g weight, paper bags or plastic containers (such as old yogurt pots) and plastic or real money.

- Play shops with the children. Encourage them to weigh out the things you are ‘buying’ using the 100g weight on one side of the scales and then tipping the lentils or beans into a bag or yogurt pot so that you can ‘buy’ them. Pay with the plastic money. Don’t forget to give change! Check that the balances are level before tipping the goods into the bags.
  Do the lentils weigh the same as the weight?
  Is the weight heavier? Are the lentils heavier?
  Is the orange heavier or lighter than the apple?

Help children to compare capacities when solving practical problems

You will need: milk, ice-cream, fruit (e.g. banana, a few strawberries, raspberries or blackcurrants) sugar to taste, straws and a variety of cups/glasses.

- Make milkshake by whipping up all the ingredients until they are frothy. You can use a hand whisk or a fork. Pour the milk shake into glasses.
  Who has most milkshake? How do we know?
  How can we give everyone the same?
  Which glass holds more?
  Which glass holds less?
- The children drink through the straws whilst you count to 10.
  Who has drunk the most?
  Who has most left?
  Who will finish their drink if I count to 10 again?
  Who might have some left?

Other ideas for activities/notes for next time

Large group activities

Use language such as 'circle' or 'bigger' to describe the shape and size of solids and flat shapes

Give opportunities for children to talk about shapes and arrangements

You will need: enough plastic squares, circles and triangles to give each child one shape, some reusable adhesive and a board.

- Give each child a shape. Encourage the children to talk about their shapes. **Which ones have corners? Which ones have straight sides? How many straight sides?**
- Take a square and stick it to the board. **This is a square.**
- Choose children with squares and ask them to pass these over so that you can stick the squares to the board to create a tiling pattern. **This is a pattern of squares. Look how they fit together.**
- Repeat this for the triangles. **This is a triangle. How many corners? These triangles make a pattern. They fit together too.**
- Then show children the circle and stick it to the board. **This is a circle. It is round. It has no corners.** Encourage children with circles to stick these beside your circle. **The circles do not fit together. There are spaces in between them.**
- Compare all three tiling patterns and talk about the shapes. **Have you seen one of these patterns at home or in school?**

Ask for shapes by describing their properties

You will need: plastic 2-D shapes, some large and some small – circles, squares, triangles and rectangles.

- Give each pair of children a shape. Let them look at it carefully and encourage them to describe their shape to each other. **Our shape has corners and straight sides. All the sides are the same length.**
- Hold a large circle behind your back. **I am holding a shape. I want to know if anyone has the same shape as I have. My shape has no corners. It is round. Has anyone got this shape?** Encourage the children holding circles to show their circle. Bring the large circle from behind your back and show the class. Demonstrate that it is the same shape as those held by the pairs of children who showed their shapes whether large or small. **We call this a circle, whatever size it is. Who has a smaller circle?**
- Repeat this process, hiding the small square behind your back and describing it. **My shape has four sides and four corners. All the sides are the same length.** Encourage children holding the square to show their square. **Whose square is larger than mine?**
- Repeat for other shapes.

Give opportunities for children to describe shapes

You will need: plastic 2-D shapes, some large and some small – circles, squares, triangles, rectangles, a puppet and an easel.

- Show the children each shape in turn and help them to talk about each shape and what it looks like. **This shape has four corners and four sides. Two sides are long and two sides are short. It's a rectangle.**
- Set up an easel or a flip chart as a 'wall'. Use a puppet. **This is Sam. He has some shapes hidden behind this wall! Can you guess what they are?** Bring the shape up from behind the wall so that just a part of the shape is visible over the wall. Ask the children to look at the part they can see. **Which shape do you think Sam is showing you over the wall? What does it look like? Has it got corners? Are the sides straight or curved? Does it look round?** The children have to guess the shape. Encourage them to name it correctly, e.g. they may say that it is a 'round', but encourage them to say a 'circle'.
- Repeat this process with Sam the puppet showing different shapes, large and small and helping the children to describe and guess the name of the shape.

Other ideas for activities/notes for next time

Model the use of positional language

You will need: a large empty box with no lid, a puppet and a cloth.

- Beforehand, place the box upside down with the puppet under the box and on top of the cloth.
- Show the children the box. **The box is on top of something! What is under the box?** Encourage the children to guess, and then lift the box to reveal the puppet. **Here is Sam.** Replace the box. **He is under the box!** Point at the cloth. **Sam is sitting on the cloth. The cloth is underneath Sam.** Move the cloth to on top of the box. **The cloth is on top of the box.** Put the puppet on top of the cloth. **Where is Sam?** Help the children to use positional language in their answer. **He is on top of the box. Where is the cloth? It is under Sam. The cloth is on top of the box.** Place the puppet beside the box and discuss its position. **Sam is beside the box.** Make the puppet fly over the box and ask the children to describe this. **Sam is flying over the box!**
- The children shut their eyes. Choose a child to place the puppet beside, under, on top, behind or in front of the box. Ask the other children open their eyes and say where Sam is.

Give children opportunities to find items from positional or directional clues

You will need: two hats (one conical and one cylindrical), an apple, a banana and an orange.

- The children close their eyes. Place the two hats on the table with the apple under one and the orange behind the other. Tell the children that you have hidden an apple and an orange. **Where do you think they can be?** Encourage the children to use positional language in their guesses. **Is the orange under that hat? Is the apple behind that hat?**
- Show the children where the apple and the orange are. **The apple is under the hat. The orange is behind this hat.**
- The children shut their eyes. Place one hat on top of another, and a banana underneath both. Place the orange in front of the hats and the apple behind them. **Where is the orange?** Encourage the use of positional language. **It is in front of the hats. Where is the pointy hat? It is on top of the round hat. Where is the banana? And the apple?**
- Give one child a hat and ask them to pick a fruit. They walk to the other side of the rug. **Where is the hat? It is over there on Kelly's head. Where is the orange? It is beside the hat.**

Give opportunities for children to use everyday words to describe position

You will need: use of the hall and simple PE equipment – the same for each group, e.g. mats and benches.

- Ask the children to find a partner. Give them various instructions modelling the use of positional language.
- **Stand next to you partner. Now one of you, stand in front of the other. Now that person should stand behind the other. Now stand opposite each other.**
- Ask children to work in pairs giving each other instructions such as 'Stand behind me. Stand in front of me.'
- Help groups of children to put out some simple PE equipment. **Put the mat next to the bench.**
- Choose a child from each group to follow your instructions. **Hop across the mat, crawl under the bench and then jump over it. Turn left, take two steps, turn left again and go back to your group.**
- Now ask this child to give some instructions to the next child in the group. Ask them to include a particular word/phrase such as up, down, left, right, across, over or under. The other children should help them to follow the instructions.

Other ideas for activities/notes for next time

Small group activities

Use language such as ‘circle’ or ‘bigger’ to describe the shape and size of solids and flat shapes

Help children to use shapes appropriately for tasks

You will need: lots of card and paper 2-D shapes of different colours and sizes (use circles, squares, rectangles and triangles), glue, several sheets of sugar paper, string and paint.

- Give each child a piece of sugar paper. Help the children to make a cat out of different shapes by arranging these on their paper. First they use a large and a smaller circle for the body and the head. Then they can select triangles for ears, circles for eyes, a rectangle for a mouth with a triangle underneath.
- Help the children to arrange shapes to make the best cat they can. Then they need to stick each shape in place on their sugar paper.
- Finally, the children can use string for whiskers.
- Talk about the shapes that you can see in each cat. Tell me about your picture. What shape did we use for the ears? And the body? The head? The eyes? We used lots of circles. Which was the biggest? Which was the smallest? Why?

Help children to select a particular named shape

You will need: lots of plastic 2-D shapes, some large strips of sugar paper and some felt-tip pens.

- Set out a few shapes in a line. The children watch you and name each shape as you use it. Circle, triangle, square, square, circle, triangle, square, square . . . Once you have a pattern, ask them to predict what shape should come next. Circle, triangle, now what? Square.
- Encourage each of the children to make a pattern on their strip. When each child has done this, spend time looking at each other’s patterns.
- Yours has triangles and squares. Triangle, square, square, triangle, square, square . . . Did you use more triangles or squares?
- Make sure that each pattern is a repeating one so that it’s possible to predict what the next shape will be. Help children to name the shapes.
- Finally give each child a strip of paper. They can draw round their shapes and reproduce their pattern. Whose pattern used the most circles? Whose pattern doesn’t have any?

Use language to describe shapes, e.g. circle

You will need: chalk, string and use of the playground.

- Use the chalk to draw a large triangle on the playground. What shape is this? It has 3 corners, one, two, three and 3 sides, one, two, three. It is a triangle. Give three children a piece of string each and ask them to lay their pieces of string together to make one triangle. Point at your triangle and their triangle. Which is bigger? They both have three sides and three corners.
- Repeat this process to draw a square with the chalk. Give four children an equal length of string each and help them to make a square using the string. Compare the chalk and string squares. Which is larger? They both have four sides and four corners. Pick up the four lengths of string. These pieces of string are all the same length. Otherwise the shape wouldn’t have been a square. All the sides of a square are the same length.
- Repeat this process to draw and lay out a string rectangle. Finally, use a piece of string anchored at one end to help you draw a chalk circle.
- Ask the children to run around but to listen carefully. Tell them that when you clap you will ask them to jump onto a particular shape. Triangle! Now run again. Circle!

Other ideas for activities/notes for next time

Encourage children to use positional language

You will need: a box, a cloth, and a selection of toy animals.

- Place the box on the table. Place the cloth over the box.
- Choose a child. Give them one of the toy animals. They should take the animal and say where they will place it in relation to the box and to the cloth.
- I will put the rabbit under the cloth and on top of the box.
- Choose another child to select a different animal and to do the same thing.
- I will put the dog inside the box and put the cloth on top of the box.
- Repeat this process, choosing children to select an animal and position it in relation to the box or the cloth. They each say where they are putting their toy.
- Look at an animal and give its position. Can the children say which animal you are looking at?
- I am looking at the animal which is on top of the cloth and beside the box.
- Choose different children to do the same thing.

Help children to use positional or directional clues

You will need: a red, blue, green and yellow cube, a set of counters to match each colour and a large grid (such as a blank 1 to 100 square) to place the counters on.

- Place four coloured cubes on the grid. All sit along the same side of the grid. Discuss the position of the four cubes. The red cube is next to the blue one. The red one is on the left and the blue one is on the right. Give each child a pile of counters to match the colours.
- Choose one child to start. Tell them where to place a counter of their colour in relation to the matching coloured cube on the grid.
- Put a red counter in a space next to the red cube. Place a counter on the left of the red cube.
- If the child does this correctly, their counter can stay on the grid. If they do not, they must take their counter off.
- Continue playing like this until one child has five counters on the grid.

Encourage children to use everyday words to describe position

You will need: sponge or potato printers, a 7 by 7 grid on a large sheet of sugar paper or card, paint and printing trays.

- Place the paint in printing trays, one for each colour. Hand out the printers, one per child.
- Start by making a print in the centre of the grid.
- Choose a child. Ask them to say where they are going to make their print, e.g. I shall print in the space one up and two along to the right.
- They then make their print. Ensure that they follow their own instructions.
- Choose a second child to make a print. They must first say where they are going to make it.
- I shall print in the space two down and three along to the left.
- Ensure that they print where they have specified.
- Continue like this, using different colours, until the grid is full of prints.

Other ideas for activities/notes for next time

Planned play and cooking activities

Use language such as ‘circle’ or ‘bigger’ to describe the shape and size of solids and flat shapes

Give opportunities for children to talk about shapes in everyday contexts

You will need: a set of farm animals, fat felt-tip pens and a very large sheet of sugar paper.

- Ask the children to use the felt pens to draw different shaped fields for their farm animals to live in. Help them to draw the fields and describe their shapes.
- Draw a triangle field for the sheep. The sheep live in this field. This field has three sides.
- Draw a square pen for the pigs. The pigs’ pen has four sides. They are all the same length.
- This field has lots of sides. They are all different lengths.
- This field is a circle.
- Arrange the animals on the farm.
- Move the pigs from the square pen to the triangle field and the sheep to the circle field.

Model the use of shape language during construction activity

You will need: card, glue, lots of sequins and small gummed shapes.

- Make hats. Roll the card to make cylinders or cones. Unroll the card again and decorate the pieces with sequins and stickers. Then roll it up to make the cones or cylinders.
- What shape is your hat? It is a cylinder. It has curved sides. If you trace your finger round the top, what shape do you draw?
- What shape is your hat? It is a cone. It has curved sides and a pointy top. If you trace your finger round the bottom of the hat, what shape do you draw?
- Decorate the hats with the sequins and gummed shapes. How many different shapes have you used? What are their names? What are they like?
- Encourage the children to make and wear different hats.

Give opportunities for children to describe the shape of solids

You will need: three eggs, 200g castor sugar and currants.

- Work with a group of three or four children to make sugar shapes. In a large bowl, whisk the egg whites until very thick. Gently stir in the sugar. Line a baking sheet with non-stick paper and place spoonfuls of the mixture onto it. It should then be thick enough for the children to shape it. They can make a variety of small solid shapes such as cubes and cones. Encourage the children to talk about what shape they are making. My shape is like an icecream cone. It’s got a point on the top. My shape is a cube like a little box. It’s got flat sides. Mine is like a mountain. It has three sloped sides and also one on the ground. This shape is a tower. It has curved sides.
- Bake the shapes at 350°F/180°C/gas mark 4 for 2 hours and then allow to cool. Put currants on the sides of the shapes to help you count how many faces.

Other ideas for activities/notes for next time

Resource Sheets

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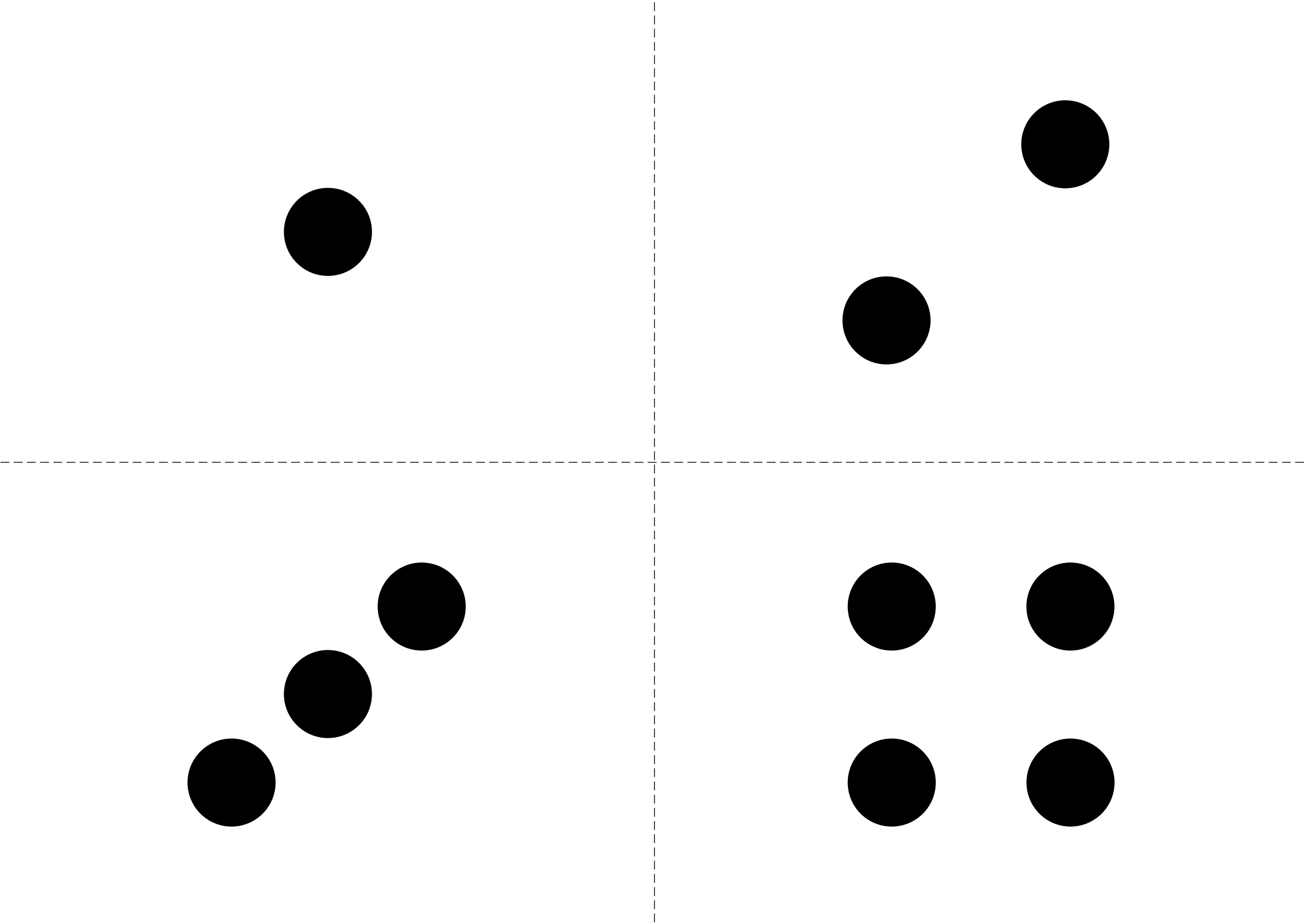

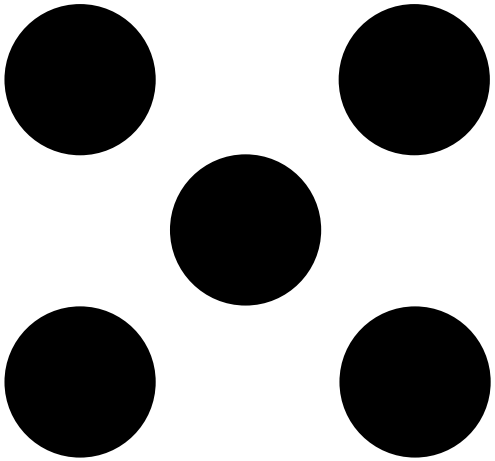

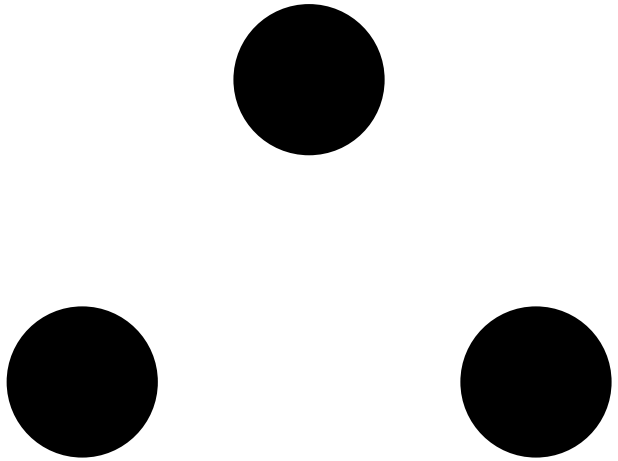

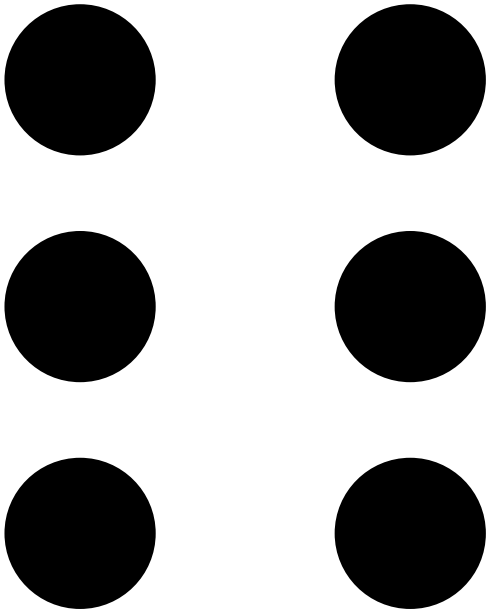

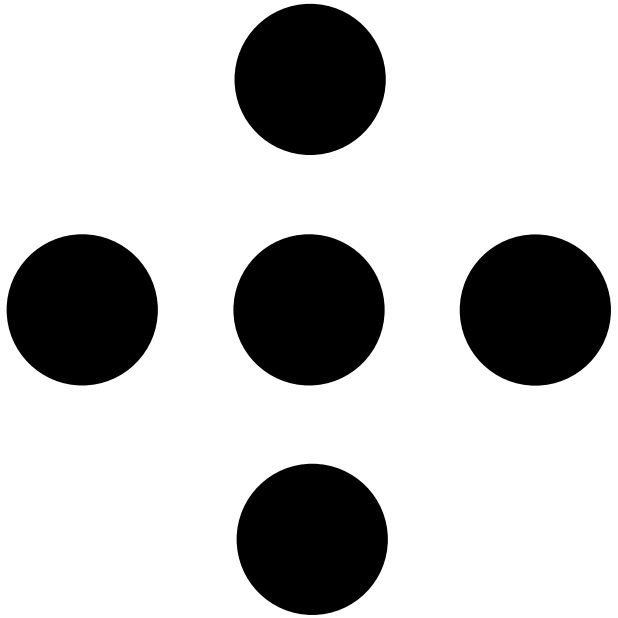

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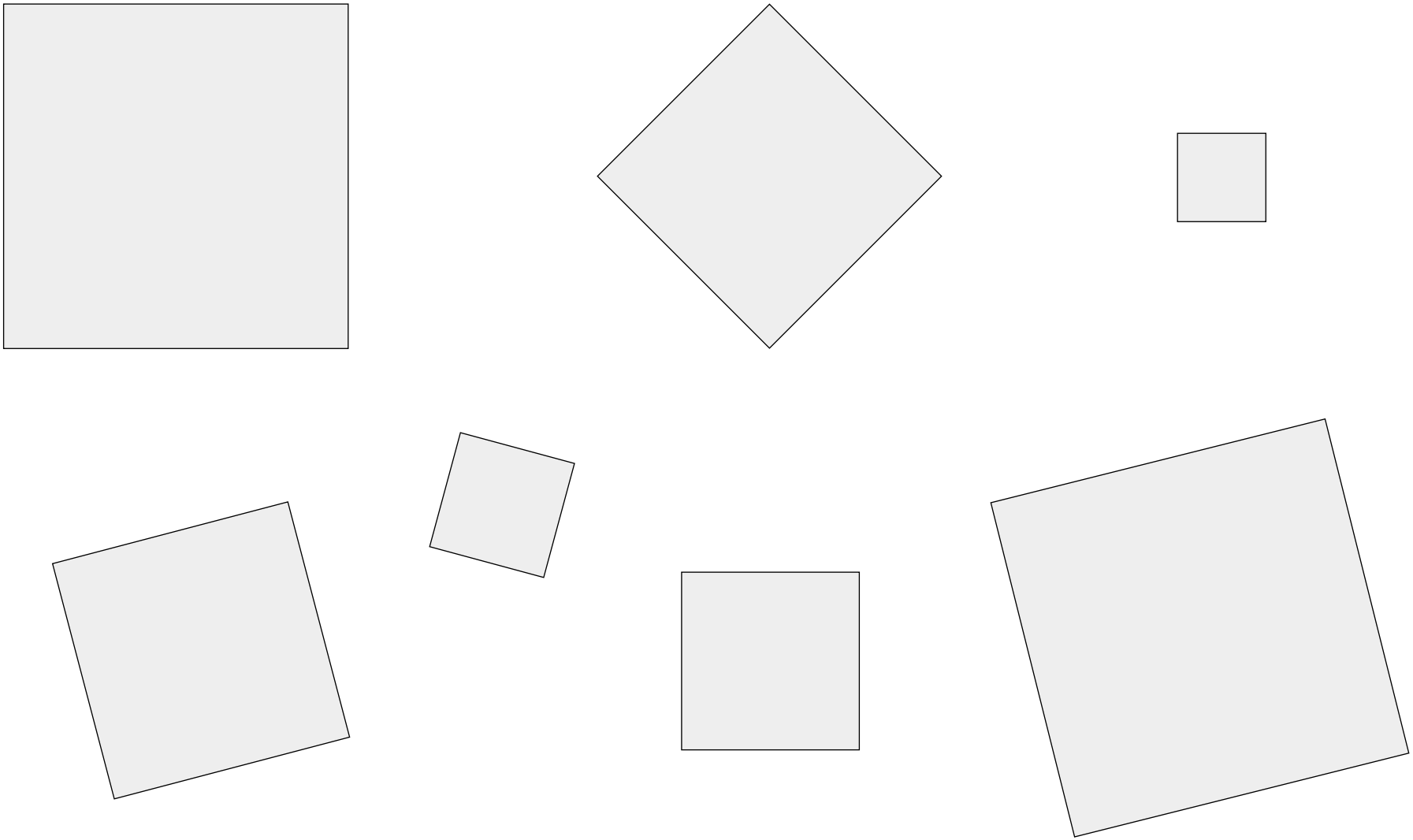

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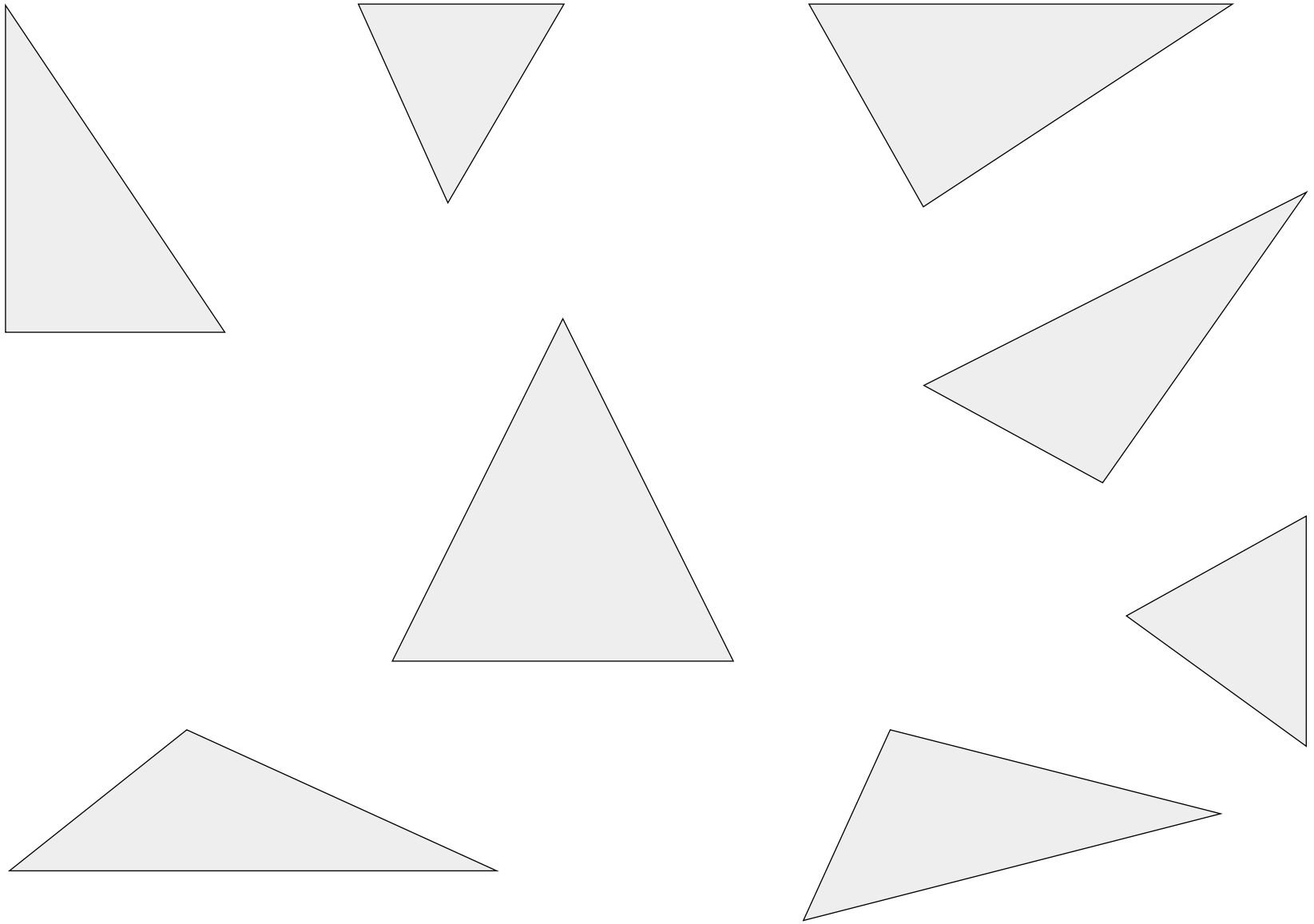

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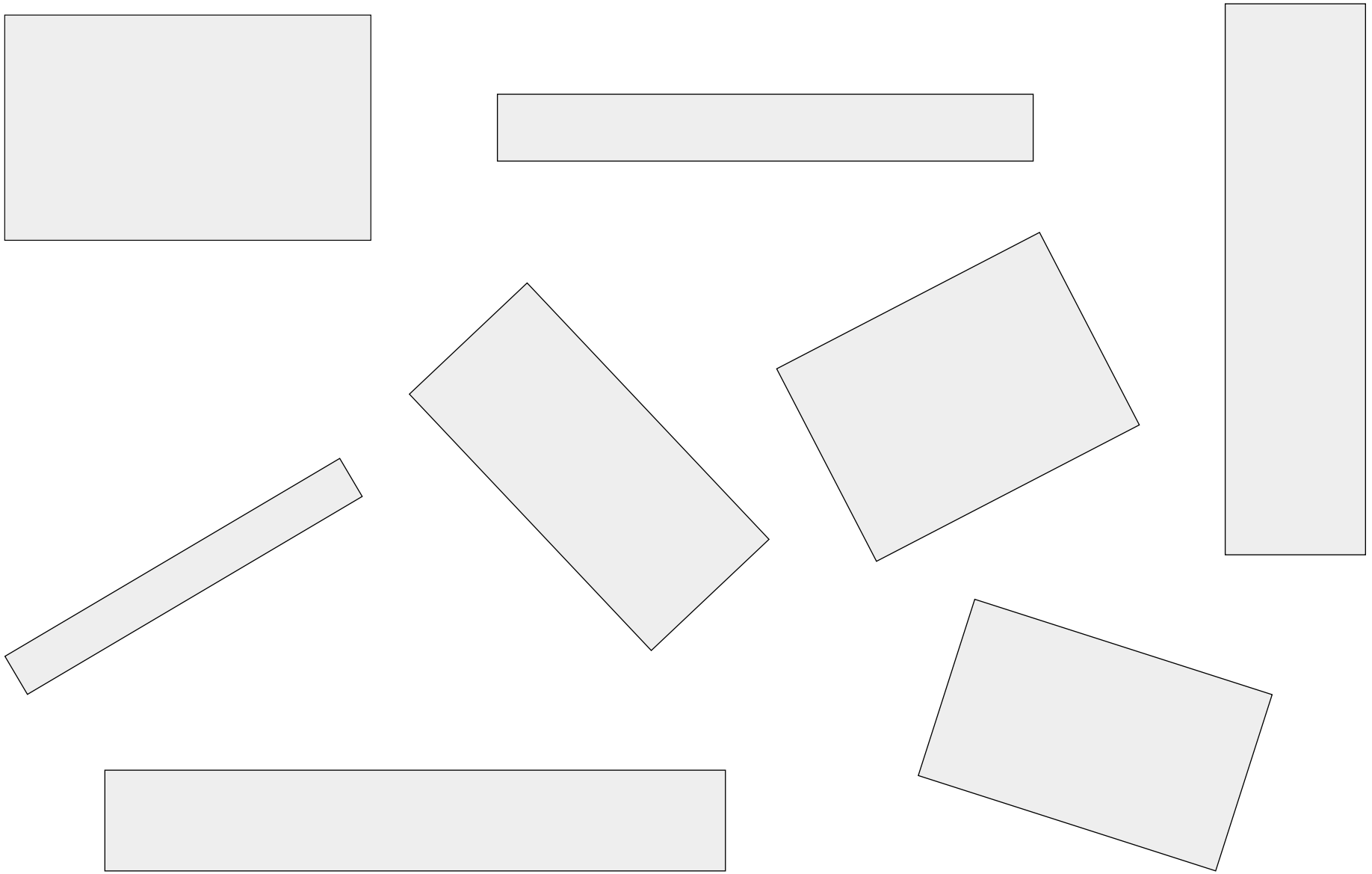

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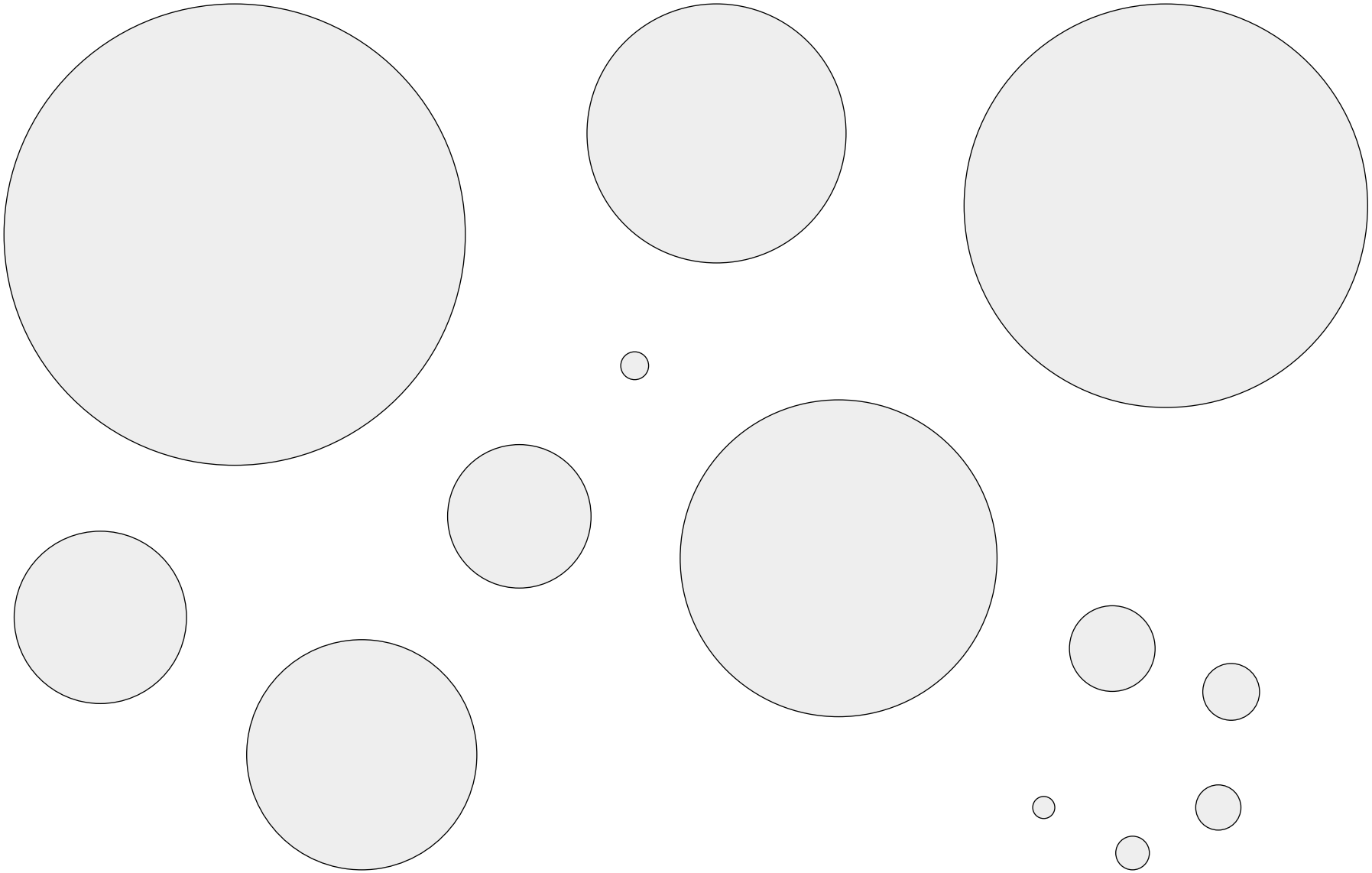

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