

1:01 Skip Counting

Content strand: Number and Algebra

Sub-strand: Patterns and algebra

Content description:

- Describe, continue, and create number patterns resulting from performing addition or subtraction.

Teaching Suggestions

- Play class counting games using skip and rhythmic counting.
- When using fingers, emphasise the pattern as each group of three is made, e.g. 1 2 3, 4 5 6, 7 8 9. Treat each example similarly.
- Some students may benefit from using concrete materials, such as place value blocks or Multilink cubes, to assist completing the patterns in Question 1.
- Read along the row when all the boxes have been completed.
- Discuss patterns found in each row, e.g. odd/even, repeating digits or patterns, numbers more/less in the ones place, addition of digits (e.g. counting by nines).

Extension Work

- Show the patterns on the page on number lines (BLM 21, p. 210). Colour a hundred chart (BLM 11, p. 200) for each row using a different colour. Note any links.

Language

skip counting, rhythmic counting, counting on, patterns

Resources

- hundred chart (BLM 11, p. 200)
- number lines (BLM 21, p. 210)

Cross-reference

See also: pp. 6, 7, 16

Year 2 p. 79

Year 4 p. 35

Evaluation

Is the student able to do the following?

- describe, continue and create number patterns
- use mental and written strategies to complete number patterns
- display mental facility for number facts up to 10×10

1:01 Skip Counting

Until we know the pattern of numbers, we can count on from the last answer.

What I count on
count on
fingers
CONCEPT

1 Skip count and write the numbers as you go.

a Each time, count on three more.

3	6								

b Each time, count on four more.

4	8								

c Each time, count on six more.

6	12								

d Each time, count on seven more.

7	14								

e Each time, count on eight more.

8	16								

f Each time, count on nine more.

9	18								

g Each time, count on ten more.

10	20								

h Each time, count on 100 more.

100	200								

Patterns and algebra: Describe, continue, and create number patterns resulting from performing addition or subtraction.

Answers

- 1 a 9, 12, 15, 18, 21, 24, 27, 30
 b 12, 16, 20, 24, 28, 32, 36, 40
 c 18, 24, 30, 36, 42, 48, 54, 60
 d 21, 28, 35, 42, 49, 56, 63, 70
 e 24, 32, 40, 48, 56, 64, 72, 80
 f 27, 36, 45, 54, 63, 72, 81, 90
 g 30, 40, 50, 60, 70, 80, 90, 100
 h 300, 400, 500, 600, 700, 800, 900, 1 000

1:02 Odd and Even Numbers

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Investigate the conditions required for a number to be odd or even and identify odd and even numbers.

Sub-strand: Patterns and algebra

Content description:

- Describe, continue, and create number patterns resulting from performing addition or subtraction.

Language

odd, even, count by twos, groups of two, rows of two, lots of two, one left over

Resources

- counters
- place-value ones
- coloured pencils
- hundred chart (BLM 11, p. 200)

Cross-reference

See also: pp. 3, 24

Year 4 p. 59

Evaluation

Is the student able to do the following?

- model and recognise odd and even numbers
- distinguish between odd and even numbers

Teaching Suggestions

- 1:02 Odd and Even Numbers (p. 2) and 1:03 Odd and Even Numbers (p. 3) could be treated in the same lesson as they both deal with odd and even numbers.
- Have each student take a number of counters or place-value ones and group them in pairs. Say: 'Hands up those who had one left over. You have an odd number of counters. Hands up those who had only pairs of counters with none left over. You have an even number of counters.' Repeat this activity several times.
- Count by twos to say the even numbers.
- Use a hundred chart (BLM 11, p. 200) to colour all even numbers blue. Colour all odd numbers red.

Extension Work

- Have students write as many even numbers as they can in one minute.
- Have students write as many odd numbers as they can in one minute.

1:02 Odd and Even Numbers

An even number of items can be drawn in pairs.


2, 4, 6, 8, 10, 12, ...

An odd number of items can't be drawn in pairs. There is always one left over.


1, 3, 5, 7, 9, 11, 13, ...

1 Under each group, write **odd** or **even** and write the number.


a




b




c




d



e



f



Odd numbers end in 1, 3, 5, 7 or 9. 87 is an odd number.

Even numbers end in 2, 4, 6, 8 or 0. 34 is an even number.

2 Colour the odd numbers red and the even numbers blue.

(83) (100) (109) (111) (118) (120) (125) (127) (130)

3 Why are numbers ending in 1, 3, 5, 7 or 9 odd numbers?

2 Number and place value: Investigate the conditions required for a number to be odd or even and identify odd and even numbers. Patterns and algebra: Describe, continue, and create number patterns resulting from performing addition or subtraction.

Answers

- 1** a odd, 7 b even, 12 c even, 16 d odd, 13
 e odd, 29 f even, 30
- 2** 83, 109, 111, 125 and 127 will be coloured red. 100, 118, 120 and 130 will be coloured blue.
- 3** Because 1, 3, 5, 7 and 9 are odd, any number ending with them will also be odd.

1:03 Odd and Even Numbers

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Investigate the conditions required for a number to be odd or even and identify odd and even numbers.

Sub-strand: Patterns and algebra

Content description:

- Describe, continue, and create number patterns resulting from performing addition or subtraction.

Teaching Suggestions

- Ask questions relating to odd and even numbers for Questions 1–16 on ID Card 1 (p. 184).
- Provide frequent opportunities for students to count by even and odd numbers, e.g. twos and tens, threes and fives.
- Use a hundred chart (BLM 11, p. 200) when counting forwards or backwards from any starting point.
- Provide opportunities for students to model and describe their own number patterns using concrete materials.
- Have students show number patterns on number lines (BLM 21, p. 210).

Extension Work

- Have students work in pairs. One student uses number lines (BLM 11, p. 200) to show a number pattern. The other student describes the pattern and writes the first four elements.

Language

odd, even, number pattern, between, below, largest even number, largest odd number, count forwards, count backwards, count by twos, fives, tens, etc.

Resources

- concrete materials, e.g. counters
- ID Card 1, p. 184
- hundred chart for colouring (BLM 11, p. 200)
- number lines (BLM 21, p. 21)

Cross-reference

See also: pp. 2, 42

Year 4 p. 59

Evaluation

Is the student able to do the following?

- recognise odd and even numbers
- create, represent and continue a variety of number patterns and supply missing elements

1:03 Odd and Even Numbers

Use the hundred chart to answer the questions.

1 a Count by 2s. Colour these numbers on the chart. These are all the even numbers up to 100.

b What is the name given to the numbers that are not coloured?

c What is the largest even number less than 80?

d What is the largest even number less than 67?

e What is the largest odd number less than 71?

2 Why are numbers ending in 2, 4, 6, 8 or 0 even numbers?

3 How many even numbers are between these numbers?

a 6 and 16 b 47 and 55 c 1 and 100

d 31 and 72 e 28 and 81 f 68 and 70

4 How many odd numbers are between these numbers?

a 6 and 16 b 47 and 55 c 1 and 100

d 27 and 54 e 42 and 95 f 13 and 69

5 Circle the even numbers. Underline the odd numbers.

38 75 14 87 66 36 29 41 50 74 100
53 92

6 For each number write **even** or **odd**.

a 98 b 120

c 103 d 914

e 216 f 847

g 681 h 509

i 852 j 75

k 367 l 644

Odd numbers end in 1, 3, 5, 7 or 9.

Number and place value: Investigate the conditions required for a number to be odd or even and identify odd and even numbers. Patterns and algebra: Describe, continue, and create number patterns resulting from performing addition or subtraction.

Answers

1 a

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

b odd numbers **c** 78 **d** 66 **e** 69

2 4, 6 and 8 are even numbers, so numbers ending in these digits are also even. Numbers ending in 0 are multiples of 10 which is an even number. (Student responses may vary.)

3 a 4 **b** 4 **c** 49 **d** 20 **e** 26 **f** 0

4 a 5 **b** 3 **c** 49 **d** 13 **e** 26 **f** 27

5 (38) 53 75 (14) 87 (92) (66) (36) 29 41 (50) 35 (74) (100)

6 a even **b** even **c** odd **d** even **e** even **f** odd
g odd **h** odd **i** even **j** odd **k** odd **l** even

1:04 Numbers to 1000

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Recognise, model, represent and order numbers to at least 10 000.
- Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems.

Teaching Suggestions

- Compare the abacus and the numeral expander (BLM 3, p. 192).
- Explain that 'H' stands for hundreds, 'T' stands for tens and 'U' stands for units. Note that if 'O' is used for ones it may be confused with zero.
- Discuss place value and the use of zero as a place holder.
- Demonstrate with place-value materials that 200 is bigger than 100. Emphasise that to order 3-digit numbers we look at the hundreds digit first.

Extension Work

- Have students write the numbers shown in Question 1 in ascending order.
- Have students model the largest possible number from any three given digits.

Language

units, ones, tens, hundreds, zero, abacus, digit, column, larger, smaller, largest, smallest, place value, ascending order, place holder

Resources

- abacus
- place-value materials
- numeral expanders (BLM 3, p. 192)

Cross-reference

See also: pp. 5, 6, 7, 8, 9

Year 2 p. 74

Year 4 p. 4

Evaluation

Is the student able to do the following?

- use place value to read, model, represent and order numbers up to three digits
- apply place value to partition, rearrange and regroup numbers


1:04 Numbers to 1000


This abacus shows 238.


These blocks show 238.


U stands for Units (ones).


1 Write the number shown by the place-value blocks or abacus.


a 


b 


c 


d 


e 


f 


g 

h 

i 

j 

k 

l 

The abacus was invented thousands of years ago.

2 Which number is larger?

a 169 or 346 b 723 or 481 c 962 or 503

d 375 or 634 e 257 or 572 f 491 or 914

3 Write these in order from smallest to largest.

a 137, 653, 446 b 974, 237, 491

c 819, 106, 567 d 683, 749, 250

4 Number and place value. Recognise, model, represent and order numbers to at least 10 000. Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems.

Answers

- 1** a 316 b 512 c 145 d 224
 e 232 f 129 g 221 h 324
 i 268 j 519 k 674 l 953
- 2** a 346 b 723 c 962
 d 634 e 572 f 914
- 3** a 137, 446, 653 b 237, 491, 974
 c 106, 567, 819 d 250, 683, 749

1:05 Numbers to 1000

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Recognise, model, represent and order numbers to at least 10 000.
- Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems.

Teaching Suggestions

- Use place-value blocks to model 3-digit numbers.
- Record numbers on numeral expanders (BLM 3, p. 192) to demonstrate place value. Fold the expanders to show the number of hundreds, tens and ones in a 3-digit number.
- Give plenty of practice in reading and writing numerals in words.
- Use a hundred chart for counting adding 100 or 700, etc. in front of the number on the chart.
- Revise the use of the term 'digit' and count the number of digits used to make various numbers.

Extension Work

- Ask Questions 1–16 on ID Card 1 (p. 184).
- In small groups, students deal four numeral cards (BLM 1, p. 190) to each player. Each player arranges the cards to make the smallest possible 3-digit number.

- Ask students to order the numbers made by the group from smallest to largest. The person with the smallest number wins the game.

Language

numeral expander, units, ones, tens, hundreds, zero, place value, digit, column, larger, smaller, largest, smallest, before, after

Resources

- place-value blocks
- ID Card 1, p. 184
- numeral cards (BLM 1, p. 190)
- numeral expanders (BLM 3, p. 192)

Cross-reference

See also: pp. 4, 6, 7, 8, 9

Year 2 p. 74

Year 4 p. 4

Evaluation

Is the student able to do the following?

- use place value to read, model, represent and order numbers up to four digits
- apply place value to partition, rearrange and regroup numbers

1:05 Numbers to 1000

This stands for 500.

3 digits.

three hundred and twenty-seven

327

1 Write the numeral, fill in the numeral expander and write the number in words.

a

b

2 How many digits are in each numeral?

a 39 b 256 c 970 d 56 e 498

f 13 g 7 h 520 i 1 000 j 777

3 Write these numbers as numerals.

a two hundred and sixty b one hundred and fifty-two

c nine hundred and forty d seven hundred and eighteen

e six hundred and seventy-nine f five hundred and thirty-four

g eight hundred and sixty-eight h three hundred and six

4 Write the numbers before and after.

a , 999, b , 863, c , 659,

d , 306, e , 499, f , 709,

Use place-value blocks to model these numbers.

• 216 • 525 • 848 • 634 • 967 • 388

• 793 • 364 • 190 • 572 • 451 • 1 000

Answers

1 a 413

four hundred and thirteen

b 324

three hundred and twenty-four

2 a 2 b 3 c 3 d 2 e 3
f 2 g 1 h 3 i 4 j 3

3 a 260 b 152
c 940 d 718
e 679 f 534
g 868 h 306

4 a 998, 1000 b 862, 864 c 658, 660
d 305, 307 e 498, 500 f 708, 710

Activity

The numbers will be modelled.

1:06 Counting

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Investigate the conditions required for a number to be odd or even and identify odd and even numbers.

Sub-strand: Patterns and algebra

Content description:

- Describe, continue, and create number patterns resulting from performing addition or subtraction.

Extension Work

- Working in pairs, instruct one student to say a rule and ask the other student to demonstrate the rule on the number line (BLM 21, p. 210), e.g. start at 108 and add 10. Stop at 158.

Language

ones, fives, tens, forwards, backwards, starting point, odd, even, number line, rule, plus, subtract, comes after, comes before, located, pairs, demonstrate, show

Resources

- hundred chart (BLM 11, p. 200)
- number lines (BLM 21, p. 210)

Cross-reference

See also: pp. 4, 5, 7, 8, 9

Year 2 p. 74

Year 4 p. 35

Evaluation

Is the student able to do the following?

- count forwards and backwards from any given point by twos, fives and tens
- recognise odd and even numbers
- describe, continue and create number patterns

Teaching Suggestions

- 1:06 Counting (p. 6) and 1:07 Counting (p. 7) could be treated in the same lesson as they both deal with counting numbers.
- Provide students with frequent opportunities to count forwards and backwards on a hundred chart (BLM 11, p. 200) by ones, fives and tens at any starting point.
- Discuss odd and even numbers, noting that even numbers make pairs and end in 2, 4, 6, 8 or 0.
- Revise the number line and ask students to show where a given number would be located.
- Remind students that number patterns can often be expressed as a rule, e.g. add 2.
- Allow time for students to practise reading and writing numerals in words.

1:06 Counting

Hundred Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

1 Use the hundred chart to answer the questions.

a Count by 2s. Colour these numbers yellow.

b Starting at 100, count backwards by 10s. Draw a cross on these numbers.

c Circle every second even number up to 80. What do you notice?

d Count by 8s and tick the first 10 numbers you count. Write them below.

2 What do even numbers end in? _____

3 When we count by 5s from zero, the numbers end in _____.

4 When we count by 10s from zero, the numbers end in _____.

5 Continue each pattern. Check your answers with a calculator.

a 223, 233, 243, _____

b 815, 810, 805, _____

c 126, 124, 122, _____

d 1000, 900, 800, _____

6 Show your answers to Questions 5a and 5b on the number lines.

a

The rule is _____

b

The rule is _____

6 Number and place value. Investigate the conditions required for a number to be odd or even and identify odd and even numbers. Patterns and algebra. Describe, continue, and create number patterns resulting from performing addition or subtraction.

Answers

1 a-d

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- c (Answers may vary): Every second even number is the pattern for counting by 4s.
- d 8, 16, 24, 32, 40, 48, 56, 64, 72, 80

2 2, 4, 6, 8 or 0

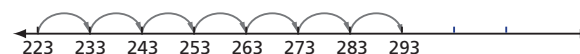
3 5 or 0

4 0

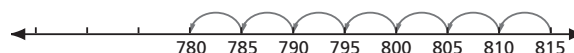
5 a 253, 263, 273, 283, 293 b 800, 795, 790, 785, 780

c 120, 118, 116, 114, 112 d 700, 600, 500, 400, 300

6 a The rule is start at 223 and add 10 each time.



b The rule is start at 815 and subtract 5 each time.



1:07 Counting

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Investigate the conditions required for a number to be odd or even and identify odd and even numbers.

Sub-strand: Patterns and algebra

Content description:

- Describe, continue, and create number patterns resulting from performing addition or subtraction.

Teaching Suggestions

- Identify patterns when counting by ones, twos, fives and tens on a hundred chart (BLM 11, p. 200)
- Discuss the next number in an increasing or decreasing pattern and ask students to describe how it was determined.
- Provide opportunities for students to model and describe their own counting patterns.
- Provide opportunities to complete and describe patterns made by others.

Extension Work

- Working in pairs, have one student use numeral cards (BLM 1, p. 190) to model a number pattern. Ask the other student to describe the pattern and add the next element.

Language

ones, fives, tens, forwards, backwards, starting point, odd, even, numeral cards, rule, plus, subtract, comes after, comes before, counting pattern, increasing, decreasing, model, describe, strategy

Resources

- numeral cards (BLM 1, p. 190) or a pack of cards
- hundred chart (BLM 11, p. 200)

Cross-reference

See also: pp. 4, 5, 6, 8, 9, 12

Year 2 p. 74

Year 4 p. 35

Evaluation

Is the student able to do the following?

- count forwards and backwards from any given point by twos, fives and tens
- model and describe increasing and decreasing number patterns

1:07 Counting

Understanding number patterns and algebra.

1 a Count on from 76 to 100 by 2s.
b Count backwards from 1000 by 100s.
c Count on from 645 to 690 by 5s.
d Count backwards from 500 to 400 by 10s.


2 Write the missing numbers.
a 865, , 845, , , 815, , , 785
b 625, 620, , , 605, , , , 585
c 412, 410, , , 404, , , 396


3 Write the first 20 even numbers. Circle every second even number and discuss the pattern you see.

4 Count by 5s and write the first 20 numbers you count. Circle every second number and discuss the pattern.

5 If you have to count 300 ten-cent coins, what is the best counting strategy to make sure you count them correctly?

6 Show your answers to Questions 1a and 1b on the number line.

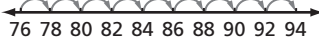

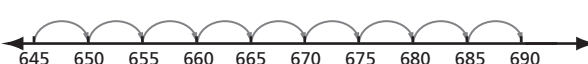
a 
The rule is

b 
The rule is

c Try to do Question 1c on your own number line.

Number and place value: Investigate the conditions required for a number to be odd or even and identify odd and even numbers. Patterns and algebra: Describe, continue, and create number patterns resulting from performing addition or subtraction.

Answers

- 1 a 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100
b 1000, 900, 800, 700, 600, 500, 400, 300, 200, 100, 0
c 645, 650, 655, 660, 665, 670, 675, 680, 685, 690
d 500, 490, 480, 470, 460, 450, 440, 430, 420, 410, 400
- 2 a 855, 835, 825, 805, 795
b 615, 610, 600, 595, 590
c 408, 406, 402, 400, 398
- 3 2, (4), 6, (8), 10, (12), 14, (16), 18, (20), 22, (24), 26, (28), 30, (32), 34, (36), 38, (40) The pattern is counting by 4, or add 4.
- 4 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100 The pattern is counting by 10, or add 10.
- 5 Group the coins into stacks of ten. Group stacks into ten lots of ten to make one hundred. Make sure that you have three groups of ten stacks of ten.
- 6 a The rule is start at 76 and add 2 each time.

- b The rule is start at 1000 and subtract 100 each time.

- c The rule is start at 645 and add 5 each time.


1:09 Numbers to 1000

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Recognise, model, represent and order numbers to at least 10 000.
- Apply place value to partition, rearrange and regroup numbers to at least 10 000 to assist calculations and solve problems.

Teaching Suggestions

- Use numeral expanders (BLM 3, p. 192) to demonstrate that 600 has 60 tens and 600 units (ones).
- Revise the use of the symbols for less than (<) and greater than (>).
- In pairs, students each write a 3-digit number. They then compare the numbers and use < or > to order them.

Fun Spot

- Students may play this game in pairs or in groups.

Extension Work

- Select a 4-digit number and write it on the board. Have students read the number in words, write the number in expanded notation and round the number to the nearest thousand.

Language

units, ones, tens, hundreds, place value, digit, column, round off, greater than, less than

Resources

- numeral expanders (BLM 3, p. 192)

Cross-reference

See also: pp. 6, 7, 8, 12, 13, 17

Year 2 p. 100

Year 4 p. 4

Evaluation





Is the student able to do the following?

- use place value to read, represent and order numbers to four digits
- apply place value to partition, rearrange and regroup numbers

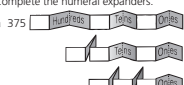

Sample pages

1:09 Numbers to 1000

1 Write the number shown by each abacus.

a  b  c  d 

2 Complete the numeral expanders.

a 375  b 198 

3 Round each number to the nearest hundred.

a 378 b 842 c 296
 d 419 e 675 f 324
 g 906 h 547 i 752

4 Use < or > to show the larger number in each pair.

a 249 497 b 963 575 c 237 999 d 672 907
 e 364 259 f 743 816 g 562 564 h 419 418

5 Use blocks, bundles or other materials to model these numbers.

• 291 • 823 • 457 • 614 • 536 • 749
 • 620 • 365 • 918 • 289 • 172 • 1 000

Higher or Lower

● One player records a secret 3-digit number and says the boundaries for the number, such as "between 200 and 300".

● Other players mark the boundaries on number lines.

● Players take turns to guess the number. After each guess, the holder of the number says whether the secret number is **higher** or **lower** than the guess.

● Players mark this clue for the guess (**higher** or **lower**) on their number lines.

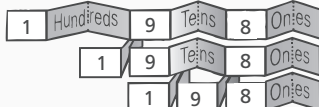
● The game continues until someone guesses the secret number exactly.

235 The secret number is higher.

Answers

1 a 746 b 183 c 575 d 397

2 a 

b 

3 a 400 b 800 c 300

d 400 e 700 f 300

g 900 h 500 i 800

4 a 249 < 497 b 963 > 575 c 237 < 999

d 672 < 907 e 364 > 259 f 743 < 816

g 562 < 564 h 419 > 418

Activity

The numbers will be modelled.

Fun Spot

Answers will vary. Students will use number lines to guess the secret numbers.

5:05 Predicting Outcomes

Content strand: Statistics and Probability

Sub-strand: Chance

Content description:

- Conduct chance experiments, identify and describe possible outcomes and recognise variation in results.

Sub-strand: Data representation and interpretation

Content description:

- Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies.

Teaching Suggestions

- Discuss the meaning of 'more likely', 'less likely' and 'even chance'.
- List all possible outcomes for a simple experiment, e.g. a spinner (BLM 20, p. 209) or taking a coloured peg from a bag. Conduct the experiment, record the results and discuss them.
- Discuss the experiment explained in Question 2.

Investigation

- Review the use of tally marks.
- Make predictions of the number of red, blue and yellow counters that will be chosen out of 50 draws.
- Carry out the experiment in groups and compare results.
- Discuss the differences and how close the predictions were to the group's results.

Extension Work

- Students could predict the number of 0 heads, 1 head, 2 heads and 3 heads thrown when 3 coins are tossed 50 times.

Language

chance, random, outcome, results, predict, certain, impossible, very likely, unlikely, even chance, tally, fifty-fifty

Resources

- dice
- coins
- counters
- pegs
- bags and boxes
- graph paper for drawing tallies
- spinners (BLM 20, p. 209)

Cross-reference

See also: pp. 150, 159

Year 2 p. 116

Year 4 p. 148

Evaluation

Is the student able to do the following?

- explore all possible outcomes in a simple chance situation
- conduct simple chance experiments

5:05 Predicting Outcomes

1 Without looking, Meg took a coloured ball from the bag.

a Which colour is least likely to be taken?

b Which colour is most likely to be taken?

c Is there an even chance of taking a yellow ball?

d Could Meg take the red ball first?

e If Meg took the red ball first, what colours could she take next?

f If Meg took a blue ball first, what colours could she take next?

2 Put 1 yellow, 3 blue and 5 red counters into a bag. Pick one counter at random.

a Which colour is most likely to be picked?

b Which colour is least likely to be picked?

3 This spinner is spun 10 times.

a Would you be surprised if blue was spun every time?

Why or why not?

b How many blue spins would you expect out of 10 spins?

4 a Are all three colours equally likely to be spun?

b How many red spins would you expect out of 6 spins?

c Is there one chance in three of spinning blue?

Put 1 yellow, 3 blue and 5 red counters into a bag. Randomly pick one counter from the bag. Record a tally mark for that colour. Put the counter back in the bag. Repeat this experiment 50 times. What do the tallies show? Discuss your results.

Taking Counters from a Bag	
Blue	<input type="text"/>
Red	<input type="text"/>
Yellow	<input type="text"/>

Chance: Conduct chance experiments, identify and describe possible outcomes and recognise variation in results. Data representation and interpretation: Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies.

Answers

- 1 a red
b yellow
c no
d yes
e blue or yellow
f blue, red or yellow
- 2 a red
b yellow
- 3 a Yes. There is an even chance of spinning blue or red.
b 5
- 4 a yes
b 2
c yes

Investigation

Answers will vary. The results should be roughly proportional to the number of counters of each colour.

5:06 Picture Graphs

Content strand: Statistics and Probability

Sub-strand: Data representation and interpretation

Content description:

- Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies.
- Interpret and compare data displays.

Teaching Suggestions

- Introduce the idea of a key that tells you the value of one symbol. Ask, for example, 'What difference would it make if one picture represented one train?'
- Have students suggest a title for the graphs in Questions 2 and 3.

Investigation

- This Investigation could take up most of a lesson.
- Explain and practise keeping a tally.
- Choose groups of four. Assign each member a different colour. Each one keeps a tally of their colour for the group.
- As an alternative to recording car colours, have three students throw dice while calling out the numbers to a fourth student who records the results in a tally.

Extension Work

- Draw a graph made of squares that shows the information of Question 2 in columns.

Language

least, most, altogether, row, column, key, tally, tally marks, different, same, compare

Resources

- paper for tallies
- dice

Cross-reference

See also: pp. 147, 148, 149, 153, 154, 155

Year 2 p. 61

Year 4 p. 147

Evaluation

Is the student able to do the following?

- conduct a survey and use tables to classify and organise data
- draw vertical and horizontal column graphs and picture graphs
- interpret data presented in tables and graphs

5:06 Picture Graphs

1 a How many trains were sold on Monday?
 b On which day were the most trains sold?
 c How many trains were sold altogether?
 d If there were 30 trains for sale, how many trains were not sold?

Toy Trains Sold	
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

stands for 2 toy trains

2 Students cut out shapes to show some of the languages spoken at home. They made this graph using one shape for each student.

Chinese		a How many students speak Greek? <input type="checkbox"/>
French		b How many students speak French? <input type="checkbox"/>
Greek		c How many students speak Chinese? <input type="checkbox"/>
		d Which row is the longest? <input type="checkbox"/>

3 Liz made this graph using stones, blocks and counters. She used a stone for each car she saw, a block for each truck and a counter for each van.

Cars	
Trucks	
Vans	

a How many cars did Liz see?
 b How many vans did she see?
 c How many more cars than trucks did she see?
 d How many cars, trucks and vans were seen altogether?

Car Colour Tallies

- Work in groups. Each group records the colours of cars that drive by in 10 minutes.
- Use tally marks to record the colours of cars.
- Groups discuss and compare their results.
- Draw a graph showing the popular colours.

These are tally marks.

Answers

- 1 a 6
 b Tuesday
 c 20
 d 10
- 2 a 7
 b 6
 c 8
 d Chinese
- 3 a 21
 b 15
 c 10
 d 47

Investigation

Answers will vary.

5:07 Making Graphs

Content strand: Statistics and Probability

Sub-strand: Data representation and interpretation

Content description:

- Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies.
- Identify questions or issues for categorical variables. Identify data sources and plan methods of data collection and recording.
- Interpret and compare data displays.

Teaching Suggestions

- Columns may run vertically or horizontally.
- The term 'bar graph' is usually used for divided bar graphs.
- Using a projector or IWB, show a table like that in Question 1. Ask students to choose the game they like best. Show responses as tallies and numbers. On a grid transparency (BLM 27, p. 216), draw vertical and horizontal column graphs using this information. Different students draw in columns to complete the graph. Squares can be coloured one-for-one as a choice is made, or totals for categories can be found first, then columns coloured.

Extension Work

- Roll a handful of dice. Build a column graph.

Language

key, category, sort, most popular, least popular, arrangement, column graph, axis, axes

Resources

- projector and/or IWB
- projector pens and transparencies
- dice
- 1 cm grid paper (BLM 27, p. 216)

Cross-reference

See also: pp. 148, 149, 152, 154, 155, 156

Year 2 p. 61

Year 4 p. 147

Evaluation

Is the student able to do the following?

- draw vertical and horizontal column graphs
- interpret data presented in tables and graphs

5:07 Making Graphs

1 Gino made this table using tally marks. It shows the favourite game of each of his friends. Use this information to complete both graphs.

Game	Tally	Number
Handball		8
Hopscotch		7
Marbles		10
Skipping		4

Columns in a graph can go up or across.

Key: stands for 1 friend

Favourite Game

Game	Tally	Number
Handball		
Hopscotch		
Marbles		
Skipping		

2 a Write a question that could be answered by the investigation above.

b Ask people in your class to choose the game they like best. Keep a tally of their answers and draw your own graph.

Game	Tally	Number
Handball		
Hopscotch		
Marbles		
Skipping		

Favourite Game

Game	Tally	Number
Handball		
Hopscotch		
Marbles		
Skipping		

3 Tina rolled these dice. Finish the graph to show how many of each number she rolled.

Make a Tally first.

Dice	Tally	Number
1		3
2		3
3		2
4		4
5		5
6		3

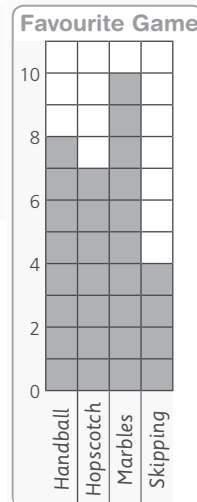
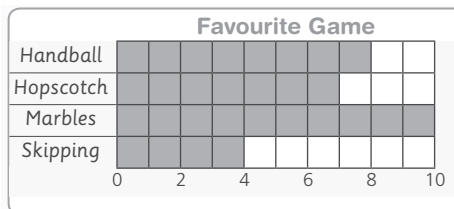
Numbers Rolled

Number	Tally	Number
1		
2		
3		
4		
5		
6		

Data representation and interpretation: Collect data, organise into categories and create displays using lists, tables, picture graphs and simple column graphs, with and without the use of digital technologies. Interpret and compare data displays. Identify questions or issues for categorical variables. Identify data sources and plan methods of data collection and recording.

Answers

1



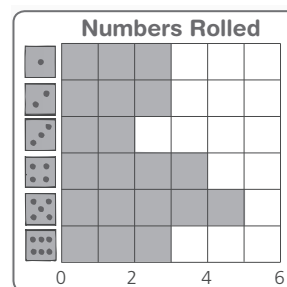
Key
 stands for 1 friend

2

Answers will vary.

3

Dice	Tally	Number
1		3
2		3
3		2
4		4
5		5
6		3



5:08

Reading Tables and Graphs

Content strand: Statistics and Probability**Sub-strand:** Data representation and interpretation**Content description:**

- Interpret and compare data displays.

Teaching Suggestions

- Revise the term 'table'. Discuss the information in the table.
- Graphs are a useful means of recording information and can be used often in Measurement and Geometry lessons.
- Column graphs may be vertical or horizontal. The term 'bar graph' is reserved for divided bar graphs and should not be used for column graphs with horizontal columns.
- Explain:
 - the key – used in Question 3.
 - the value of a number scale – to help count squares.
- The graph in Question 2 is a column graph. The graph in Question 3 is a picture graph.
- Discuss similarities and differences between the graphs in Questions 2 and 3.

Activity

- Newspapers are a good source of graphs.
- If students have trouble finding graphs, they could trace or draw graphs from the Student Book.

Language

picture graph, column graph, key, scale, heading or title, label, least, most, altogether, row, column, different, same, compare

Resources

- newspapers
- graphs

Cross-reference

See also: pp. 149, 152, 153, 155, 156, 157

Year 2 p. 101

Year 4 p. 147

Evaluation

Is the student able to do the following?

- interpret data presented in tables and graphs

5:08 Reading Tables and Graphs

Use the tables and graphs to answer the questions.

1 How many of these people were at the play?

	Parents	Students	Teachers
Female	70	120	6
Male	80	100	4

a female teachers
 b male students
 c female parents
 d teachers e males f altogether

2 a Who has the most merit stamps?
 b Who has the least stamps?
 c How many stamps does Adiva have?
 d How many stamps does Juan have?
 e How many stamps do Benjamin and Amanda have altogether?
 f What is the total number of stamps that Adiva and Brittany have?

Adiva	■
Amanda	■
Benjamin	■
Brittany	■
Juan	■

0 2 4 6 8 10 12 14 16 18

3 a How many students practised on Monday?
 b How many students practised on Friday?
 c On which two days did the same number of students practise?
 d What was the total number of students who practised on Wednesday and Friday?
 e How many more students practised on Thursday than on Wednesday?
 f Can we tell how many different students practised during the week?

Mon	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Tue	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Wed	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Thu	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Fri	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

■ stands for 2 students

Graph Display

- Collect different types of graphs.
- Use them to make a display in your classroom.

154 Data representation and interpretation Interpret and compare data displays.

Answers

- 1 a 6
 b 100
 c 70 d 10 e 184 f 380
- 2 a Amanda
 b Juan
 c 10
 d 8
 e 33
 f 24
- 3 a 14
 b 18
 c Tuesday and Thursday
 d 26
 e 8
 f No, because some students may have practised more than once during this week.

Activity

Different graphs will be collected and displayed.