

1:01 Numbers to One Million

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Recognise, represent and order numbers to at least tens of thousands. *[Progression]*

Teaching Suggestions

- Use an abacus or place-value charts and counters to model numbers to 1 000 000.
- Provide students with frequent opportunities to read and write numbers to 999 999 presented orally.
- Revise expanded notation, e.g. 678 924 is $600\,000 + 70\,000 + 8\,000 + 900 + 20 + 4$.
- Relate expanded notation to digit value, e.g. the value of the 7 in 678 924 is 7 ten thousands (70 000).
- The value of a digit is equal to the product of the digit and the value of its column, e.g. the 3 in 123 476 is $3 \times 1\,000$ or 3 000.
- Use the example questions on the IWB DVD.

Language

numeral, expanded notation, place value, hundred thousands, ten thousands, thousands, hundreds, tens, units, abacus, place-value chart

Resources

- abacus
- place-value charts
- counters
- IWB DVD 5

Cross-reference

See also: pp. 2, 3
Year 4 p. 34
Year 6 p. 1

Evaluation

Is the student able to do the following?

- read and write numbers to 1 000 000 using place value
- record numbers in expanded notation

1:01 Numbers to One Million

Use counters and a place-value chart to model:

- two hundred and thirty-nine thousand four hundred and fifty-three
- six hundred and twenty-five thousand seven hundred and sixty-four
- three hundred and forty-two thousand one hundred and twenty-nine
- one hundred and fifty-eight thousand two hundred and seventy-one

e 734 396 f 253 817 g 814 536 h 471 239 i 526 949

1 Read these numbers aloud and then write them in figures on the place-value chart.

- three hundred and forty-six thousand nine hundred and seventy-five
- five hundred and twenty-three thousand four hundred and eighty-two
- seven hundred and sixteen thousand eight hundred and fifty-nine
- six hundred and seventy-eight thousand nine hundred and sixty
- two hundred and fifty-one thousand six hundred and three

	Hund Thous	Ten Thous	Thousands	Hundreds	Tens	Ones
a						
b						
c						
d						
e						

2 Write the value for each coloured digit.

a 394 128 b 726 403 c 152 776 d 430 275
e 863 410 f 507 395 g 483 721 h 273 496

3 Write the numeral for:

- $100\,000 + 40\,000 + 7\,000 + 600 + 20 + 4$
- $400\,000 + 90\,000 + 6\,000 + 500 + 30 + 9$
- $800\,000 + 60\,000 + 9\,000 + 300 + 70 + 6$
- $600\,000 + 50\,000 + 8\,000 + 100 + 90 + 2$
- $200\,000 + 70\,000 + 5\,000 + 400 + 6$

$999\,999 + 1 = 1\,000\,000$ (one million)

Number and place value: Recognise, represent and order numbers to at least tens of thousands. [Progression]

Answers

- 1
- | | HThous | TThous | Thous | Hunds | Tens | Ones |
|---|--------|--------|-------|-------|------|------|
| a | 3 | 4 | 6 | 9 | 7 | 5 |
| b | 5 | 2 | 3 | 4 | 8 | 2 |
| c | 7 | 1 | 6 | 8 | 5 | 9 |
| d | 6 | 7 | 8 | 9 | 6 | 0 |
| e | 2 | 5 | 1 | 6 | 0 | 3 |
- 2 a 4 thousands b 6 thousands c 7 tens
d 3 tens of thousands e 3 thousands f 5 ones
g 4 hundreds of thousands h 3 thousands
- 3 a 147 624
b 496 539
c 869 376
d 658 192
e 275 406

1:01 Numbers to One Million

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Recognise, represent and order numbers to at least tens of thousands. [Progression]

Teaching Suggestions

- Use an abacus or place-value charts and counters to model numbers to 1 000 000.
- Provide students with frequent opportunities to read and write numbers to 999 999 presented orally.
- Revise expanded notation, e.g. 678 924 is $600\,000 + 70\,000 + 8\,000 + 900 + 20 + 4$.
- Relate expanded notation to digit value, e.g. the value of the 7 in 678 924 is 7 ten thousands (70 000).
- The value of a digit is equal to the product of the digit and the value of its column, e.g. the 3 in 123 476 is $3 \times 1\,000$ or 3 000.
- Use the example questions on the IWB DVD.

Language

numeral, expanded notation, place value, hundred thousands, ten thousands, thousands, hundreds, tens, units, abacus, place-value chart

Resources

- abacus
- place-value charts
- counters
- IWB DVD 5

Cross-reference

See also: pp. 2, 3

Year 4 p. 34

Year 6 p. 1

Evaluation

Is the student able to do the following?

- read and write numbers to 1 000 000 using place value
- record numbers in expanded notation

1:01 Numbers to One Million

Use counters and a place-value chart to model:

Hund Thous	Ten Thous	Thous	Hund	Tens	Ones
4	7	3	6	8	2

a two hundred and thirty-nine thousand four hundred and fifty-three
b six hundred and twenty-five thousand seven hundred and sixty-four
c three hundred and forty-two thousand one hundred and twenty-nine
d one hundred and fifty-eight thousand two hundred and seventy-one
e 734 396 **f** 253 817 **g** 814 536 **h** 471 239 **i** 526 949

1 Read these numbers aloud and then write them in figures on the place-value chart.

a three hundred and forty-six thousand nine hundred and seventy-five
b five hundred and twenty-three thousand four hundred and eighty-two
c seven hundred and sixteen thousand eight hundred and fifty-nine
d six hundred and seventy-eight thousand nine hundred and sixty
e two hundred and fifty-one thousand six hundred and three

Hund Thous	Ten Thous	Thousands	Hundreds	Tens	Ones
a					
b					
c					
d					
e					

2 Write the value for each coloured digit.

a 394 128 **b** 726 403 **c** 152 776 **d** 430 275
e 863 410 **f** 507 395 **g** 483 721 **h** 273 496

3 Write the numeral for:

a $100\,000 + 40\,000 + 7\,000 + 600 + 20 + 4$
b $400\,000 + 90\,000 + 6\,000 + 500 + 30 + 9$
c $800\,000 + 60\,000 + 9\,000 + 300 + 70 + 6$
d $600\,000 + 50\,000 + 8\,000 + 100 + 90 + 2$
e $200\,000 + 70\,000 + 5\,000 + 400 + 6$

999 999 + 1 = 1 000 000 (one million)

Number and place value: Recognise, represent and order numbers to at least tens of thousands. [Progression]

Answers

- 1
- | | HThous | TThous | Thous | Hunds | Tens | Ones |
|---|--------|--------|-------|-------|------|------|
| a | 3 | 4 | 6 | 9 | 7 | 5 |
| b | 5 | 2 | 3 | 4 | 8 | 2 |
| c | 7 | 1 | 6 | 8 | 5 | 9 |
| d | 6 | 7 | 8 | 9 | 6 | 0 |
| e | 2 | 5 | 1 | 6 | 0 | 3 |
- 2
- a** 4 thousands **b** 6 thousands **c** 7 tens
d 3 tens of thousands **e** 3 thousands **f** 5 ones
g 4 hundreds of thousands **h** 3 thousands
- 3
- a** 147 624
b 496 539
c 869 376
d 658 192
e 275 406

1:02 Numbers Above One Million

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Recognise, represent and order numbers to at least tens of thousands. *[Progression]*

Teaching Suggestions

- Answer Questions 1–4 on ID Card 1 (p. 190).
- Use an abacus and/or numeral expander to demonstrate numbers above one million.
- Provide students with frequent opportunities to read and write numbers above 1 000 000 presented orally.
- Revise expanded notation, e.g. $862\,439$ is $800\,000 + 60\,000 + 2\,000 + 400 + 30 + 9$.
- Use the example questions on the IWB DVD.

Fun Spot

- Allow the students to work in groups.
- Students take turns to nominate the task. All students participate in arranging their cards to comply with the nominated task.
- The place value of a digit is the value of the column in which it is placed.
- The value of a digit is the product of the digit and its place value.

Language

numeral, expanded notation, powers of ten, place value, millions, hundred thousands, ten thousands, thousands, hundreds, tens, units, abacus, numeral expander

Resources

- abacus
- numeral expanders
- playing cards marked 0 to 9
- ID Card 1, p. 190
- IWB DVD 5

Cross-reference

See also: pp. 1, 3

Year 4 p. 34

Year 6 p. 1

Evaluation

Is the student able to do the following?

- read and write numbers above 1 000 000 using place value
- record numbers in expanded notation or powers of ten

1:02 Numbers Above One Million
NUMBER & ALGEBRA

Millions
Hundred thousands
Ten thousands
Thousands
Hundreds
Tens
Units

2953674

Two million nine hundred and fifty-three thousand six hundred and seventy-four

1 Use numerals to write:

a two million three hundred and eighty-six thousand five hundred and thirty-one

b seven million eight hundred and forty-three thousand two hundred and sixty-six

c three million five hundred and twenty-one thousand six hundred and fifty-three

2 Write the numeral for:

a $600\,000 + 50\,000 + 9\,000 + 800 + 70 + 4$

b $700\,000 + 60\,000 + 3\,000 + 700 + 50 + 9$

c $3\,000\,000 + 800\,000 + 40\,000 + 8\,000 + 600 + 30 + 1$

d $5\,000\,000 + 900\,000 + 10\,000 + 6\,000 + 500 + 90 + 2$

3 Write the value for each coloured digit.

a 1572392 b 4631762 c 3946724 d 6275648

e 6334704 f 5435246 g 2165424 h 9234619

4 Arrange each group of numbers in ascending order.

a 3654761 5814903 4607519

b 7651411 7323916 7135976

c 4238175 4962345 4572391

5 Round each number to the nearest million.

a 2469725 b 6243915 c 1385476

d 4517219 e 5172403 f 8319647

Make the Number

- Use a set of playing cards marked with the digits 0 to 9.
- (Use four of each type.)
- One student is asked to nominate a task from the task board.
- Each player is dealt six cards.
- The players arrange their cards to best fit the task.
- The player who best meets the task receives one point.

Task Board	
Task	Score
biggest number	
smallest number	
closest to 1 000 000	
less than 500 000	
Total score	

Answers

- 1 a 2386531
b 7843266
c 3521653
- 2 a 659874
b 763759
c 3848631
d 5916592
- 3 a 9 tens
b 3 tens of thousands
c 8 hundreds of thousands
d 5 thousands
e 6 millions
f 2 hundreds
g 1 hundreds of thousands
h 4 thousands
- 4 a 3654761; 4607519; 5814903
b 7135976; 7323916; 7651411
c 4238175; 4572391; 4962345
- 5 a 2 000 000 b 6 000 000 c 1 000 000
d 5 000 000 e 5 000 000 f 8 000 000

1:03 Powers of Ten

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Recognise, represent and order numbers to at least tens of thousands. [Progression]

Teaching Suggestions

- Read 10^3 as 'ten cubed' or 'ten to the power of three' and 10^2 as 'ten squared' or 'ten to the power of two'.
- Demonstrate that 10^3 is $10 \times 10 \times 10$ and 10^2 is 10×10 (the index number shows the number of times that the ten is multiplied).
- Link powers of ten with previous work on powers such as 3^2 is 3×3 (or 9) and 2^3 is $2 \times 2 \times 2$ (or 8).
- Emphasise that 10^1 is 10, 10^2 is 100 and 10^3 is 1000 and relate this to previous work on place value and expanded notation.
- Some students may use the term 'index notation' (or indices) to refer to the power to which a number is written, e.g. 'The index number in 10^3 is three.'
- The value of the 8 in 382 145 is $8 \times 10\,000$ or 80000.
- Use the example questions on the IWB DVD.

Extension Work

- Have students record 4-digit numbers in as many different ways as possible, e.g. 2967 is:
 $2\,000 + 900 + 60 + 7$,
 $(2 \times 10^3) + (9 \times 10^2) + (6 \times 10^1) + 7$,
 $(2 \times 1\,000) + (9 \times 100) + (6 \times 10) + 7$,
 two thousand nine hundred and sixty-seven.
 Students could use numeral expanders (BLM 2, p. 198).
- Have students predict the values of larger powers of ten, e.g. 10^4 and 10^5 . Use a calculator to check the accuracy of the predictions.

Language

power, power of ten, squared, cubed, place value, expanded notation, numeral, numeral expander, digits, hundreds, tens, units, abacus, index notation, indices

Resources

- abacus
- place-value chart
- numeral expanders (BLM 2, p. 198)
- IWB DVD 5

Cross-reference

Year 6 p. 7

Evaluation

Is the student able to do the following?

- recognise and calculate simple powers of whole numbers
- explain the place value of any digit in a number

1:03 Powers of Ten

Thousands	Hundreds	Tens	Ones
10^3	10^2	10^1	1
$10 \times 10 \times 10$	10×10	10	1
6	9	4	3

$6943 = (6 \times 1000) + (9 \times 100) + (4 \times 10) + 3$
 $= (6 \times 10^3) + (9 \times 10^2) + (4 \times 10) + 3$

1 Write the numeral for:

a $(4 \times 10^3) + (2 \times 10^2) + (8 \times 10) + 7$ b $(8 \times 10^3) + (6 \times 10^2) + (9 \times 10) + 5$

c $(7 \times 10^3) + (4 \times 10^2) + (5 \times 10) + 4$ d $(5 \times 10^3) + (1 \times 10^2) + (3 \times 10) + 8$

e $(9 \times 10^3) + (3 \times 10^2) + (7 \times 10) + 5$ f $(2 \times 10^3) + (7 \times 10^2) + (6 \times 10) + 1$

g $(6 \times 10^3) + (5 \times 10^2) + (2 \times 10) + 9$ h $(1 \times 10^3) + (9 \times 10^2) + (1 \times 10) + 6$

2 Write the following using powers of ten.

a 3742 b 8463

c 9529 d 7385

e 6956

3 Write the value of each coloured digit using a power of ten.

a 4631 b 9578 c 6752 d 6973

e 3276 f 4230 g 2865 h 7624

4 Write the numeral for the number shown on each abacus.

a b c d

e f g h

Number and place value: Recognise, represent and order numbers to at least tens of thousands. [Progression]

Answers

- 1 a 4287 b 8695 c 7454 d 5138
 e 9375 f 2761 g 6529 h 1916
- 2 a $(3 \times 10^3) + (7 \times 10^2) + (4 \times 10) + 2$
 b $(8 \times 10^3) + (4 \times 10^2) + (6 \times 10) + 3$
 c $(9 \times 10^3) + (5 \times 10^2) + (2 \times 10) + 9$
 d $(7 \times 10^3) + (3 \times 10^2) + (8 \times 10) + 5$
 e $(6 \times 10^3) + (9 \times 10^2) + (5 \times 10) + 6$
- 3 a 3×10^1 b 5×10^2 c 6×10^3 d 7×10^1
 e 2×10^2 f 4×10^3 g 8×10^2 h 7×10^3
- 4 a 7583 b 3195 c 6639 d 9743
 e 4837 f 9638 g 5749 h 4768

1:04 Hundredths

Content strand: Number and Algebra

Sub-strand: Fractions and decimals

Content description:

- Model and represent unit fractions including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$ and their multiples to a complete whole. [Progression]

Teaching Suggestions

- Read the hundred square as a number out of 100, e.g. 78 out of 100 is also 0.78.
- Relate fractions to decimals. Use hundred squares and place-value blocks (BLM 1, p. 197) to demonstrate equivalence between decimals and fractions.
- Use numeral cards to label fractions in as many ways as possible.

Extension Work

- Working in small groups, have students create a set of playing cards representing hundredths by using different names, e.g. $\frac{25}{100}$, 25 out of 100 and 0.25. They can use the cards to play familiar games like *Fish*, *Old Maid* etc.
- Use the example questions on the IWB DVD.

Language

fraction, decimal, hundredth, tenth, decimal point, zero, whole, denominator, numerator, 25 out of 100

Resources

- numeral cards
- hundred squares
- place-value blocks (BLM 1, p. 197)
- IWB DVD 5

Cross-reference

See also: pp. 7, 8, 9

Year 4 p. 26

Year 6 p. 4


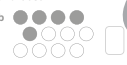

Evaluation




Is the student able to do the following?

- recognise decimals in everyday situations
- relate a common fraction to a decimal

1:04 Hundredths

1 What fraction of each group has been shaded?





a  b  c 





d  e  f 

Hundredths are also called percentages.





75 out of 100 is $\frac{75}{100}$ or 0.75

2 Write the fraction and the decimal shown in each hundred square.

a  or b  or c  or d  or

e  or f  or g  or h  or

3 For each square, colour the fraction shown.

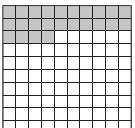
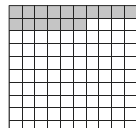
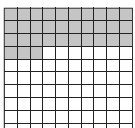
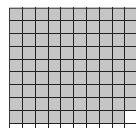
a  $\frac{24}{100}$ b  $\frac{16}{100}$ c  $\frac{33}{100}$ d  $\frac{89}{100}$

4 What fraction of each square in Questions 2a to 2d has not been coloured?

a b c d

4 fractions and decimals. Model and represent unit fractions including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$ and their multiples to complete a whole. [Progression]

Answers

- 1 a $\frac{9}{10}$ b $\frac{5}{12}$ c $\frac{5}{6}$
 d $\frac{4}{6}$ e $\frac{5}{8}$ f $\frac{3}{8}$
- 2 a $\frac{78}{100}$ or 0.78 b $\frac{56}{100}$ or 0.56 c $\frac{63}{100}$ or 0.63
 d $\frac{39}{100}$ or 0.39 e $\frac{28}{100}$ or 0.28 f $\frac{43}{100}$ or 0.43
 g $\frac{92}{100}$ or 0.92 h $\frac{87}{100}$ or 0.87
- 3 a  b 
 c  d 
- 4 a $\frac{22}{100}$ b $\frac{44}{100}$ c $\frac{37}{100}$ d $\frac{61}{100}$

1:05 Fractions

Content strand: Number and Algebra

Sub-strand: Fractions and decimals

Content description:

- Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator.

Teaching Suggestions

- Revise the concept of a fraction expressed in the form $\frac{a}{b}$ where a is the number of equal fraction parts and b is the number of equal parts into which the whole has been divided.
- Revise the use of the terms 'numerator' (top number) and 'denominator' (bottom number).
- Discuss equivalent fractions and provide frequent opportunities for students to draw diagrams or use number lines to find equivalent fractions for a given fraction.
- Use Cuisenaire rods to demonstrate combinations of fractions to make 1 whole, e.g. a tan rod and a red rod makes an orange rod. An orange rod will be 1 whole if a white rod equals $\frac{1}{10}$.
- Note: $\frac{8}{10} + \frac{2}{10} = \frac{10}{10} = 1$ whole.
- Play the memory match game on the IWB DVD.

Extension Work

- On 5 mm grid paper (BLM 22, p. 218) draw number lines to show equivalent fractions for fifths and tenths, quarters and eighths, and thirds and sixths.

Language

fraction, numerator, denominator, equivalent, fraction, half, quarter, eighth, fifth, tenth, third, sixth, twelfth, number line

Resources

- Cuisenaire rods
- 5 mm grid paper (BLM 22, p. 218)
- IWB DVD 5

Cross-reference

See also: pp. 6, 7, 8, 9, 25, 26

Year 4 p. 32

Year 6 p. 10

Evaluation

Is the student able to do the following?

- model, compare and represent commonly used fractions
- find equivalence between thirds, sixths and twelfths





1:05 Fractions

NUMBER & ALGEBRA

CONCEPT

7/10 is coloured red. 3/10 is coloured blue. 7/10 and 3/10 makes 1 whole.

1 Complete this exercise.

a  is coloured.  is coloured.  is not coloured.  is not coloured.

and makes 1 whole. and makes 1 whole.

2 Complete.

a $\frac{1}{2}$ and $\frac{1}{2}$ makes whole. b $\frac{1}{4}$ and makes 1 whole.

c and $\frac{2}{3}$ makes 1 whole. d $\frac{2}{3}$ and $\frac{2}{3}$ makes whole.

e $\frac{3}{8}$ and makes 1 whole. f and $\frac{4}{10}$ makes 1 whole.

3 Complete these fraction problems.

a If $\frac{2}{3}$ of our class come to school by bus, what fraction does not come by bus?

b If a water tank is $\frac{5}{8}$ full, what fraction of the water tank is empty?

c $\frac{3}{5}$ of a pizza is left. What fraction has been eaten?

d $\frac{9}{10}$ of my pavers have arrived. What fraction still needs to arrive?

e If $\frac{2}{3}$ of a cake has been eaten, what fraction is left?

f If $\frac{2}{10}$ of the class is present, what fraction is absent?

4 What fraction of the pieces of fruit is:

watermelons?	<input type="text"/>	apples?	<input type="text"/>
pears?	<input type="text"/>	bananas?	<input type="text"/>
oranges?	<input type="text"/>	cherries?	<input type="text"/>

Fractions and decimals Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator.

5

Answers

- 1 a $\frac{3}{4}, \frac{1}{4}$. $\frac{3}{4}$ and $\frac{1}{4}$ makes 1 whole.
b $\frac{3}{8}, \frac{5}{8}$. $\frac{3}{8}$ and $\frac{5}{8}$ makes 1 whole.
- 2 a 1 b $\frac{3}{4}$
c $\frac{1}{3}$ d 1
e $\frac{5}{8}$ f $\frac{6}{10}$
- 3 a $\frac{1}{4}$
b $\frac{3}{8}$
c $\frac{2}{5}$
d $\frac{1}{10}$
e $\frac{5}{8}$
f $\frac{3}{10}$
- 4 watermelons $\frac{1}{20}$; apples $\frac{4}{20}$; pears $\frac{5}{20}$; bananas $\frac{5}{20}$;
oranges $\frac{3}{20}$; cherries $\frac{2}{20}$

1:06

Unit Fractions

Content strand: Number and Algebra

Sub-strand: Fractions and decimals

Content description:

- Compare and order common unit fractions and locate and represent them on a number line.

Teaching Suggestions

- Unit fractions have a numerator of 1.
- Discuss the fact that unit fractions can be located on a number line by dividing the space between 0 and 1 into equal parts.
- Revise the greater than (>) and less than (<) signs so students can complete Question 1.
- Emphasise that fractions can be ordered on a number line even though the denominators may be different. Refer to the number line in the Concept box.
- Students may use Cuisenaire rods to assist their understanding of smaller and larger unit fractions by placing one white rod on other rods. This may help to determine the order of unit fractions.
- Discuss the parts in the shapes in Question 3 and the fractions written next to each. Note the fact that for unit fractions, the greater the denominator, the smaller the fraction.

Extension Work

- Students can use Cuisenaire rods to create their own unit fraction patterns.
- Use number lines (BLM 17, p. 213) to record the fraction patterns made in the above activity.

Language

unit fraction, equals, is equal to, total, makes, combine, located, number line, position, greater than, less than, order, denominator, Cuisenaire rods

Resources

- Cuisenaire rods
- number lines (BLM 17, p. 213)
- IWB DVD 5

Cross-reference

See also: pp. 5, 7, 8, 9, 25, 26
Year 4 p. 32
Year 6 p. 10

Evaluation

Is the student able to do the following?

- compare and order common unit fractions
- locate and represent common unit fractions on a number line

1:06 Unit Fractions

1 Use dots to show the fractions on the number line. Use < or > to complete the sentence.

a $\frac{1}{2}$ and $\frac{1}{4}$ b $\frac{1}{10}$ and $\frac{1}{3}$

c $\frac{1}{2}$ and $\frac{1}{8}$ d $\frac{1}{6}$ and $\frac{1}{3}$

The Order of Unit Fractions

The larger the denominator of a unit fraction, the smaller the fraction is.

2 Put each group of fractions in order, from smallest to largest.

a $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ b $\frac{1}{100}, \frac{1}{20}, \frac{1}{10}$

c $\frac{1}{3}, \frac{1}{8}, \frac{1}{2}$ d $\frac{1}{4}, \frac{1}{8}, \frac{1}{2}$

3 Match each fraction with a part of the circle.

4 Match each fraction with a part of the decagon.

5 For unit fractions, the greater the denominator, the _____ the fraction.

Answers

1 a $\frac{1}{2} > \frac{1}{4}$ b $\frac{1}{10} < \frac{1}{3}$

c $\frac{1}{2} > \frac{1}{8}$ d $\frac{1}{6} < \frac{1}{3}$

2 a $\frac{1}{5}, \frac{1}{4}, \frac{1}{2}$ b $\frac{1}{100}, \frac{1}{20}, \frac{1}{10}$

c $\frac{1}{8}, \frac{1}{3}, \frac{1}{2}$ d $\frac{1}{8}, \frac{1}{4}, \frac{1}{2}$

3

4

1:07 Tenths

Content strand: Number and Algebra

Sub-strand: Fractions and decimals

Content description:

- Compare and order common unit fractions and locate and represent them on a number line.
- Recognise that the place value system can be extended to beyond hundredths.

Teaching Suggestions

- Use place-value blocks (BLM 1, p. 197) to model tenths, including whole numbers.
- By placing 7 ones on top of 1 ten, we can model $\frac{7}{10}$ or 0.7. This can also be modelled by placing 7 tens on top of 1 hundred.
- Use place-value cards (BLM 3, p. 199) to demonstrate the place value of decimal fractions.
- Note the 'th' at the end of the word 'tenth' and its position in relation to the decimal point. Clarify the difference between 'tenths' and 'tens'.

Extension Work

- Play *Bingo*. The 'caller' says a fraction, and the students mark off the respective decimal.
- Encourage students to play Concentration using fractions and decimals.

Language

fraction, decimal, decimal point, decimal number, whole, tenth, column, one point three ...

Resources

- place-value blocks (BLM 1, p. 197)
- place-value cards (BLM 3, p. 199)
- IWB DVD 5

Cross-reference

See also: pp. 4, 8, 9, 10, 11, 12, 13
Year 4 p. 21
Year 6 p. 5

Evaluation

Is the student able to do the following?

- model, compare and represent decimals to one decimal place
- add and subtract decimals with the same number of decimal places

1:07 Tenths

This is the same as 0.7.

Units Tenth Units Tenth

0 . 7 1 .

1 Write the decimal for:

a $\frac{9}{10}$ b $\frac{5}{10}$ c $\frac{3}{10}$ d $\frac{7}{10}$

e $\frac{4}{10}$ f $1\frac{6}{10}$ g $2\frac{8}{10}$ h $1\frac{1}{10}$

i $2\frac{8}{10}$ j $3\frac{2}{10}$ k $6\frac{9}{10}$ l $2\frac{8}{10}$

2 Match each fraction with the correct decimal.

a $\frac{5}{10}$ 0.5 b $\frac{3}{10}$ 2.7 c $\frac{4.6}{10}$ 4.5

$\frac{8}{10}$ 0.2 $2\frac{9}{10}$ 2.9 $\frac{4.1}{10}$ 4.6

$\frac{7}{10}$ 0.8 $2\frac{3}{10}$ 2.3 $\frac{4.5}{10}$ 4.1

3 Use decimals to write:

a 8 tenths b 3 tenths c 9 tenths d 4 tenths

e 5 tenths f 1 tenth g 2 tenths h 6 tenths

i zero point eight j zero point three k one point zero

l one point five m four point two n eight point nine

4 Complete the number lines.

a 0 $\frac{1}{10}$ $\frac{2}{10}$ $\frac{3}{10}$ $\frac{4}{10}$ $\frac{5}{10}$ $\frac{6}{10}$ $\frac{7}{10}$ $\frac{8}{10}$ $\frac{9}{10}$ 1

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

b 3 $3\frac{1}{10}$ $3\frac{2}{10}$ $3\frac{3}{10}$ $3\frac{4}{10}$ $3\frac{5}{10}$ $3\frac{6}{10}$ $3\frac{7}{10}$ $3\frac{8}{10}$ $3\frac{9}{10}$ 4 $4\frac{1}{10}$

3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4.0 4.1

Fractions and decimals: Compare and order common unit fractions and locate and represent them on a number line. Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation.

Answers

- 1** a 0.9 b 0.5 c 0.3 d 0.7 e 0.4 f 1.6
g 2.8 h 1.1 i 2.8 j 3.2 k 6.9 l 2.8
- 2** a $\frac{5}{10}$ — 0.5 b $2\frac{3}{10}$ ~~2.7~~ c $4\frac{6}{10}$ ~~4.5~~
 $\frac{8}{10}$ ~~0.2~~ $2\frac{9}{10}$ ~~2.9~~ $4\frac{1}{10}$ ~~4.6~~
 $\frac{7}{10}$ ~~0.8~~ $2\frac{3}{10}$ ~~2.3~~ $4\frac{5}{10}$ ~~4.1~~
- 3** a 0.8 b 0.3 c 0.9 d 0.4 e 0.5
f 0.1 g 0.2 h 0.6 i 0.8 j 0.3
k 1.0 l 1.5 m 4.2 n 8.9
- 4** a 0 $\frac{1}{10}$ $\frac{2}{10}$ $\frac{3}{10}$ $\frac{4}{10}$ $\frac{5}{10}$ $\frac{6}{10}$ $\frac{7}{10}$ $\frac{8}{10}$ $\frac{9}{10}$ 1
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0
- b 3 $3\frac{1}{10}$ $3\frac{2}{10}$ $3\frac{3}{10}$ $3\frac{4}{10}$ $3\frac{5}{10}$ $3\frac{6}{10}$ $3\frac{7}{10}$ $3\frac{8}{10}$ $3\frac{9}{10}$ 4 $4\frac{1}{10}$
3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4.0 4.1

1:08 Decimals

Content strand: Number and Algebra

Sub-strand: Fractions and decimals

Content description:

- Compare, order and represent decimals.

Teaching Suggestions

- Discuss the concept shown in the Concept box, i.e. the equivalence of 82 out of 100 to 0.82 and $\frac{82}{100}$. They can be used freely as alternatives when naming a fraction.
- Discuss the use of the decimal point and its position above the line (although there is a publishing convention to place it on the line).
- Discuss the use of the zero as a place holder before the decimal point. (It indicates that there are no whole numbers being used.)
- Use fraction labels (BLM 4, p. 200) to name the fractions in as many ways as possible. Display this on a chart.

Extension Work

- Have students use place-value materials to model each fraction shown in Question 4.
- Ask students to name each fraction shown in Question 4.

Language

whole, fraction, tenth, 82 out of 100, $\frac{82}{100}$, 0.82, decimal, numerator, denominator, one hundredth, two hundredths...one hundred hundredths

Resources

- place-value materials
- fraction labels (BLM 4, p. 200)
- IWB DVD 5

Cross-reference

See also: pp. 4, 8, 9, 10, 11, 12, 13, 19

Year 4 p. 27

Year 6 p. 4

Evaluation

Is the student able to do the following?

- model, compare and represent fractions with denominators 10 and 100
- model, compare and represent decimals to two decimal places

1:08 Decimals

That says nought point eight two. Writing fractions as decimals 0.82. That also says nought point eight two.

82 out of 100. Decimal point. $\frac{82}{100}$ or 82%

1 How many squares are grouped together?

2 What part of the group of squares:

a is green? out of 100 $\frac{\quad}{100}$ 0.

b is white? out of 100 $\frac{\quad}{100}$ 0.

c is blue? out of 100 $\frac{\quad}{100}$ 0.

3 What part of the group of squares is red? 0.

4 Write the fraction and decimal that is coloured.

a b c d

e f g h

8 Fractions and decimals: Compare, order and represent decimals.

Answers

- 1** 100
- 2** a 40 out of 100, $\frac{40}{100}$, 0.40 or 0.4
b 18 out of 100, $\frac{18}{100}$, 0.18
c 18 out of 100, $\frac{18}{100}$, 0.18
- 3** 0.24
- 4** a 0.49, $\frac{49}{100}$ b 0.94, $\frac{94}{100}$ c 0.71, $\frac{71}{100}$ d 0.89, $\frac{89}{100}$
e 0.40, $\frac{40}{100}$ f 0.35, $\frac{35}{100}$ g 0.74, $\frac{74}{100}$ h 0.53, $\frac{53}{100}$

1:02 Numbers Above One Million

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Recognise, represent and order numbers to at least tens of thousands. *[Progression]*

Teaching Suggestions

- Answer Questions 1–4 on ID Card 1 (p. 190).
- Use an abacus and/or numeral expander to demonstrate numbers above one million.
- Provide students with frequent opportunities to read and write numbers above 1 000 000 presented orally.
- Revise expanded notation, e.g. $862\,439$ is $800\,000 + 60\,000 + 2\,000 + 400 + 30 + 9$.
- Use the example questions on the IWB DVD.

Fun Spot

- Allow the students to work in groups.
- Students take turns to nominate the task. All students participate in arranging their cards to comply with the nominated task.
- The place value of a digit is the value of the column in which it is placed.
- The value of a digit is the product of the digit and its place value.

Language

numeral, expanded notation, powers of ten, place value, millions, hundred thousands, ten thousands, thousands, hundreds, tens, units, abacus, numeral expander

Resources

- abacus
- numeral expanders
- playing cards marked 0 to 9
- ID Card 1, p. 190
- IWB DVD 5

Cross-reference

See also: pp. 1, 3

Year 4 p. 34

Year 6 p. 1

Evaluation

Is the student able to do the following?

- read and write numbers above 1 000 000 using place value
- record numbers in expanded notation or powers of ten

1:02 Numbers Above One Million
NUMBER & ALGEBRA

Millions
Hundred thousands
Ten thousands
Thousands
Hundreds
Tens
Units

2953674

Two million nine hundred and fifty-three thousand six hundred and seventy-four

1 Use numerals to write:

a two million three hundred and eighty-six thousand five hundred and thirty-one

b seven million eight hundred and forty-three thousand two hundred and sixty-six

c three million five hundred and twenty-one thousand six hundred and fifty-three

2 Write the numeral for:

a $600\,000 + 50\,000 + 9\,000 + 800 + 70 + 4$

b $700\,000 + 60\,000 + 3\,000 + 700 + 50 + 9$

c $3\,000\,000 + 800\,000 + 40\,000 + 8\,000 + 600 + 30 + 1$

d $5\,000\,000 + 900\,000 + 10\,000 + 6\,000 + 500 + 90 + 2$

3 Write the value for each coloured digit.

a 1572392 b 4631762 c 3946724 d 6275648

e 6334704 f 5435246 g 2165424 h 9234619

4 Arrange each group of numbers in ascending order.

a 3654761 5814903 4607519

b 7651411 7323916 7135976

c 4238175 4962345 4572391

5 Round each number to the nearest million.

a 2469725 b 6243915 c 1385476

d 4517219 e 5172403 f 8319647

Make the Number

- Use a set of playing cards marked with the digits 0 to 9.
- (Use four of each type.)
- One student is asked to nominate a task from the task board.
- Each player is dealt six cards.
- The players arrange their cards to best fit the task.
- The player who best meets the task receives one point.

Task Board	
Task	Score
biggest number	
smallest number	
closest to 1 000 000	
less than 500 000	
Total score	

Answers

- 1 a 2386531
b 7843266
c 3521653
- 2 a 659874
b 763759
c 3848631
d 5916592
- 3 a 9 tens
b 3 tens of thousands
c 8 hundreds of thousands
d 5 thousands
e 6 millions
f 2 hundreds
g 1 hundreds of thousands
h 4 thousands
- 4 a 3654761; 4607519; 5814903
b 7135976; 7323916; 7651411
c 4238175; 4572391; 4962345
- 5 a 2 000 000 b 6 000 000 c 1 000 000
d 5 000 000 e 5 000 000 f 8 000 000

1:03 Powers of Ten

Content strand: Number and Algebra

Sub-strand: Number and place value

Content description:

- Recognise, represent and order numbers to at least tens of thousands. [Progression]

Teaching Suggestions

- Read 10^3 as 'ten cubed' or 'ten to the power of three' and 10^2 as 'ten squared' or 'ten to the power of two'.
- Demonstrate that 10^3 is $10 \times 10 \times 10$ and 10^2 is 10×10 (the index number shows the number of times that the ten is multiplied).
- Link powers of ten with previous work on powers such as 3^2 is 3×3 (or 9) and 2^3 is $2 \times 2 \times 2$ (or 8).
- Emphasise that 10^1 is 10, 10^2 is 100 and 10^3 is 1000 and relate this to previous work on place value and expanded notation.
- Some students may use the term 'index notation' (or indices) to refer to the power to which a number is written, e.g. 'The index number in 10^3 is three.'
- The value of the 8 in 382 145 is $8 \times 10\,000$ or 80000.
- Use the example questions on the IWB DVD.

Extension Work

- Have students record 4-digit numbers in as many different ways as possible, e.g. 2967 is:
 $2\,000 + 900 + 60 + 7$,
 $(2 \times 10^3) + (9 \times 10^2) + (6 \times 10^1) + 7$,
 $(2 \times 1\,000) + (9 \times 100) + (6 \times 10) + 7$,
 two thousand nine hundred and sixty-seven.
 Students could use numeral expanders (BLM 2, p. 198).
- Have students predict the values of larger powers of ten, e.g. 10^4 and 10^5 . Use a calculator to check the accuracy of the predictions.

Language

power, power of ten, squared, cubed, place value, expanded notation, numeral, numeral expander, digits, hundreds, tens, units, abacus, index notation, indices

Resources

- abacus
- place-value chart
- numeral expanders (BLM 2, p. 198)
- IWB DVD 5

Cross-reference

Year 6 p. 7

Evaluation

Is the student able to do the following?

- recognise and calculate simple powers of whole numbers
- explain the place value of any digit in a number

1:03 Powers of Ten

Thousands	Hundreds	Tens	Ones
10^3	10^2	10^1	1
$10 \times 10 \times 10$	10×10	10	1
6	9	4	3

$6943 = (6 \times 1000) + (9 \times 100) + (4 \times 10) + 3$
 $= (6 \times 10^3) + (9 \times 10^2) + (4 \times 10) + 3$

1 Write the numeral for:

a $(4 \times 10^3) + (2 \times 10^2) + (8 \times 10) + 7$ b $(8 \times 10^3) + (6 \times 10^2) + (9 \times 10) + 5$

c $(7 \times 10^3) + (4 \times 10^2) + (5 \times 10) + 4$ d $(5 \times 10^3) + (1 \times 10^2) + (3 \times 10) + 8$

e $(9 \times 10^3) + (3 \times 10^2) + (7 \times 10) + 5$ f $(2 \times 10^3) + (7 \times 10^2) + (6 \times 10) + 1$

g $(6 \times 10^3) + (5 \times 10^2) + (2 \times 10) + 9$ h $(1 \times 10^3) + (9 \times 10^2) + (1 \times 10) + 6$

2 Write the following using powers of ten.

a 3742 b 8463

c 9529 d 7385

e 6956

3 Write the value of each coloured digit using a power of ten.

a 4631 b 9578 c 6752 d 6973

e 3276 f 4230 g 2865 h 7624

4 Write the numeral for the number shown on each abacus.

a b c d

e f g h

Number and place value: Recognise, represent and order numbers to at least tens of thousands. [Progression]

Answers

- 1 a 4287 b 8695 c 7454 d 5138
 e 9375 f 2761 g 6529 h 1916
- 2 a $(3 \times 10^3) + (7 \times 10^2) + (4 \times 10) + 2$
 b $(8 \times 10^3) + (4 \times 10^2) + (6 \times 10) + 3$
 c $(9 \times 10^3) + (5 \times 10^2) + (2 \times 10) + 9$
 d $(7 \times 10^3) + (3 \times 10^2) + (8 \times 10) + 5$
 e $(6 \times 10^3) + (9 \times 10^2) + (5 \times 10) + 6$
- 3 a 3×10^1 b 5×10^2 c 6×10^3 d 7×10^1
 e 2×10^2 f 4×10^3 g 8×10^2 h 7×10^3
- 4 a 7583 b 3195 c 6639 d 9743
 e 4837 f 9638 g 5749 h 4768

1:04 Hundredths

Content strand: Number and Algebra

Sub-strand: Fractions and decimals

Content description:

- Model and represent unit fractions including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$ and their multiples to a complete whole. [Progression]

Teaching Suggestions

- Read the hundred square as a number out of 100, e.g. 78 out of 100 is also 0.78.
- Relate fractions to decimals. Use hundred squares and place-value blocks (BLM 1, p. 197) to demonstrate equivalence between decimals and fractions.
- Use numeral cards to label fractions in as many ways as possible.

Extension Work

- Working in small groups, have students create a set of playing cards representing hundredths by using different names, e.g. $\frac{25}{100}$, 25 out of 100 and 0.25. They can use the cards to play familiar games like *Fish*, *Old Maid* etc.
- Use the example questions on the IWB DVD.

Language

fraction, decimal, hundredth, tenth, decimal point, zero, whole, denominator, numerator, 25 out of 100

Resources

- numeral cards
- hundred squares
- place-value blocks (BLM 1, p. 197)
- IWB DVD 5

Cross-reference

See also: pp. 7, 8, 9

Year 4 p. 26

Year 6 p. 4

Evaluation

Is the student able to do the following?

- recognise decimals in everyday situations
- relate a common fraction to a decimal

1:04 Hundredths

1 What fraction of each group has been shaded?

a b c d e f

25 hundredths 75 hundredths

75 out of 100 is $\frac{75}{100}$ or 0.75

Hundredths are also called percentages.

2 Write the fraction and the decimal shown in each hundred square.

a or b or c or d or

e or f or g or h or

3 For each square, colour the fraction shown.

a $\frac{24}{100}$ b $\frac{16}{100}$ c $\frac{33}{100}$ d $\frac{89}{100}$

4 What fraction of each square in Questions 2a to 2d has not been coloured?

a b c d

4 fractions and decimals. Model and represent unit fractions including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{5}$ and their multiples to complete a whole. [Progression]

Answers

1 a $\frac{9}{10}$ b $\frac{5}{12}$ c $\frac{5}{6}$
 d $\frac{4}{6}$ e $\frac{5}{8}$ f $\frac{3}{8}$

2 a $\frac{78}{100}$ or 0.78 b $\frac{56}{100}$ or 0.56 c $\frac{63}{100}$ or 0.63
 d $\frac{39}{100}$ or 0.39 e $\frac{28}{100}$ or 0.28 f $\frac{43}{100}$ or 0.43
 g $\frac{92}{100}$ or 0.92 h $\frac{87}{100}$ or 0.87

3 a b c d

4 a $\frac{22}{100}$ b $\frac{44}{100}$ c $\frac{37}{100}$ d $\frac{61}{100}$

1:05 Fractions

Content strand: Number and Algebra

Sub-strand: Fractions and decimals

Content description:

- Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator.

Teaching Suggestions

- Revise the concept of a fraction expressed in the form $\frac{a}{b}$ where a is the number of equal fraction parts and b is the number of equal parts into which the whole has been divided.
- Revise the use of the terms 'numerator' (top number) and 'denominator' (bottom number).
- Discuss equivalent fractions and provide frequent opportunities for students to draw diagrams or use number lines to find equivalent fractions for a given fraction.
- Use Cuisenaire rods to demonstrate combinations of fractions to make 1 whole, e.g. a tan rod and a red rod makes an orange rod. An orange rod will be 1 whole if a white rod equals $\frac{1}{10}$.
- Note: $\frac{8}{10} + \frac{2}{10} = \frac{10}{10} = 1$ whole.
- Play the memory match game on the IWB DVD.

Extension Work

- On 5 mm grid paper (BLM 22, p. 218) draw number lines to show equivalent fractions for fifths and tenths, quarters and eighths, and thirds and sixths.

Language

fraction, numerator, denominator, equivalent, fraction, half, quarter, eighth, fifth, tenth, third, sixth, twelfth, number line

Resources

- Cuisenaire rods
- 5 mm grid paper (BLM 22, p. 218)
- IWB DVD 5

Cross-reference

See also: pp. 6, 7, 8, 9, 25, 26

Year 4 p. 32

Year 6 p. 10

Evaluation

Is the student able to do the following?

- model, compare and represent commonly used fractions
- find equivalence between thirds, sixths and twelfths

1:05 Fractions



NUMBER & ALGEBRA



CONCEPT





$\frac{3}{4}$ is coloured red. $\frac{1}{4}$ is uncoloured.

$\frac{7}{10}$ and $\frac{3}{10}$ makes 1 whole.

1 Complete this exercise.

a  is coloured.  is coloured.

 is not coloured.  is not coloured.

 and  makes 1 whole.  and  makes 1 whole.

2 Complete.

a $\frac{1}{2}$ and $\frac{1}{2}$ makes whole. b $\frac{1}{4}$ and makes 1 whole.

c and $\frac{2}{3}$ makes 1 whole. d $\frac{2}{3}$ and $\frac{2}{3}$ makes whole.

e $\frac{3}{8}$ and makes 1 whole. f and $\frac{4}{10}$ makes 1 whole.

3 Complete these fraction problems.

a If $\frac{2}{3}$ of our class come to school by bus, what fraction does not come by bus?

b If a water tank is $\frac{5}{8}$ full, what fraction of the water tank is empty?

c $\frac{3}{5}$ of a pizza is left. What fraction has been eaten?

d $\frac{9}{10}$ of my pavers have arrived. What fraction still needs to arrive?

e If $\frac{2}{3}$ of a cake has been eaten, what fraction is left?

f If $\frac{2}{10}$ of the class is present, what fraction is absent?

4 What fraction of the pieces of fruit is:

watermelons?	<input type="text"/>	apples?	<input type="text"/>
pears?	<input type="text"/>	bananas?	<input type="text"/>
oranges?	<input type="text"/>	cherries?	<input type="text"/>

Fractions and decimals. Investigate strategies to solve problems involving addition and subtraction of fractions with the same denominator.

5

Answers

- 1 a $\frac{3}{4}$, $\frac{1}{4}$. $\frac{3}{4}$ and $\frac{1}{4}$ makes 1 whole.
b $\frac{3}{8}$, $\frac{5}{8}$. $\frac{3}{8}$ and $\frac{5}{8}$ makes 1 whole.
- 2 a 1 b $\frac{3}{4}$
c $\frac{1}{3}$ d 1
e $\frac{5}{8}$ f $\frac{6}{10}$
- 3 a $\frac{1}{4}$
b $\frac{3}{8}$
c $\frac{2}{5}$
d $\frac{1}{10}$
e $\frac{5}{8}$
f $\frac{3}{10}$
- 4 watermelons $\frac{1}{20}$; apples $\frac{4}{20}$; pears $\frac{5}{20}$; bananas $\frac{5}{20}$;
oranges $\frac{3}{20}$; cherries $\frac{2}{20}$

1:06

Unit Fractions

Content strand: Number and Algebra

Sub-strand: Fractions and decimals

Content description:

- Compare and order common unit fractions and locate and represent them on a number line.

Teaching Suggestions

- Unit fractions have a numerator of 1.
- Discuss the fact that unit fractions can be located on a number line by dividing the space between 0 and 1 into equal parts.
- Revise the greater than (>) and less than (<) signs so students can complete Question 1.
- Emphasise that fractions can be ordered on a number line even though the denominators may be different. Refer to the number line in the Concept box.
- Students may use Cuisenaire rods to assist their understanding of smaller and larger unit fractions by placing one white rod on other rods. This may help to determine the order of unit fractions.
- Discuss the parts in the shapes in Question 3 and the fractions written next to each. Note the fact that for unit fractions, the greater the denominator, the smaller the fraction.

Extension Work

- Students can use Cuisenaire rods to create their own unit fraction patterns.
- Use number lines (BLM 17, p. 213) to record the fraction patterns made in the above activity.

Language

unit fraction, equals, is equal to, total, makes, combine, located, number line, position, greater than, less than, order, denominator, Cuisenaire rods

Resources

- Cuisenaire rods
- number lines (BLM 17, p. 213)
- IWB DVD 5

Cross-reference

See also: pp. 5, 7, 8, 9, 25, 26
Year 4 p. 32
Year 6 p. 10

Evaluation

Is the student able to do the following?

- compare and order common unit fractions
- locate and represent common unit fractions on a number line

1:06 Unit Fractions

1 Use dots to show the fractions on the number line. Use < or > to complete the sentence.

a $\frac{1}{2}$ and $\frac{1}{4}$ b $\frac{1}{10}$ and $\frac{1}{3}$

c $\frac{1}{2}$ and $\frac{1}{8}$ d $\frac{1}{6}$ and $\frac{1}{3}$

The Order of Unit Fractions

The larger the denominator of a unit fraction, the smaller the fraction is.

2 Put each group of fractions in order, from smallest to largest.

a $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$ b $\frac{1}{100}, \frac{1}{20}, \frac{1}{10}$

c $\frac{1}{3}, \frac{1}{8}, \frac{1}{2}$ d $\frac{1}{4}, \frac{1}{8}, \frac{1}{2}$

3 Match each fraction with a part of the circle.

4 Match each fraction with a part of the decagon.

5 For unit fractions, the greater the denominator, the _____ the fraction.

Answers

1 a b
 c d

2 a $\frac{1}{5}, \frac{1}{4}, \frac{1}{2}$ b $\frac{1}{100}, \frac{1}{20}, \frac{1}{10}$
 c $\frac{1}{8}, \frac{1}{3}, \frac{1}{2}$ d $\frac{1}{8}, \frac{1}{4}, \frac{1}{2}$

3

4

1:07 Tenths

Content strand: Number and Algebra

Sub-strand: Fractions and decimals

Content description:

- Compare and order common unit fractions and locate and represent them on a number line.
- Recognise that the place value system can be extended to beyond hundredths.

Teaching Suggestions

- Use place-value blocks (BLM 1, p. 197) to model tenths, including whole numbers.
- By placing 7 ones on top of 1 ten, we can model $\frac{7}{10}$ or 0.7. This can also be modelled by placing 7 tens on top of 1 hundred.
- Use place-value cards (BLM 3, p. 199) to demonstrate the place value of decimal fractions.
- Note the 'th' at the end of the word 'tenth' and its position in relation to the decimal point. Clarify the difference between 'tenths' and 'tens'.

Extension Work

- Play *Bingo*. The 'caller' says a fraction, and the students mark off the respective decimal.
- Encourage students to play Concentration using fractions and decimals.

Language

fraction, decimal, decimal point, decimal number, whole, tenth, column, one point three ...

Resources

- place-value blocks (BLM 1, p. 197)
- place-value cards (BLM 3, p. 199)
- IWB DVD 5

Cross-reference

See also: pp. 4, 8, 9, 10, 11, 12, 13
Year 4 p. 21
Year 6 p. 5

Evaluation

Is the student able to do the following?

- model, compare and represent decimals to one decimal place
- add and subtract decimals with the same number of decimal places

1:07 Tenths

This is the same as 0.7.

Units Tenth Units Tenth

0 . 7 1 .

1 Write the decimal for:

a $\frac{9}{10}$ b $\frac{5}{10}$ c $\frac{3}{10}$ d $\frac{7}{10}$

e $\frac{4}{10}$ f $1\frac{6}{10}$ g $2\frac{8}{10}$ h $1\frac{1}{10}$

i $2\frac{8}{10}$ j $3\frac{2}{10}$ k $6\frac{9}{10}$ l $2\frac{8}{10}$

2 Match each fraction with the correct decimal.

a $\frac{5}{10}$ 0.5 b $\frac{3}{10}$ 2.7 c $\frac{4.6}{10}$ 4.5

$\frac{8}{10}$ 0.2 $\frac{2.9}{10}$ 2.9 $\frac{4.1}{10}$ 4.6

$\frac{7}{10}$ 0.8 $\frac{2.3}{10}$ 2.3 $\frac{4.1}{10}$ 4.1

3 Use decimals to write:

a 8 tenths b 3 tenths c 9 tenths d 4 tenths

e 5 tenths f 1 tenth g 2 tenths h 6 tenths

i zero point eight j zero point three k one point zero

l one point five m four point two n eight point nine

4 Complete the number lines.

a 0 $\frac{1}{10}$ $\frac{2}{10}$ $\frac{3}{10}$ $\frac{4}{10}$ $\frac{5}{10}$ $\frac{6}{10}$ $\frac{7}{10}$ $\frac{8}{10}$ $\frac{9}{10}$ 1

0 0.1 0.5 0.6 1.0

b 3 $3\frac{1}{10}$ $3\frac{2}{10}$ $3\frac{3}{10}$ $3\frac{4}{10}$ $3\frac{5}{10}$ $3\frac{6}{10}$ $3\frac{7}{10}$ $3\frac{8}{10}$ $3\frac{9}{10}$ 4 $4\frac{1}{10}$

3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4.0 4.1

0.1 and $\frac{1}{10}$ occupy the same position on the number line.

Answers

- 1 a 0.9 b 0.5 c 0.3 d 0.7 e 0.4 f 1.6
g 2.8 h 1.1 i 2.8 j 3.2 k 6.9 l 2.8

- 2 a $\frac{5}{10}$ — 0.5 b $\frac{3}{10}$ ~~2.7~~ c $\frac{4.6}{10}$ ~~4.5~~
- $\frac{8}{10}$ ~~0.2~~ $\frac{2.9}{10}$ ~~2.9~~ $\frac{4.1}{10}$ ~~4.6~~
- $\frac{7}{10}$ ~~0.8~~ $\frac{2.3}{10}$ ~~2.3~~ $\frac{4.1}{10}$ ~~4.1~~

- 3 a 0.8 b 0.3 c 0.9 d 0.4 e 0.5
f 0.1 g 0.2 h 0.6 i 0.8 j 0.3
k 1.0 l 1.5 m 4.2 n 8.9

- 4 a 0 $\frac{1}{10}$ $\frac{2}{10}$ $\frac{3}{10}$ $\frac{4}{10}$ $\frac{5}{10}$ $\frac{6}{10}$ $\frac{7}{10}$ $\frac{8}{10}$ $\frac{9}{10}$ 1
- 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0

- b 3 $3\frac{1}{10}$ $3\frac{2}{10}$ $3\frac{3}{10}$ $3\frac{4}{10}$ $3\frac{5}{10}$ $3\frac{6}{10}$ $3\frac{7}{10}$ $3\frac{8}{10}$ $3\frac{9}{10}$ 4 $4\frac{1}{10}$
- 3 3.1 3.2 3.3 3.4 3.5 3.6 3.7 3.8 3.9 4.0 4.1

1:08 Decimals

Content strand: Number and Algebra

Sub-strand: Fractions and decimals

Content description:

- Compare, order and represent decimals.

Teaching Suggestions

- Discuss the concept shown in the Concept box, i.e. the equivalence of 82 out of 100 to 0.82 and $\frac{82}{100}$. They can be used freely as alternatives when naming a fraction.
- Discuss the use of the decimal point and its position above the line (although there is a publishing convention to place it on the line).
- Discuss the use of the zero as a place holder before the decimal point. (It indicates that there are no whole numbers being used.)
- Use fraction labels (BLM 4, p. 200) to name the fractions in as many ways as possible. Display this on a chart.

Extension Work

- Have students use place-value materials to model each fraction shown in Question 4.
- Ask students to name each fraction shown in Question 4.

Language

whole, fraction, tenth, 82 out of 100, $\frac{82}{100}$, 0.82, decimal, numerator, denominator, one hundredth, two hundredths...one hundred hundredths

Resources

- place-value materials
- fraction labels (BLM 4, p. 200)
- IWB DVD 5

Cross-reference

See also: pp. 4, 8, 9, 10, 11, 12, 13, 19

Year 4 p. 27

Year 6 p. 4

Evaluation

Is the student able to do the following?

- model, compare and represent fractions with denominators 10 and 100
- model, compare and represent decimals to two decimal places

1:08 Decimals

That says nought point eight two. Writing fractions as decimals 0.82. That also says nought point eight two. $\frac{82}{100}$ or 82%. Decimal point

82 out of 100

1 How many squares are grouped together?

2 What part of the group of squares:

a is green? out of 100 $\frac{\quad}{100}$ 0.

b is white? out of 100 $\frac{\quad}{100}$ 0.

c is blue? out of 100 $\frac{\quad}{100}$ 0.

3 What part of the group of squares is red? 0.

\$0.17 is 17 cents or $\frac{17}{100}$ of a dollar.

4 Write the fraction and decimal that is coloured.

a b c d

e f g h

8 Fractions and decimals: Compare, order and represent decimals.

Answers

- 1 100
- 2 a 40 out of 100, $\frac{40}{100}$, 0.40 or 0.4
b 18 out of 100, $\frac{18}{100}$, 0.18
c 18 out of 100, $\frac{18}{100}$, 0.18
- 3 0.24
- 4 a 0.49, $\frac{49}{100}$ b 0.94, $\frac{94}{100}$ c 0.71, $\frac{71}{100}$ d 0.89, $\frac{89}{100}$
e 0.40, $\frac{40}{100}$ f 0.35, $\frac{35}{100}$ g 0.74, $\frac{74}{100}$ h 0.53, $\frac{53}{100}$