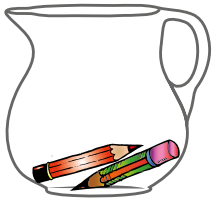
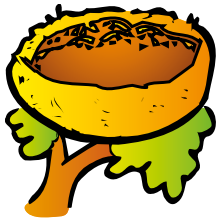
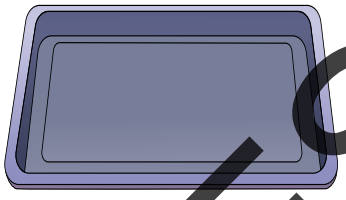
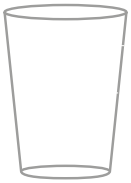
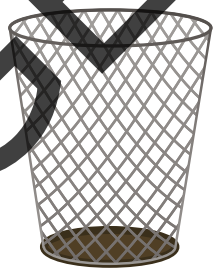
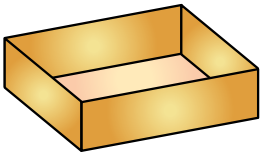
AUSTRALIAN Signpost MATHS NSW

EARLY STAGE 1

K

Alan McSeveny Rachel Adams Diane McSeveny-Foster

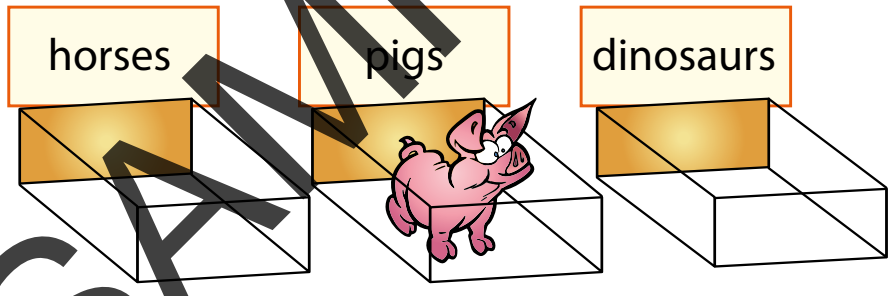
1 **Circle** the containers that hold zero things. Trace the numerals and the word "zero".

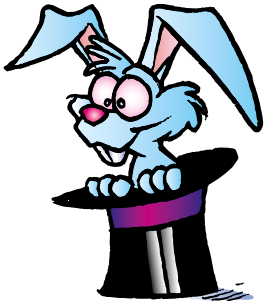







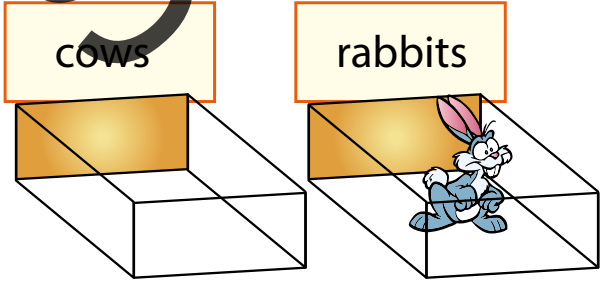

0 zero

0 0 0 0 0 0 0 0 0 0

2 These stalls were at the show. Look at the picture and then answer the questions.







How many dinosaurs? ☐

How many horses? ☐

How many cows? ☐

How many pigs? ☐

1A Zero

Strand: Number and algebra

Substrand: Representing whole numbers

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-RNW-01, MAE-RNW-02

Content: Connect counting and numerals to quantities

- read numerals to at least 20, including zero
- represent numbers as quantities to at least 20 using objects (such as fingers), number words and numerals
- make correspondences between collections

Content: Recognise number patterns

- recognise dice and domino patterns

About this page

- Zero is used as:
  - the number of a group which has no objects in it
  - a place holder in a number
  - the starting point on a number line.

  Note: On this page we are focusing on zero being the number of a group which has no objects.
- Discuss the dice and ten frame in the header.
- As a class, practise rote counting to ten starting with zero (BLM 7).
- In Question 1, only the empty containers will be circled. The '0' and the word 'zero' are not supposed to be circled as they are not part of the answer.
- In Question 2, discuss how there are zero dinosaurs left because they are extinct.

More teaching suggestions

- Show some containers with a different number of objects in each. Ask students which container has zero objects. Label the container with a card showing the numeral '0' and the number name 'zero'.
- Ask students to make different groups using counters. It doesn't matter how many, as they need not be counted at this stage. Direct them to put zero counters in a cup (i.e. a group that has no counters).
- Encourage the students to use the correct language listed on this page.
- Discuss situations where zero occurs (e.g. I don't own a cat, so I own zero cats).
- Ask students to choose 0s and the number name 'zero' from a collection of numeral cards (**BLM 2**) and word labels (**BLM 3**).
- Instruct students to make a number book. Each page will have a different numeral starting with 0. Students can write the numeral and its name on the page. For zero, nothing else will be on the page.

Extension work

- In a box of dominoes ask students to find all of the blank (zero) squares on any domino. Discuss what this means.
- Give each student the same number of counters. Ask students to remove one counter at a time until there are no more left. Discuss how many each student has now.

Language

dice (or 'die'), ten frame, zero, nought, nothing, no more left, none left, none at all, empty, more than, less than, domino, dot pattern, blank, double zero

Resources

- any classroom objects that can be counted (e.g. counters, buttons, blocks, etc.)
- dominoes
- BLMs: 2 Numeral cards, 3 Word labels, 7 Number charts

Cross-reference

See also: pp 6, 8, 10, 12, 30, 75, 78, 79

Year 1 pp 2, 3,

Evaluation

Is the student able to do the following

- read and represent the number zero
- count forwards to ten starting from zero
- use the language of zero

Answers

❶ The nest, tray, garbage bin, box and glass will be circled.

All zeros and the word 'zero' will be traced starting from the top.

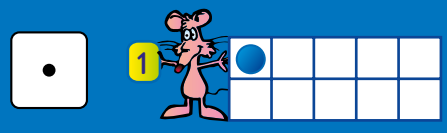
❷ There are 0 dinosaurs.

There are 0 horses.

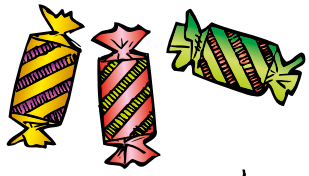
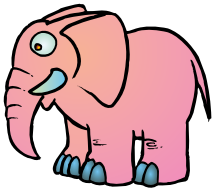
There are 0 cows.

There is 1 pig.

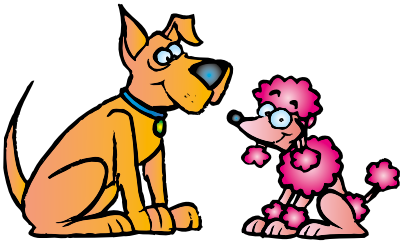
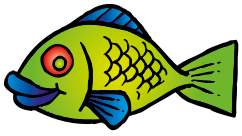
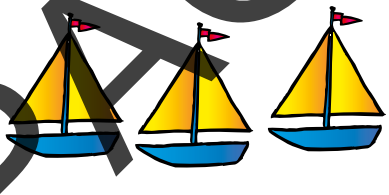
The number one



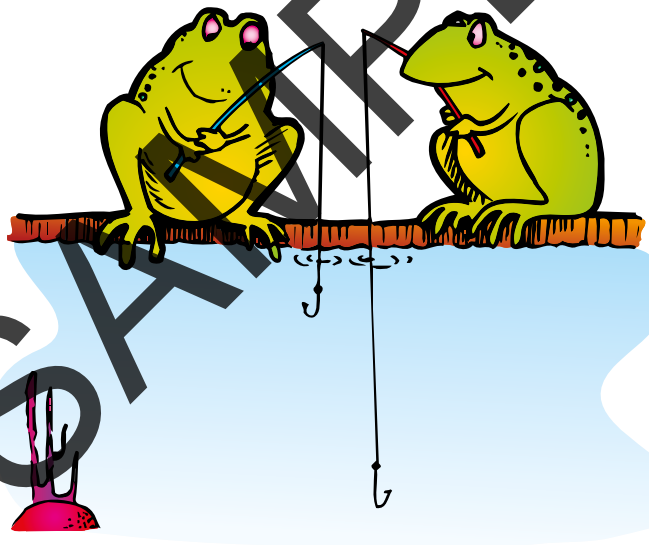
1 **Circle** the groups with one object. Trace the numerals and the word "one".



2 Draw one fish.



How many fish did you draw?

FUN SPOT

Colour the parts that are shown only once.

1B The number one

Strand: Number and algebra

Substrand Representing: whole numbers

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-RNW-01, MAE-RNW-02

Content: Connect counting and numerals to quantities

- read numerals to at least 20, including zero
- represent numbers as quantities to at least 20 using objects (such as fingers), number words and numerals
- make correspondences between collections

Content: Recognise number patterns

- recognise dice and domino patterns

About this page

- Discuss the position of the dots on the dice and ten frame in the header. Encourage rapid recognition of the patterns for 0 and 1.
- In Question 1, ensure students are beginning at the top of the 1.
- In Question 2, it may be necessary to point out to students that their answer should be written in the box next to the question.

Fun spot

- Discuss the features on the face. Note: There is one head, one face, one chin, one mouth, one tongue, one nose, one earring and one party hat (but four streamers are attached).

More teaching suggestions

- Provide students with the opportunity to write the number 1. Writing numbers (**BLM 5**) may be of assistance. This blackline master can be cut into strips and used as a consolidation exercise after each number has been introduced.
- Make a class poster to show the numeral 1 (e.g. 1, one, the dice and domino patterns for 1, 1 on a ten frame, 1 finger, 1 circle, a unicycle).
- Instruct students to make a number book. Each page will have a different numeral starting with zero (made in the previous lesson). Students can write the numeral 1, the name 'one' and an object on the page (e.g. a drawing of 1 ball).
- Provide students with regular rote counting opportunities up to ten as this exercise will enable students to memorise the sequence of numbers.
- Encourage students to practise counting forwards and backwards. Number charts (**BLM 7**) may be of assistance. Students could point to each number as it is said. Rhythmic counting or body percussion (e.g. clap hands, touch head, touch nose etc.) could also be used by students when counting.
- Choose 1s from a collection of numeral cards (**BLM 2**) and word labels (**BLM 3**).
- Place one different item beside each card.
- Make the digit 1 out of playdough. Trace over 1s made out of sandpaper or trace 1s in wet sand etc.
- Draw or cut out pictures from magazines that show one object. Paste each picture on a page and label it (e.g. 'In the fruit bowl I can see one apple').
- Count shapes onto a double workspace using the Counters tool. Count them aloud with students. On the left-hand side, drag 5 counters and colour one of them with a different colour. Ask students to label the pieces, for example: '1 red apple and 4 green apples').
- Students can use the Counters tool to practise counting out shapes. Ask students to make the following diagram: 1 apple, 2 teddy bears, 3 planes, 4 stars and 5 squares.

Extension work

- Have a portrait gallery. Students paint a portrait of a cartoon for 1 and these are displayed.
- Individual books could be made using the student's work from this activity and past and future activities.
- Give each student a picture card of an object that can be found in the room. Ask students to find and then display the one object like the one on their card.

Language

count, counts forwards, one, two, three … ten, more than, less than, the same, not as many as, dot, dice, ten frame, box (square)

Resources

- any classroom objects that can be counted (e.g. counters, buttons, beads, toys, plastic animals)
- playdough, wet sand, sandpaper
- magazines, glue, paper
- paint
- picture cards
- BLMs: 2 Number cards, 3 Word labels, 5 Writing numbers, 7 Number charts
- Maths Tool: Counters

Cross-reference

See also: pp 6, 8, 10, 11, 12, 30

Year 1 pp 2, 3, 4, 10, 11

Evaluation

Is the student able to do the following?

- read and represent the number one
- count forwards to 10

Answers

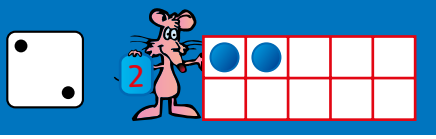
❶ The cake, fish, elephant and sun will be circled.
The word 'one' and numerals will be traced.

❷ 1 fish will be drawn and 1 written in the box.

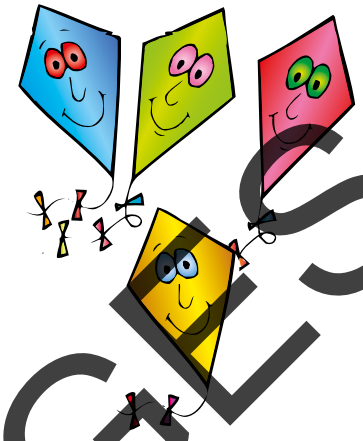
Fun Spot

The party hat (not streamers), the earring, the nose, the mouth, the tongue and chin will be coloured. Note: There is 1 head and 1 face.

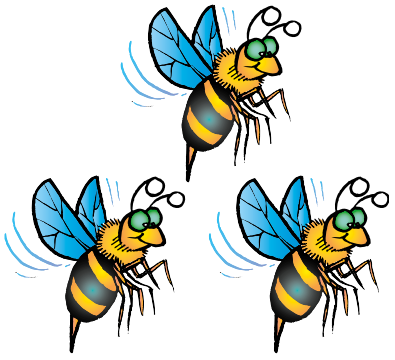
The number two

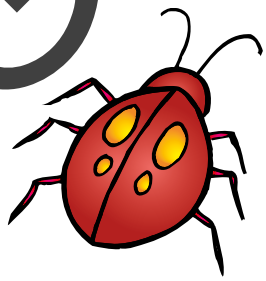


1 **Circle** the groups of two. Trace the numerals and the word "two".



2 two





2 2 2

Discuss which groups above have the same number.

2 Colour two in each row. Trace the numbers.

Draw two balloons.

FUN SPOT

Tell a story about the balloons.

1C The number two

Strand: Number and algebra

Substrand: Representing whole numbers

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-RNW-01, MAE-RNW-02

Content: Connect counting and numerals to quantities

- read numerals to at least 20, including zero
- represent numbers as quantities to at least 20 using objects (such as fingers), number words and numerals
- make correspondences between collections

Content: Recognise number patterns

- recognise dice and domino patterns

About this page

- Discuss the position of the dots on the dice and ten frame in the header. Use flashcards of these patterns to reinforce rapid recognition of 0, 1 and 2.
- In Question 1, ask students to trace the numeral and number name for two with their finger before tracing with a pencil. Remind students to write the numeral correctly by beginning at the top of the 2.
- Also in Question 1 discuss which groups have the same number of objects in them (e.g. 2 presents, 2 hamburgers).

Fun spot

- Ask students to draw two balloons and tell a story about the balloons (e.g. 'I had one balloon and my friend gave me another one. I now have two balloons.').
- Ask students, 'How many balloons would be left if one balloon burst?'

More teaching suggestions

- Practise writing the numeral 2 in the air. Trace over 2s made from sandpaper or draw 2s in wet sand.
- Writing numbers (**BLM 5**) could be used to reinforce writing the numeral 2.
- Using the Counters tool, make groups of two, e.g. two apples, two teddies, two stars and two circles.
- Students can create a double workspace using the Counters tool and drag five apples onto the left-hand side. Colour two of the apples purple. On the right-hand side, drag ten stars and colour two of them blue.
- Provide students with regular rote counting opportunities as this exercise will enable students to memorise the sequence of numbers. Encourage students to practise counting forwards and backwards. Number charts (**BLM 7**) may be of assistance.
- Instruct students to place a counter over a given number and count again. Continue covering the numbers until there are none left to see.
- Discuss the number before a given number. Talk about the fact that the number 'before' means 'one less' than that number (e.g. 1 is one less than 2, so 1 comes before 2).
- Place numeral cards (**BLM 2**) and word labels (**BLM 3**) face down on a table and match the numeral and number name. Place them in order from 0 to 2.
- Ask students to make a number book. Each page will have a different numeral starting with 0. Students can draw groups of objects on the page that represent the given numeral, which in this case is 2. Students can write the numeral 2 and the number name two on the page. They can draw 2 hands, 2 feet, 2 arms, 2 eyes etc.
- Make a class poster to show the numeral '2', the number name 'two', the dice and domino pattern for 2, 2 on a ten frame, 2 fingers, a bicycle (two wheels), 2 cherries attached etc.
- Use activities and experiences that develop the concept of two. Read the word for two (**BLM 3**).
- Use concrete materials to make groups of two objects (e.g. two teddies, two blocks, two fingers etc.).
- Count forwards to 10 using rhythmic counting where every second number said is clapped or stamped.
- Sing action rhymes for two (e.g. *Two Little Dicky Birds*).
- Have students draw pictures of themselves and make each 'two', a different colour (e.g. two brown eyes, two pink ears, two orange eyebrows).

Extension work

- Make a frieze of Noah's Ark and the animals going in two by two.
- Have students trace their two hands or feet. Cut out and display.
- Individual books could be made using the student's work from this activity and past and future activities.

Language

count, counts forwards, one, two, three … twenty, more than, less than, the same, equal, different, not as many as, ten frame, box (square), dot, dice, pattern

Resources

- flashcards of dice and domino patterns for 0, 1 and 2
- sand tray
- 2 made from sandpaper

- any classroom objects that can be counted (e.g. toys, place value ones, blocks, plastic dinosaurs)
- coloured pencils
- art paper
- songs and rhymes from the internet about 2
- BLMs: 2 Numeral cards, 3 Word labels, 5 Writing numbers, 7 Number charts
- Maths Tool: Counters

Cross-reference

See also: pp 8, 10, 11, 12, 30

Year 1 pp 2, 3, 4, 10, 11

Evaluation

Is the student able to do the following?

- read and represent the number 2. Note: The presents, hamburgers and grubs all have the same number of objects (i.e. 2).
- count forwards to 10
- recognise dice and domino patterns for 2

Answers

❶ The kite has a long tail.

The girl is short

The giraffe is tall. (However, the giraffe has a long neck.)

❷ A tall tree and 2 short trees will be drawn.

A long arrow and 2 short arrows will be drawn.

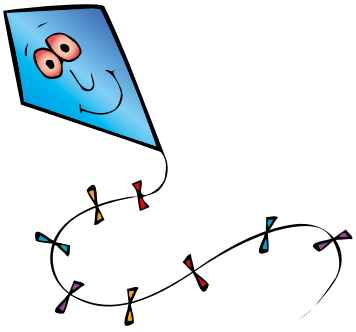
A long scarf and 2 short scarves will be drawn.

❸ The 2 long snakes will be coloured.

2 short snakes will be drawn.

1 Draw lines to match each word to a picture.

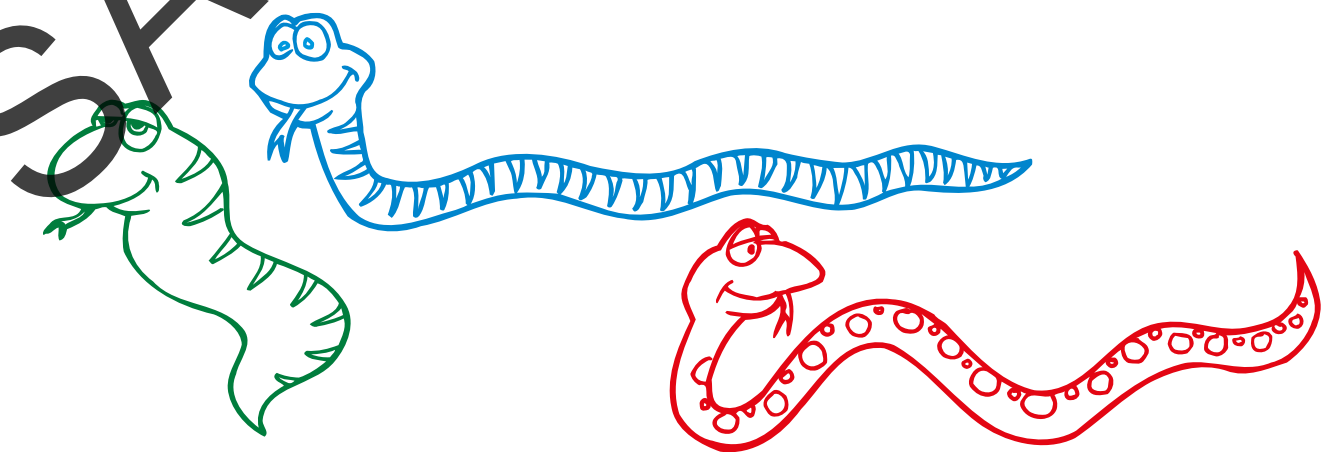
short | long | tall



2 Draw a tall tree. | Draw one long arrow. | Draw a long scarf.

Draw two short trees. | Draw two short arrows. | Draw two short scarves.

3 Colour the long snakes. Draw two more short snakes.



1D Long, short and tall

Strand: Measurement and space

Substrand: Geometric measure

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-GM-02

Content: Length: Use direct and indirect comparisons to decide which is longer

- identify the attributes of 'length' as the measure of an object from end to end
- use comparative language to describe length

About this page

- In Question 1, discuss the fact that the giraffe is taller than the girl so the girl is shorter than the giraffe. Note: the use of 'tall' refers to the height of an object while the use of the word 'long' refers to the length of an object.
- Question 3 refers to colouring the long snakes (plural) as it could be difficult for students to distinguish between the two long snakes. The teacher could demonstrate how to compare the lengths of each snake by using a piece of string.

More teaching suggestions

- Demonstrate how to compare the length of two objects by placing them beside each other, then end-to-end.
- Discuss why it is difficult to compare lengths when the objects are not beside each other. Note: When two lengths are compared students should align one end of each object being compared.
- Encourage students to explore and experiment with a wide variety of materials (e.g. craft sticks, Lego® and blocks). Allow them to construct and arrange the materials. Encourage the language of length.
- Categorise objects into long and short. Use pictures, photos and objects in the environment.
- Discuss comparative language (i.e. long, longer, longest, short, shorter, shortest, tall, taller, tallest).
- Instruct students to find objects in the classroom that are longer than a desk. Ask students to draw these objects and label them. A word bank may need to be made so students can copy the labels, or prepared sentences could be used and placed next to the object (e.g. The bookshelf is longer than the desk).
- Similarly, students could find objects that are shorter than a chair and / or taller than themselves.
- Model the language of length regularly to describe a variety of situations (e.g. 'That's a long line', when students are lining up; 'That was a short song'; 'Let's have a long/short race'; 'He is a tall man').
- Students can drag each shape in the Pattern Blocks tool onto the workspace and arrange it in the order of shortest to tallest.
- Using the Geometry tool, students can drag five of the same shapes onto the workspace. Ask the students to use the resize icon and then arrange the shapes in the order of shortest to tallest.

Extension work

- Refer stories about long and short (e.g. *Jack and the Beanstalk*, *Tom Thumb*).
- Sort collected sticks into pairs (one long and one short), regroup, then sort according to thickness (or straightness or curviness).

Language

long, longer, longest, longer than, short, shorter, shortest, shorter than, tall, taller, tallest, taller than, straight, straighter, straightest, straighter than, thick, thicker, thickest, thicker than, thin, thinner, thinnest, thinner than, end-to-end, beside, length

Resources

- prepared sentences, words using length vocabulary
- craft sticks, blocks, Lego®
- magazine pictures, any classroom objects
- sticks
- stories
- Maths tools: Pattern blocks, Geometry

Cross-reference

See also: pp 36, 57, 76, 89, 115

Year 1 p 32

Evaluation

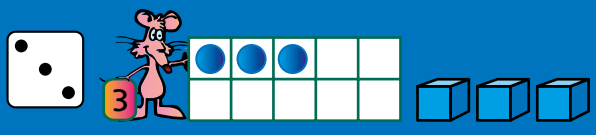
Is the student able to do the following?

- describe objects in terms of long, short or tall
- make a long or a short construction
- identify length as a measure from end-to-end

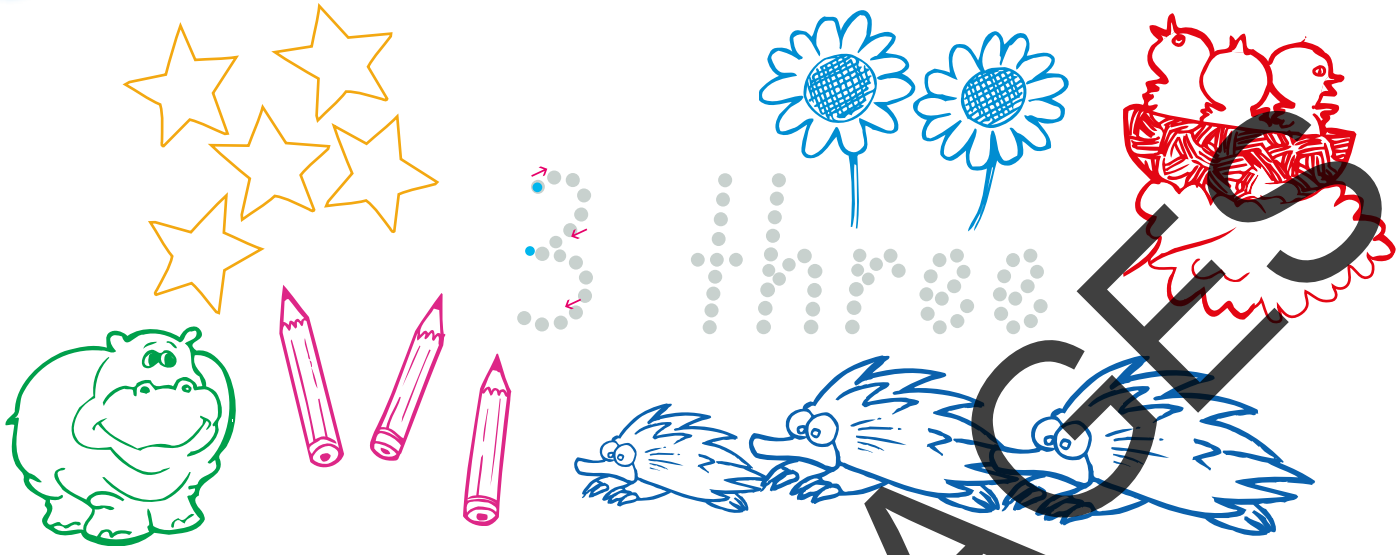
Answers

1. The kite has a long tail.
   The girl is short.
   The giraffe is tall.
2. A tall tree, 2 short arrows and a long scarf will be drawn.
3. The 2 long snakes will be coloured.
   2 short snakes will be drawn.

2A The number three

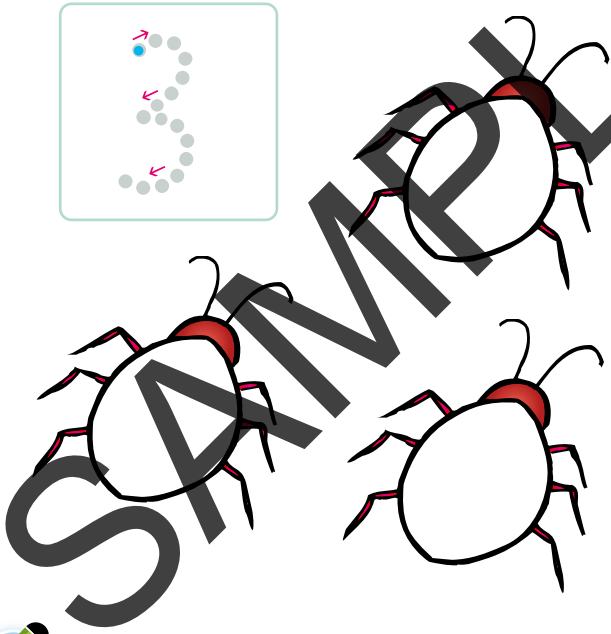


1 Colour groups that show three. Trace the numerals and the word "three".



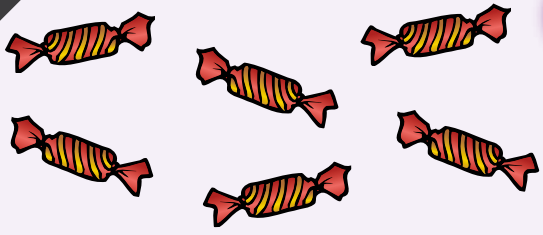
three

2 Draw three spots on each ladybird.



Circle groups of two lollies.

INVESTIGATION



How many groups did you circle?

→ Talk about your answer.

3 Write the numeral after or before.

	3	2			1	0		

2A The number three

Strand: Number and algebra

Substrand: Representing whole numbers

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-RWN-01, MAE-RWN-02

Content: Connect counting and numerals to quantities

- read numerals to at least 20, including zero
- represent numbers as quantities to at least 20 using objects (such as fingers), number words and numerals
- make correspondences between collections

Content: Recognise number patterns

- recognise dice and domino patterns

About this page

- Discuss the position of the dots on the dice and ten frame in the header. Compare these to pp 2 and 3.
- Ask students to show 'three' using their fingers.
- In Question 1, when writing the number 3 encourage students to begin at the top of the 3 and go around until they reach the second blue dot, and then go around again.
- In Question 3, explain that the number 'before' a given number means 'one less' than that number (e.g. 2 is one less than 3, so 2 comes before 3).
- Also discuss that the number 'after' a given number means 'one more' than that number (e.g. 3 is one more than 2, so 3 comes after 2).

Investigation

- Ask students to count two lollies and put one circle around them. Repeat the process until all lollies are circled. Remind the class that they should write their answer in the box.
  Ask students to explain the result.
- Discuss the difference between 'how many groups' and 'how many are in a group' (i.e. there are three groups and in each group there are two lollies).

More teaching suggestions

- Have students practise counting forwards and backwards to ten. Use number charts (**BLM 7**) and point to each number with a finger as it is said.
- Provide students with the opportunity to write the numeral 3. Writing numbers (**BLM 5**) can be cut into strips so that each numeral can be traced when it is introduced.
- When asking the students to contribute, encourage them to use the language on this page as it reinforces their understanding of the concept of numbers.
- Make a class poster to show the numeral 3 (e.g. 3, three, the dice and domino patterns for 3, 3 on a ten frame, tricycle wheels, triangle, three-leaf clover, traffic lights).
- Give experiences in making and matching groups of three using a variety of concrete materials. Use numeral cards (**BLM 2**) and word labels (**BLM 3**).
- Discuss the word and numeral 3.
- Ask students to make a number book. Each page will have a different numeral starting with 0. Students can write the numeral (3) and its name (three) on the page and draw groups of 3 objects.
- Give students pipe cleaners. Ask them to put a given number of beads on their pipe cleaner from 0 to 3.
- Read stories about three (e.g. *The Three Little Pigs, The Three Billy Goats Gruff* and *Goldilocks and the Three Bears*).
- Sing songs about three (e.g. *Three Blind Mice, Three Little Kittens*).
- Use the Counters tool to model groups of three planes, teddies, stars and circles.
- Students can practise counting to nine using the Counters tool, by dragging nine shapes onto each side of a double workspace. Ask students to select different colours on the paint icon and create colour-coordinated groups of three.

Extension work

- Make a frieze of *The Three Little Pigs* and label it, (e.g. 'Here are 3 pigs', 'Here are 3 houses').
- Ask students to make playdough or pipe cleaner numerals of 1, 2 and 3. They could use a laminated copy of writing numbers (**BLM 5**) to ensure the numerals are formed correctly.
- On a calculator, fill the screen with 1s, 2s and 3s. (Explain how the calculator is turned on/off and cleared.)

Language

count, counting, forwards, backwards, numeral, dots, dice, box, one, two, three, four … 10, ten frame, how many groups, how many in a group, more than, less than, match, equal, not as many as, one less than, before, one more than, after, next, pattern

Resources

- classroom objects that can be counted (e.g. toys, counters buttons, beads, plastic animals)
- songs and stories using 3 (e.g. *Three Blind Mice*)

- playdough, pipe cleaners, sand
- paint, glue, paper
- calculators
- BLMs: 2 Numeral cards, 3 Word labels, 5 Writing numbers, 7 Number charts
- Maths Tool: Counters

Cross-reference

See also: pp 7, 8, 10, 11, 30

Year 1 pp 2, 3, 4, 10, 11

Evaluation

Is the student able to do the following?

- read and represent the number three
- count forwards to 10
- count backwards from 10
- recognise the dice and domino pattern for 3

Answers

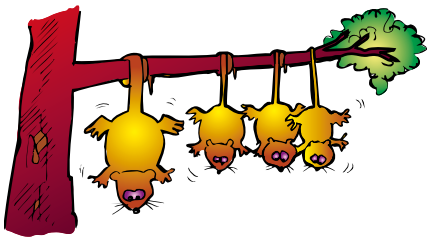
1. The echidnas, pencils and birds will be coloured. The word 'three' and the numerals will be traced.
2. Students will draw three spots on each ladybird.
3. 2, 3, 0, 1

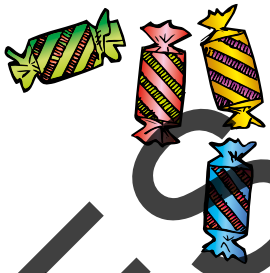
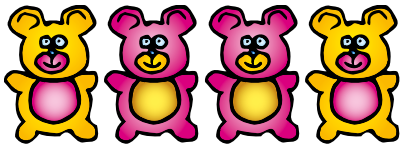
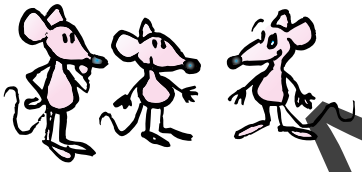
Investigation

3 groups of 2 lollies will be circled. Students will discuss their answers.

2B The number four

1 Circle groups that show four. Trace the numerals and the word "four".




4 four

2 Draw objects to match each numeral.

4

2

3

INVESTIGATION

Make different dot patterns for four.

→ Talk about your answer.

3 Write the numbers 0, 1, 2, 3 and 4 from smallest to largest.

2B The number four

Strand: Number and algebra

Substrand: Representing whole numbers

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-RWN-01, MAE-RWN-02

Content: Connect counting and numerals to quantities

- read numerals to at least 20, including zero
- represent numbers as quantities to at least 20 using objects (such as fingers), number words and numerals
- make correspondences between collections

Content: Recognise number patterns

- recognise dice and domino patterns

About this page

- In the header, discuss the position of the dots on the dice and ten frame. Compare them to header on p 6.
- Ask students to show 4, using their fingers. Discuss the possibilities (e.g. 4 fingers on one hand, 3 fingers on one hand and 1 finger on the other hand, 2 fingers on both hands).
- When writing the numeral 4 remind students to start at the top and go down and across. Lift the pencil and then go down again. Writing numbers (**BLM 5**) could be used as part of this lesson.
- Discuss the terms 'order' and 'smallest to largest'.

Investigation

- Discuss the patterns for four. Ask students to draw dot patterns for four.
- Individual books could be made using the student's work from this activity and past and future activities.

More teaching suggestions

- Count, match and sort objects to make groups of four. Match groups with numeral cards (**BLM 2**), word labels (**BLM 3**) and dot cards (**BLM 4**).
- Have students use lines of numbers or numeral tracks (**BLM 13**) and point to a nominated number with their finger. Ask students to move their finger along the line as they say each number.
- Discuss the fact that the number 'before' a given number means 'one less' than that number (e.g. 3 is one less than 4, so 3 comes before 4).
- Discuss that the number 'after' a given number means 'one more' than that number (e.g. 4 is one more than 3, so 4 comes after 3).
- Instruct students to make a number book. Each page will have a different number. On a new page, students can write the numeral 4 and its number name four and draw 4 objects.
- Make a class poster to show the numeral 4 (e.g. 4, four, the dice and domino patterns for 4, 4 on a ten frame, 4 fingers, 4 sides on a square, 4 wheels on a car).
- Direct students to fold a piece of paper into four. Place four things in each section (e.g. gumnuts, counters).
- Use four craft sticks to make a square paddock. Inside each, place four 4-legged animals (e.g. sheep, cows, dogs).
- Make a class book of animals with four legs.
- Students can use the Pattern Blocks tool to create two groups: shapes with four sides and shapes that do not have four sides.
- Students should open the Geometry tool and place shapes with four sides onto the workspace. As an extension, students could create groups of four, for example: four squares, four rectangles, four kites. This can be a good way to introduce the names of less common shapes, e.g. trapezium and rhombus.

Extension work

- Play games involving four players (e.g. Ludo).
- Divide the room into four and label each section 1 to 4. Have students walk around to music. When the music stops, select a card from 1 to 4 to eliminate students in that section. Repeat until one child remains.
- Arrange four blocks to make interesting shapes. Repeat these shapes to make patterns.

Language

count, counting, forwards, one, two, three, four … twenty, more than, less than, match, equal, the same as, not as many as, before, after, between, dots, dice, ten frame, box (square), order, smallest to largest, pattern

Resources

- any classroom objects that can be counted (e.g. gumnuts, toys, place-value ones, blocks)
- craft sticks, toy four-legged animals
- paper
- games for four players (e.g. Ludo)
- BLMs: 2 Numeral cards, 3 Word labels, 4 Dot cards, 5 Writing numbers, 13 Numeral tracks
- Maths Tools: Pattern Blocks, Geometry
- Maths Tool Activity: Pattern Blocks

Cross-reference

See also: pp 8, 10, 11, 14, 15, 30
Year 1 pp 2, 3, 4, 10, 11

Evaluation

Is the student able to do the following?

- read and represent the number four
- count four objects
- count forwards to 10
- recognise the dice and domino patterns for 4

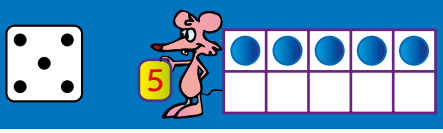
Answers

1. Lollies, birds, bears and possums will be circled. The word 'four' and numerals will be traced.
2. Answers will vary. Objects will be drawn to match each numeral (4, 2, 3).
3. 0, 1, 2, 3, 4

Investigation

Answers will vary, e.g.  ,  or  .

The number five



1 Colour the groups of five. Trace the numerals and the word "five".

2 Write the numbers in order.

a forwards

3	1	5	2	4

b backwards

2	5	1	4	3

3 Write 2, 0, 5 and 4 in order, smallest to largest.

4 Write 3, 5, 0 and 2 in order, smallest to largest.

ACTIVITY

Draw your hand on paper. Number the fingers 1 to 5.

2C The number five

Strand: Number and algebra

Substrand: Representing whole numbers

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-RWN-01, MAE-RWN-02

Content: Connect counting and numerals to quantities

- read numerals to at least 20, including zero
- represent numbers as quantities to at least 20 using objects (such as fingers), number words and numerals
- count with one-to-one correspondence, recognising that the last number name represents the total number in the collection

Content: Recognise number patterns

- recognise dice and domino patterns

About this page

- Discuss the dice pattern on the header at the top of the page. Encourage students to recognise these patterns without counting as it provides them with instant recognition of numbers. The importance of subitising is explained in the Mathematics K–2 syllabus. Dot cards (**BLM 4**) and concentration cards (**BLM 1**) may assist students in this exercise.
- In Question 1, instruct students to write the numeral 5 by beginning at the first blue dot and making a downward stroke until the second blue dot is reached. Then trace over the round curved line. This is all one movement. Place the pencil back on the first blue dot and go across.
- Before commencing Question 2, count forwards to 20, with every fifth number said being clapped or stamped. Practise saying numbers before and after a given number. Count backwards from 10. Use number charts (**BLM 7**) to assist students when counting. Students could use their finger to point to each number as it is said.
- Discuss the terms 'order' and 'smallest to largest'.

Activity

- Students are instructed to draw a hand on paper and label the fingers 1 to 5. Ask students to make the hand big enough for the numbers to be written clearly on each finger.

More teaching suggestions

- Write the numerals 0 to 5 on paddle pop sticks or cards. Have students put the numbers in order.
- Make a class number poster to display things that show five (e.g. the numeral 5, the written word 'five', five on a ten frame, a 5-cent coin, a $5 note, five fingers on a hand, five toes on a foot, five points on a star, five dogs, a five-sided shape (pentagon)).
- Ask students to select a numeral from a randomly arranged group of numerals when a specific number is said (**BLM 2**). Similarly, you could use written words (**BLM 3**). Concentration picture cards (**BLM 1**) could be used instead of numbers or words.
- Have students use a line of numbers and point to a given number with their finger. Ask students to move their finger along the line as they say each number.
- Peg numeral cards 0 to 5 to a line of string in the wrong order. Order the numbers as a class from lowest to highest or highest to lowest.
- Discuss the fact that the number 'before' a given number means 'one less' than that number (e.g. 4 is one less than 5, so 4 comes before 5).
- Discuss the fact that the number 'after' a given number means 'one more' than that number (e.g. 5 is one more than 4, so 5 comes after 4).
- Remind students that the last number counted represents the total number of items.
- Provide students with opportunities to see and show the number five using fingers. Count to five slowly and show the corresponding fingers. Have students hold up the correct number of fingers and count with you.
- Make a template of a birthday cake and have students add five paper cut-out candles. Number the candles 1 to 5.
- Ask students to follow directions (e.g. clap five times, take three steps forwards). Touch and count five objects.
- Provide students with many opportunities to write the numeral 5 correctly. Writing numbers (**BLM 5**) will be useful for this task. A blackline master can be cut in half and part of it can be used at a later date (e.g. Numbers to ten, p 30).
- Ask students to make a number book. Each page will have a different numeral starting with 0. Students can write the numeral 5 and its name 'five' on the page and draw groups of objects that represent the number five.
- Sing songs about five (e.g. *Five Little Ducks, Five Fat Sausages* or *Once I Caught A Fish Alive*).
- Read the book *Five Little Ducks* by Jose Aruego and Ariane Dewey.
- Use the Colour Tiles tool to create groups of five tiles in different formations with each in different colours.
- Students can use the Geometry tool to create towers, in ascending order, from one block to five blocks tall.

Extension work

- Begin with one object and add one each time, up to five. Ask, 'What comes after five?'
- Arrange groups of five coloured paper squares in different ways. Paste them into a book and label.
- Individual books could be made using the student's work from this activity as well as past and future activities.

Language

count, count forwards, count backwards, numeral, one, two, three, four, five … twenty, more than, less than, one more than, after, next, one less than, before, dice pattern, in order, show 5, line of numbers, lowest, highest

Resources

- any classroom objects that can be counted, matched and sorted (e.g. counters, centicubes, beads)
- template of a birthday cake, five paper cut-out candles
- coloured paper squares
- BLMs: 1 Concentration cards 2 Numeral cards, 3 Word labels, 4 Dot cards, 5 Writing numbers, 7 Number charts
- poems and songs focusing on 5 (e.g. *Five Little Ducks, Five Fat Sausages*)
- Maths Tools: Colour Tiles, Geometry
- Maths Tool Activity: Colour Tiles

Cross-reference

See also: pp 10, 11, 14, 15, 30

Year 1 pp 2, 3, 4, 10, 11

Evaluation

Is the student able to do the following?

- read and represent the number five
- count five objects
- count forwards to 20
- order groups of up to five objects
- recognise the dot and domino patterns for 5

Answers

❶ The stars, ice creams and ducks will be coloured. Words and numerals will be traced.

❷ **a** 1, 2, 3, 4, 5 **b** 5, 4, 3, 2, 1

❸ 0, 2, 4, 5

❹ 0, 2, 3, 5

Activity

Students will trace their hands on paper and number the fingers 1 to 5.

1 Colour each group differently.

How have you sorted the objects?

Which group has the most?

Sort groups of objects in your classroom. Talk about how you sorted the objects.

You could sort pencils, blocks, toys or counters.

ACTIVITY

2D Data

Strand: Statistics and probability

Substrand: Data

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-DATA-01

Content: Organise objects into simple data displays and interpret the displays

- group objects according to characteristics
- compare the sizes of groups of objects by counting (Reasons about relations)

About this page

- In Question 1, discuss the objects on the page and possible groupings. Identify groups by using colour (e.g. colour the dogs brown, the things that live in the sea blue, the fruit red, the things that fly green).
- Instruct students to place different coloured counters on each group (i.e. a blue counter on the things that live in the sea). Remove one colour and place it in a line. Repeat for the other coloured counters, aligning each line underneath the previous line. Count and compare the lines. Discuss which colour has the most.
- Ask students if there are any ways of comparing the groups other than the suggestion above.
- Ask students to use a 'not' attribute (e.g. those with a tail and those that do not have a tail).

Activity

- Ask students to sort a variety of objects into groups. Ask them to explain how they made their group.

More teaching suggestions

- Give students objects to explore and discuss. Ask students to sort the objects according to one characteristic (e.g. colour, size or shape).
- Ask students to investigate where items are sorted and stored. Make a list and display it in the classroom (e.g. at home cutlery, crockery, toys and books are all sorted and put in special places).
- Display a 'yes' sign on one side of the room and a 'no' sign on the other side. Ask students yes/no questions and instruct them to stand on the yes side or the no side of the room to answer each question. Discuss which group has the most, the least or the same number in it.
- Use the Geometry tool and scatter one of each of the shapes from the first three lists onto the workspace. Ask students to do the same and categorise the shapes by their colours and then by the number of sides of the shapes.
- Discuss the idea of parallel lines (a pair of lines that run in such a way that they won't meet). Ask students to categorise shapes using the Geometry tool into two categories: 'Has a pair of parallel sides' and 'Does not have a pair of parallel sides'.

Extension work

- Discuss suitable groupings and shelf positions for class items (e.g. books, toys, objects in a 'class shop').
- Discuss how and why objects are sorted in the real world (e.g. food in a supermarket, types of books in the library).

Language

like, alike, belongs, does not belong, the same as, not the same, groups of, sort, different, big, little, colour names, not big, not little

Resources

- any classroom objects that can be sorted (e.g. blocks, toys, Lego®, Multilink)
- cups, cutlery, saucers, clothing
- plastic cars, animals, people etc.
- Maths Tool: Geometry
- Maths Tool Activity: Geometry

Cross-reference

See also: pp 49, 81, 93, 123, 125

Year 1 pp 25, 53, 61, 97, 124, 130

Evaluation

Is the student able to do the following?

- sort objects into groups according to characteristics
- explain how objects were sorted
- identify the group with the most objects

Answers

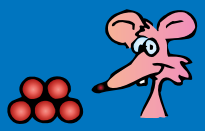
❶ Answers will vary.

Students may link: dogs, fruit, things that fly, things that live in the sea etc.

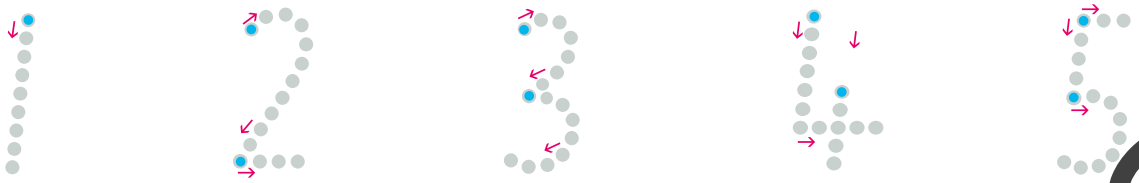
There are more dogs.

Activity

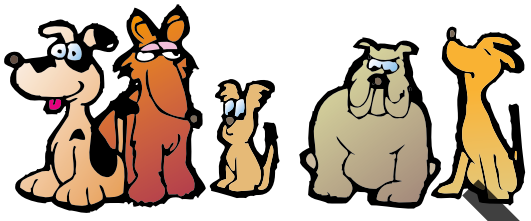
Students will sort objects into groups according to certain characteristics (e.g. colour, size, shape).

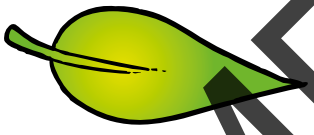


1 Trace the numerals.

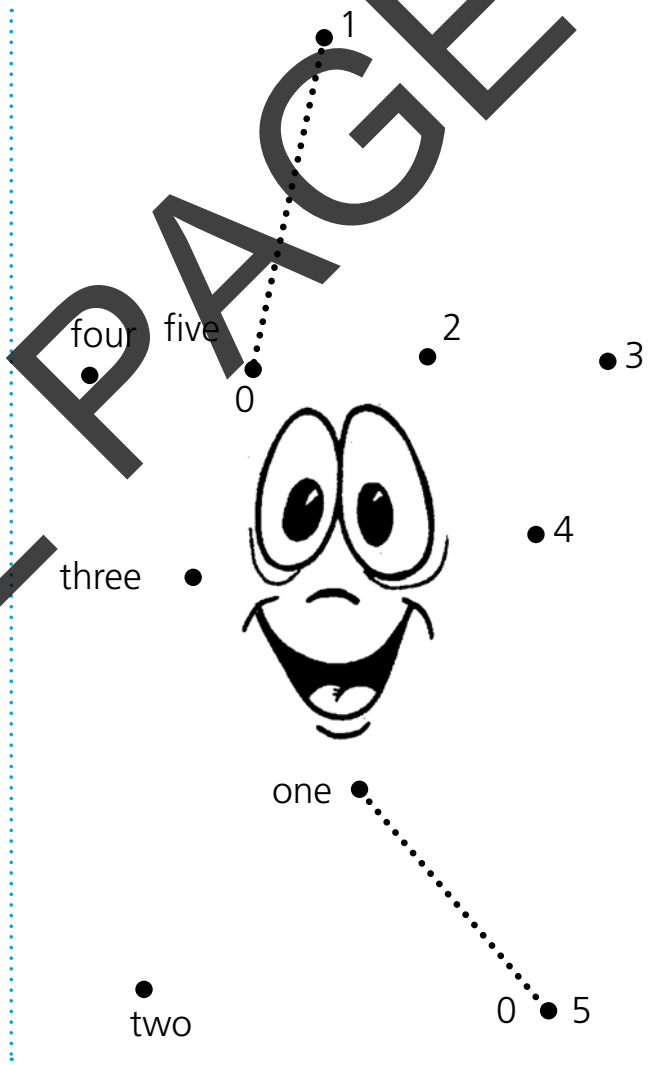


2 How many?

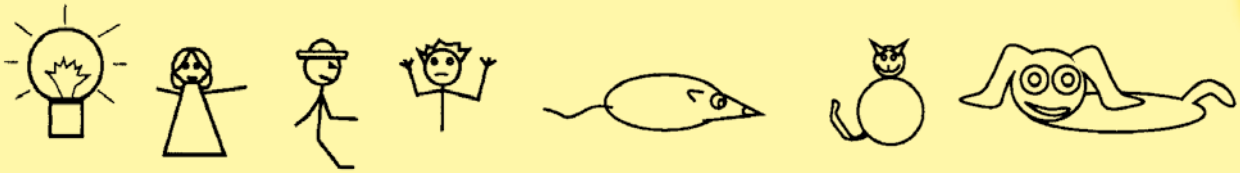




3 Join the numbers in order. Join the words in order.



Give each person 2 legs. Give each animal 4 legs.



FUN SPOT

3A Numbers to five

Strand: Number and algebra

Substrand: Representing whole numbers

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-RNW-01, MAE-RNW-02

Content: Connect counting and numerals to quantities

- represent numbers as quantities to at least 20 using objects (such as fingers), number words and numerals
- read numerals to at least 20, including zero
- count with one-to-one correspondence, recognising that the last number name represents the total number in the collection
- compare and order numbers to 20

Content: Recognise number patterns

- recognise dice and domino dot patterns

About this page

- Discuss and compare the dice dot patterns in the header. Use dot cards (**BLM 4**) as flashcards to assist instant recognition.
- In Question 1, students should be reminded to begin at the top of each of the numbers. Provide students with many opportunities to write the numbers 1 to 5. Use writing numbers (**BLM 5**) for extra reinforcement.
- Note: In Question 2, the last number name spoken when counting the pictures represents the total number of objects (e.g. 1, 2, 3, 4, 5. Five is the last number spoken so there are 5 dogs).
- Discuss which group has the most, and which group has more than another group.
- In Question 3, discuss the number before and after a given number (e.g. the number after one is two so a line will be drawn from one to two, the number after two is three so the next line will be drawn from two to three and so on until the picture of the star is complete).
- Ask students to point to each number on the star including zero as they count forwards and backwards.
- Students can use the Pattern Blocks tool to create one hexagon, two trapeziums, three parallelograms, four triangles and five squares.
- Students can create colour-coordinated groups of shapes using the Counters tool. Drag groups of shapes onto the workspace and colour groups of five in yellow, groups of four in purple, groups of three in red, groups of two in orange and single items in green.

Fun spot

- Discuss the pictures so that students realise the difference between people, who need two legs, and animals, which need four legs. Ask, 'Does the light bulb need legs?'

More teaching suggestions

- Have students use a line of numbers or numeral tracks (BLM 13) and move a finger along the line as they say each number.
- Match numeral cards (BLM 2) and word labels (BLM 3).
- During lesson breaks, call out a number from zero to five and have students hold up that number of fingers as quickly as they can.
- Review regularly: counting objects to 20, writing numerals to 5 and recognising the words one to five.
- Note: Counting by rote is like singing a song without regard for the meaning of the words. It does however establish the repeated pattern for counting (i.e. twenty-one, twenty-two, ... thirty-one, thirty-two).
- Counting with understanding, on the other hand, is enhanced by the use of one-to-one correspondence while counting a number of items. Students become aware of the size of a number of items and the relative size of numbers.

Extension work

- Have students draw and label pictures using the numerals 1 to 5.
- Individual books could be made using the student's work from this activity and the past and future activities.
- Display concentration cards (**BLM 1**), numeral cards (**BLM 2**), word labels (**BLM 3**) and dot cards (**BLM 4**) showing one to five objects in random order. Have the students order them.

Language

count, counting forwards, backwards, one, two, three ... twenty, the most, more than, less than, the same, not as many, dot, dice, ten frame, pattern, compare

Resources

- any classroom objects that can be counted (e.g. counters, buttons, beads, toys, plastic animals)
- counting songs
- Maths Tools: Pattern Blocks, Counters

Cross-reference

See also: pp 8, 11, 12, 14, 15

Year 1 pp 2, 3, 11

Evaluation

Is the student able to do the following?

- read and represent the numbers one to five
- count five objects
- order groups of up to five objects

Answers

1. The numbers will be traced.
2. 3, 2, 5, 1, 4
3. A star will be drawn.

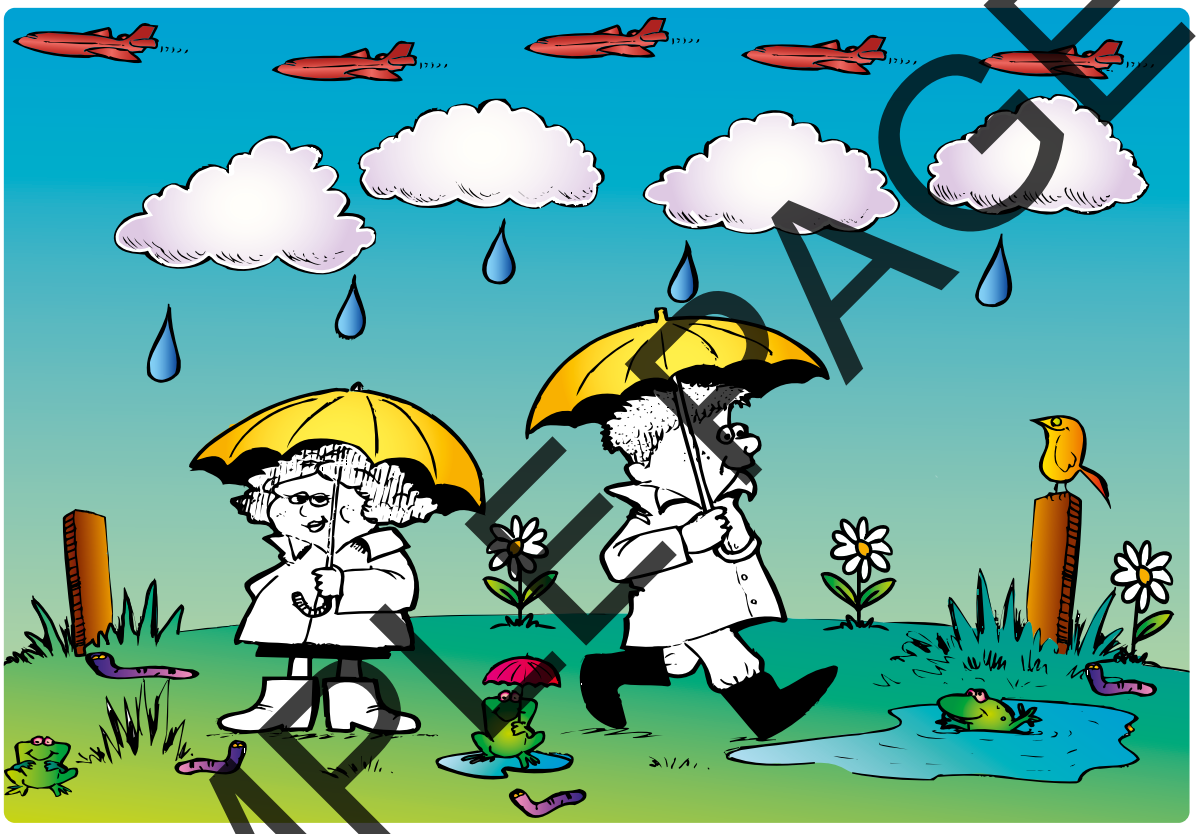
Fun spot

Each person will have 2 legs drawn.
Each animal will have 4 legs drawn.

1 Trace the numerals.

1 2 3 4 5

2 Talk about the picture and answer the questions.



How many ? How many ?

How many ? How many ?

How many ? How many ?

How many ? How many ?

3B Counting to five

Strand: Number and algebra

Substrand: Representing whole numbers

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-RNW-01, MAE-RNW-02

Content: Connect counting and numerals to quantities

- represent numbers as quantities to at least 20 using objects (such as fingers), number words and numerals
- read numerals to at least 20, including zero
- count with one-to-one correspondence, recognising that the last number name represents the total number in the collection
- compare and order numbers to 20

About this page

- In Question 1, revise the numerals 0 to 5. Students should be reminded to begin at the top when writing each of the numbers. Review the correct formation of each numeral.
- In Question 2, encourage students to look carefully at the picture as some objects are not as obvious as others.

More teaching suggestions

- Counting exercises, both forwards and backwards, as well as varying the starting point will assist students to memorise the order of numbers. Number charts (**BLM 7**) can be used. Students could point to each number as it is said.
- Count, match and sort objects to make groups up to and including five. Match groups with numeral cards (**BLM 2**) and word labels (**BLM 3**) or dot cards (**BLM 4**). Zero should also be included.
- Have large number cards labelled 0 to 5 placed in random order face up (or in a pile face down). Ask students one at a time to put the cards in order.
- Order collections of objects from one to five.
- Place the large numeral cards in order from 0 to 5. Ask students to close their eyes and then take away one card. Students must then say which card is missing. Discuss strategies used to work out the missing card.
- Regularly revise writing numbers 1 to 5 (**BLM 5**). Half of this BLM could be used now and the second half used in later lessons (8A or 8B). Emphasise the correct formation of each number.
- Distribute the number book made by each student from previous lessons. Revise each number page.
- Revise the class posters (which were made in previous lessons) for each of the numbers 1, 2, 3, 4 and 5. Discuss and compare the posters.
- Use calculators to revise numerals up to five.
- Students can use the Building Blocks tool to create a staircase two blocks wide and one to five blocks high. Students should focus on counting the blocks as they are placed onto the workspace.
- Students can use the Counters tool to model groups of one with purple, two with blue, three with yellow, four with orange and five with red.

Extension work

- *Make the Numeral:* Show a numeral (up to 5) and have students form groups to match that numeral.

Language

count, counting, forwards, one, two, three, four, five … twenty, more than, less than, match, equal, not as many as, next, before, after, between

Resources

- any classroom objects that can be counted, sorted and matched (e.g. counters, buttons, pencils)
- calculators
- BLMs: 2 Numeral cards, 3 Word labels, 4 Dot cards, 5 Writing numbers, 7 Number charts
- Maths Tools: Building Blocks, Counters
- Maths Tool Activity: Building Blocks

Cross-reference

See also: pp 8, 10, 15, 30

Year 1 pp 2, 3, 4, 11

Evaluation

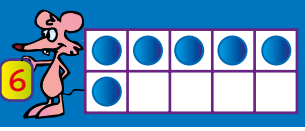
Is the student able to do the following?

- read and represent numbers up to five
- count forwards to 20
- order groups of up to five

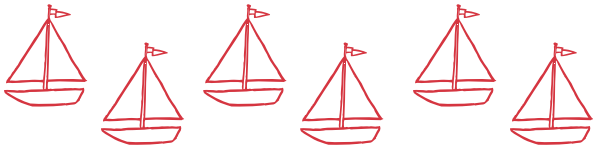
Answers

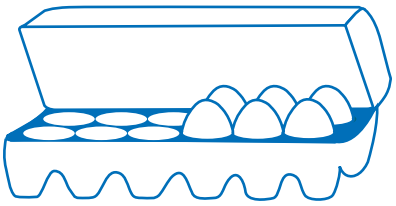
1. Numerals will be traced.
2. 3 umbrellas; 4 clouds; 3 frogs; 5 planes; 5 raindrops; 4 grubs; 3 flowers; 2 puddles

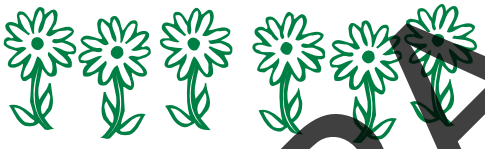
3C The number six



1 Colour the groups that show six. Trace the numerals and the word "six".







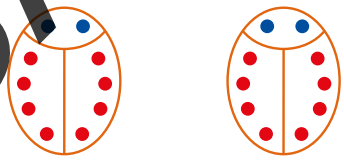
2 Write the number before (one less).

	1		2

3 Write the number after (one more).

5		3	

4 Draw six legs on each beetle.

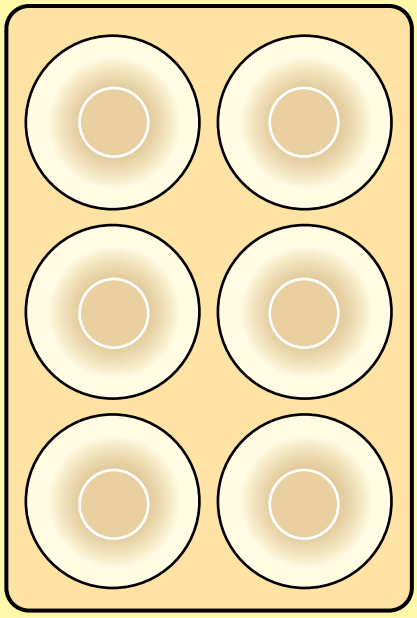


Challenge a friend

- What is one more than: 2, 4, 5, 3, 1?
- What is one less than: 3, 6, 4, 2, 5?

Egg carton game

Cut an egg carton into parts containing six cups. Place counters into each cup, one at a time, counting as you go. Repeat the process of placing the counters several times.



3C The number six

Strand: Number and algebra

Substrand: Representing whole numbers

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-RNW-01, MAE-RNW-02

Content: Connect counting and numerals to quantities

- represent numbers as quantities to at least 20 using objects (such as fingers), number words and numerals
- count with one-to-one correspondence, recognising that the last number name represents the total number in the collection

Content: Use the counting sequence of ones flexibly

- identify the number before as 'one less' and the number after as 'one more' than a given number

Content: Recognise number patterns

- recognise dice and domino dot patterns

About this page

- Discuss the dice and ten frame patterns in the header. In the ten frame, 6 is made up of 5 in the top row and 1 more in the bottom row. Use dot cards to encourage instant recognition of dot patterns (**BLM 4**).
- Ask students to use their fingers to show the number 6. Discuss the possibilities (i.e. 5 and 1, 3 and 3, etc.).
- In Question 1, when tracing the number 6 remind students to begin at the top and go down and back up to make a loop and stop at the second blue dot.
- Count forwards to 20 and backwards from 10. Vary the starting and finishing numbers as regular counting exercises will assist students to memorise the sequence of numbers.
- In Question 2, explain that the number 'before' a given number means 'one less' than that number (e.g. 2 is one less than 3, so 2 comes before 3).
- In Question 3, discuss that the number 'after' a given number means 'one more' than that number (e.g. 3 is one more than 2, so 3 comes after 2).

Challenge

- Students could work in pairs. One student asks their partner to complete the first challenge. They could then change roles to complete the second challenge.
- Students can practise using the Counters tool to count out 18 objects and then use the paint to create three groups of six.
- Use the Geometry tool and 'explore objects' to find the three nets that are made up of six faces (the cube, rectangular prism and pentagonal pyramid).

More teaching suggestions

- Have students order numeral cards (**BLM 2**) from zero to six inclusive, where some numerals are not present (e.g. 6, 0, 3, 5 when ordered becomes 0, 3, 5, 6).
- Provide students with the opportunity to write the numerals 1 to 6 (**BLM 5**).
- When asking students to contribute, encourage the use of the language listed below as it reinforces the understanding of number.
- Make a class poster to show the numeral 6 (e.g. 6, six, the dice and domino patterns for 6, 6 on a ten frame, 6 fingers, a spider with 6 legs, 6 flowers).
- Give experiences in making and matching groups of six using a variety of concrete materials. Use numeral cards (**BLM 2**) and word labels (**BLM 3**). Discuss the word and numeral 6.
- Ask students to make a number book. Each page will have a different numeral starting with 0. Students can write the numeral (6) and its name (six) on the page and draw groups of 6 objects.
- Use dice with numerals 1 to 6. Have students roll the dice and collect that number of blocks from a pile. Continue until there are no blocks left.

Extension work

- Play dominoes.
- Have students draw pictures of insects with six legs. Label the insects and number their legs.
- Individual books could be made using the student's work from this activity as well as past and future activities.

Language

count, counting forwards, one, two, three … twenty, the same as, equal, not as many, one less than, before, one more than, after

Resources

- any classroom objects that can be counted, sorted and matched (e.g. counters)
- dice
- dominoes
- paint, paper, pencils
- BLMs: 2 Numeral cards, 3 Word labels, 4 Dot cards 5 Writing numbers
- Maths Tools: Counters, Geometry

Cross-reference

See also: pp 15, 26, 30, 31

Year 1 pp 3, 4, 11

Evaluation

Is the student able to do the following?

- read and represent the number six
- count six objects
- order groups of up to six objects
- identify a number before a given number
- identify a number after a given number

Answers

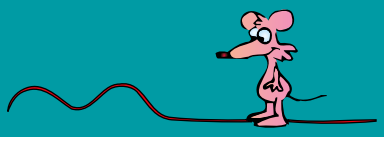
1. The boats, eggs and flowers will be coloured.
   The numeral and the word 'six' will be traced.
   The numeral 6 will be traced.
2. 0, 1
3. 6, 4
4. Six legs will be drawn on each beetle.

Challenge

3, 5, 6, 4, 2

2, 5, 3, 1, 4

Curved and straight



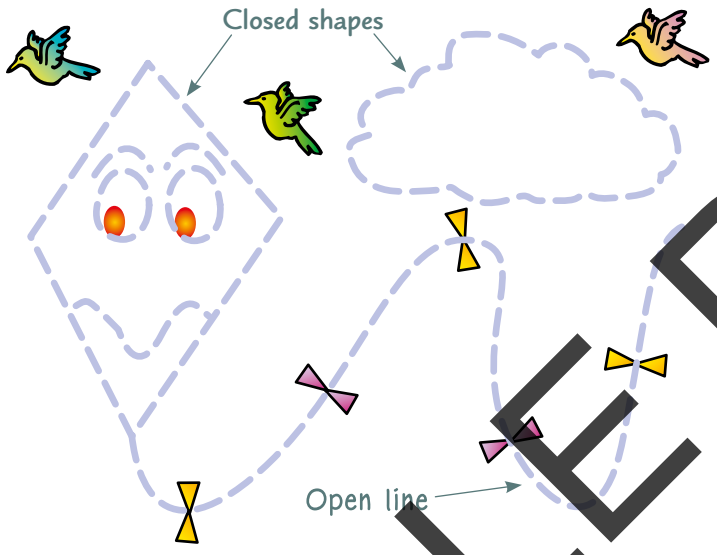
CONCEPT

- This line is curved.

- This line is straight.

Shapes have curved or straight sides.

1 Trace the curved lines red and the straight lines blue.

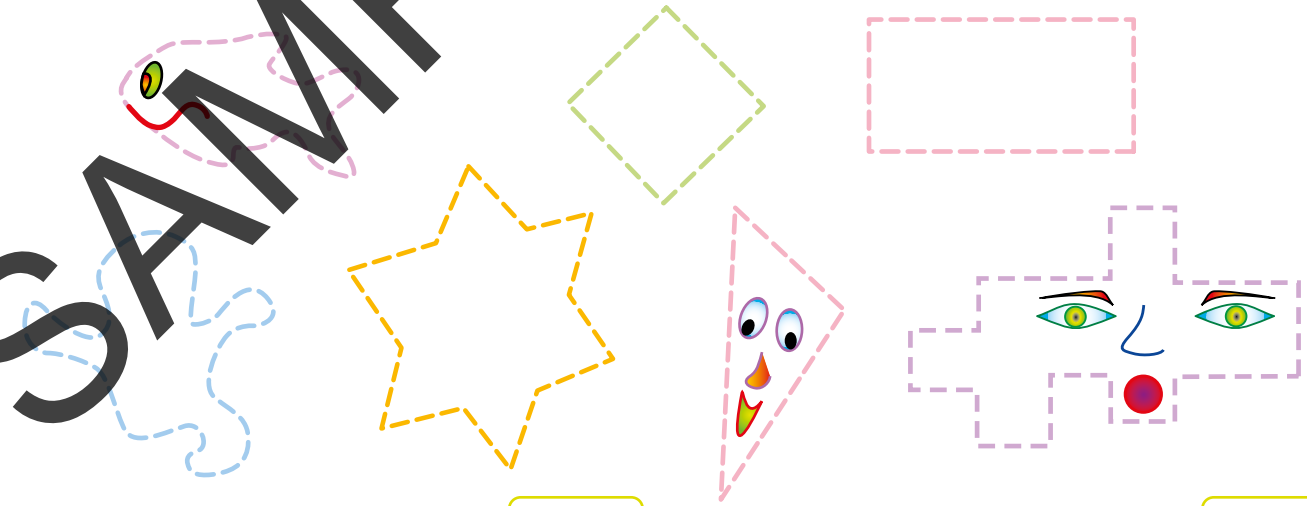


2 Draw some straight and curved lines.

Straight

Curved

3 Trace these closed shapes and add some funny faces.



How many curved shapes? ☐

How many straight shapes? ☐

3D Curved and straight

Strand: Measurement and space

Substrand: Two-dimensional spatial structure

Outcomes: Working mathematically (MAE-WM-01) pervades each strand. MAE-2DS-01

Content: 2D shapes: Represent shapes

- identify and draw lines and curves

About this page

- Have students trace the curved line in the Concept box with their finger and then trace the straight line. Also have students draw curved and straight lines in the air with their finger. Discuss the difference.
- In Question 1, instruct students to trace the kite with their finger and then the string of the kite. Talk about 'curved lines' and 'straight lines'. Note: When lines meet they enclose a space. They can form 2D shapes (e.g. the kite is a closed shape).
- Display and discuss a collection of shapes with distinctive straight and curved sides. Have students sort the shapes.
- In Question 2, ensure there is a significant difference between the lines drawn.
- In Question 3, have students use a red pencil to trace the shapes with straight lines and a blue pencil to trace the shapes with curved lines. Reinforce that when the sides meet to enclose a shape leaving no gaps, it is a closed shape. Encourage students to trace the lines carefully and add funny faces to each shape. Ask students to think of appropriate names for each shape (e.g. the star could be called Pointy).

Fun spot

- Discuss that when the line is joined or meets the beginning, it is a closed shape.
- Ask students to trace the shapes with their fingers, then draw the shapes. Encourage them to trace the lines carefully and add funny faces to each shape.

More teaching suggestions

- Using chalk, draw a path of straight and curved lines on the concrete playground. Have students walk, hop, jump etc. along each part and then describe their actions.
- Have students practise writing their name. Discuss the curved and straight lines used when writing each letter.
- Allow students to investigate different shapes made using pipe cleaners or connecting straws.
- Have students use their hands and bodies to make straight and curved positions.

Extension work

- Find objects in the environment with straight and curved sides.
- Make a class display with captions of objects with straight and curved sides.
- Individual books could be made using the student's work from this activity and past and future activities.
- Use playdough to make shapes and objects with straight and curved sides and edges.

Language

straight line, curved line, sides, alike, not alike, belongs, does not belong, sort, different, a group of, shape, closed shape, open line

Resources

- collection of shapes with distinctive curved and straight sides
- paths of lines drawn in chalk on concrete
- pipe cleaners, connecting straws
- playdough, string, wool and coloured pencils
- Interactive Game: Curved and Straight
- Example Questions: Curved and Straight

Cross-reference

See also: pp 16, 108, 122

Year 1 p 5

Evaluation

Is the student able to do the following?

- manipulate, sort and describe two-dimensional shapes with straight and curved sides
- draw straight and curved lines

Answers

1. Curved lines will be red. Straight lines will be blue.
2. Answers will vary.
3. 2 curved shapes. 5 straight shapes.