Second Level – Exploring Number

Fractions, Decimals and Percentages Homework Cards

FDP2.1 I can identify, create and calculate unit fractions and can record them in different ways

Bob and Betty *objects for sorting and counting* Ask children to collect some small objects for sorting, e.g. coins, grapes or sweets. They choose a multiple of 4, e.g. 16, 20, 24, 28 or 32 and count out that many objects. Explain that they must share them between Bob and Betty. Bob gets one quarter of them and Betty gets three quarters of them each time, e.g. 16 sweets, Bob gets 4 and Betty gets 12. They record their findings in their learning logs.

FDP2.1 I can identify, create and calculate unit fractions and can record them in different ways

Monkey puzzles Ask children to create their own monkey puzzles similar to the following and write them as fraction statements:
There are _____ monkeys and 24 bananas. The monkeys share the bananas equally. How many do they get each?
Children write at least six questions and record the statements, e.g. $^1\backslash_2$ of 24 is 12,
$^1\backslash_4$ of 24 is 6, etc.

FDP2.2 I can find simple fractions of a number using my multiplication facts

Badge making *squared paper* Ask children to draw different shaped badges made from up to 16 squares using squared paper. They shade each badge and write statements about what fraction of each badge is each colour, e.g. $^3\backslash_{16}$ of this badge is red, etc.

FDP2.2 I can find simple fractions of a number using my multiplication facts

Sorting objects *objects for sorting* Ask children to sort 24 small identical objects, such as 1p coins, grapes or sweets into two equal groups, then into three equal groups, then four, then six and then eight equal groups. They record the number in the groups e.g. $^1\backslash_2$ of 24 = 12, $^1\backslash_4$ of 24 = 6, $^2\backslash_4$ of 24 = 12, $^3\backslash_4$ of 24 = 18, etc. Ask children to note when a group or groups have the same number, e.g.
$^2\backslash_8$ of 24 = $^1\backslash_4$ of 24 = 6.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.3 I can compare and order simple fractions

Fractions chain Children write a chain of at least six fractions, changing either the denominator or numerator each time, e.g. $^{1}\backslash_{3}$, $^{2}\backslash_{3}$, $^{2}\backslash_{6}$, $^{5}\backslash_{6}$, $^{5}\backslash_{7}$, $^{2}\backslash_{7}$, $^{2}\backslash_{9}$. Then they write <, > or = correctly between each pair.

FDP2.3 I can compare and order simple fractions

Fraction digits Children use the following digits: 1, 2, 3, 4, 6, 8. Ask them to make sets of three fractions, using all the digits once, e.g. $^{3}\backslash_{4}$, $^{1}\backslash_{8}$ and $^{2}\backslash_{6}$ or $^{1}\backslash_{2}$, $^{3}\backslash_{6}$ and $^{4}\backslash_{8}$. They write an explanation of how the fractions in each set are related by ordering, e.g. $^{1}\backslash_{8}$, $^{2}\backslash_{6}$, $^{3}\backslash_{4}$ or by saying which are equivalent, e.g. $^{1}\backslash_{2}$, $^{3}\backslash_{6}$, $^{4}\backslash_{8}$.

FDP2.4 I have explored improper fractions and mixed numbers

Mind map Ask children to draw a mind map to show what they know about improper fractions and mixed numbers. Encourage them to include notation and different representations of them and real-life examples of their use. The mind maps can form a useful classroom display.

FDP2.4 I have explored improper fractions and mixed numbers

Dominoes *slips of paper or card* Ask children to create their own set of improper-fraction and mixed-number dominoes. Using small slips of paper or card they try to make a loop of dominoes where the improper fraction on one domino is equivalent to the mixed number on another domino.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.5 I can create a set of equal fractions and can decide if fractions are equal

Snap Ask children to make their own sets of cards with a range of different fractions and their equivalents. They can use the cards to play Snap or Pairs.

FDP2.5 I can create a set of equal fractions and can decide if fractions are equal

Explain *squared paper* Give children some squared paper. Ask them to draw diagrams and write an explanation to help a younger child understand why the fractions $^{18}\backslash_{24}$, $^{12}\backslash_{16}$, $^{9}\backslash_{12}$, $^{6}\backslash_{8}$ and $^{3}\backslash_{4}$ are equivalent. Suggest that they draw five rectangles made from 24 squares for this task.

FDP2.6 I can work out the simplest form of a fraction

Fraction action Ask children to make a range of different fractions using the numbers 2, 3, 4, 6, 12, 16, 18, 24 and 30, e.g. $^{6}\backslash_{18}$, $^{4}\backslash_{30}$, etc. They convert each fraction to its simplest form and record all the possible outcomes, e.g. $^{1}\backslash_{2}$, $^{1}\backslash_{3}$, $^{2}\backslash_{3}$, $^{1}\backslash_{4}$, $^{3}\backslash_{4}$, $^{1}\backslash_{6}$, $^{3}\backslash_{5}$, $^{4}\backslash_{5}$, etc.

FDP2.6 I can work out the simplest form of a fraction

Simple Simon Children prepare 10 Simon says statements to bring back to school for a game with a partner (nine should be true and one false). Each should be about the simplest form of a fraction that can be worked out reasonably easily, e.g. $^{2}\backslash_{3}$ is the simplest form of $^{20}\backslash_{30}$, $^{70}\backslash_{150}$ can be simplified to $^{7}\backslash_{50}$.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.7 I can compare and order any fractions

Make a puzzle Ask children to choose a five-letter word (ideally one where the letters could spell more than one word, e.g. HEART/EARTH, TEARS/RATES/STARE.
Children write a fraction for each letter, so that the fractions are in order of size when the letters are in the correct order, e.g. H = $^{1}\backslash_{6}$, E = $^{15}\backslash_{45}$, A = $^{18}\backslash_{30}$, etc. They write each letter with its fraction on a separate piece of paper and use as a puzzle in class.

FDP2.7 I can compare and order any fractions

Fraction action Ask children to make a range of different fractions with the numbers 2, 3, 4, 6, 12, 16, 18, 24 and 30, e.g. 6\18, 4\30, etc. They convert each fraction to its simplest form and then order the fractions, starting with the smallest, e.g. $^{2}\backslash_{12}$, $^{12}\backslash_{24}$, $^{6}\backslash_{18}$, $^{12}\backslash_{18}$, $^{24}\backslash_{30}$, etc.

FDP2.8 I can work out a fraction of a number (whole number answers)

True or false? Give children true or false fraction statements involving finding fractions of whole numbers, such as:
• $^{3}\backslash_{16}$ of 48 is less than $^{5}\backslash_{12}$ of 60
Ask children to show their working in their learning logs.

FDP2.8 I can work out a fraction of a number (whole number answers)

Animal puzzles Ask children to solve the following puzzle.
A farmer has 90 animals in a field. $^{4}\backslash_{9}$ *are sheep,* $^{1}\backslash_{3}$ *are cows,* $^{1}\backslash_{10}$ *are horses and the rest are pigs. What fraction are pigs?*
Children write their own similar puzzle for others to solve back at school.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.9a I can convert a fraction to a decimal fraction and can talk about the position and value of the digits – Tenths

Decimal search Ask children to collect items, labels or newspaper/magazine cuttings that involve decimals with tenths, e.g. 2·5 l, 1·2 kg and to stick them into their learning logs. Ask them to write explanations of the decimals, e.g. *1·2 kg is 1 whole kilogram and 2 tenths of a kilogram*, and to write each as a fraction or mixed number, e.g. 1·2 kg = $1\ ^{2}\backslash_{10}$ kg.

FDP2.9a I can convert a fraction to a decimal fraction and can talk about the position and value of the digits – Tenths

Number lines *squared paper, counters coin* Give children squared paper on which they draw a 0–2 number line, marked in tenths (i.e. with 20 intervals). They play with a partner. Each places a counter on zero to start. They take turns to toss a coin.
If it is heads, they move their counter one tenth along the line and say aloud the number they land on as a decimal, e.g. 0.1, 1.2, etc. If it is tails, they move two tenths along the line. The winner is the first player to reach or move beyond 2.

FDP2.9b I can convert a fraction to a decimal fraction and can talk about the position and value of the digits – Hundredths

Decimal search Ask children to collect items, labels or newspaper/magazine cuttings that involve decimals with hundredths, e.g. 2·75 l, 1·02 kg and to stick them into their learning logs. Ask them to write explanations of the decimals,
e.g. 2·75 l is 2 whole litres and 75 hundredths of a litre, and to write each as a fraction or mixed number, e.g. 2·75 l = $2\ ^{75}\backslash_{100}$ l = $2\ ^{3}\backslash_{4}$ l.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.9b I can convert a fraction to a decimal fraction and can talk about the position and value of the digits – Hundredths

Badge colouring *squared paper* Give children a 10×10 piece of squared paper. Ask them to colour the paper using up to five colours to make a badge. They should colour only whole squares. Children then write statements about what fraction of their badge is each colour, writing the fractions as decimals, e.g. *0·17 of this badge is red.*

FDP2.9c I can convert a fraction to a decimal fraction and can talk about the position and value of the digits – Other simple fractions

Decimal snap Ask children to write fractions and their equivalent decimals on to small pieces of paper or card, e.g. $^{3}\backslash_{4}$ and 0·75, and then to use them to play *Snap* or *Pairs*. Children could also include cards where they write the fractions or decimals in words, e.g. three quarters and nought point seven five.

FDP2.9c I can convert a fraction to a decimal fraction and can talk about the position and value of the digits – Other simple fractions

Square puzzle *squared paper* Give children a 10×10 piece of squared paper. Ask them to colour the paper using the following rules: $^{1}\backslash_{4}$ red, $^{1}\backslash_{20}$ yellow, $^{3}\backslash_{50}$ blue,
0·14 green, $^{1}\backslash_{10}$ pink and the rest purple. *What fraction is purple*? Children write this as a fraction in its simplest form ($^{2}\backslash_{5}$) and as a decimal (0·4).

FDP2.10 I can compare and order decimals showing tenths and hundredths

Whose is greater? Ask children to write a range of decimals onto small pieces of paper or card, e.g. 1·4 and 0·75. They play a game with another player. Each picks a card. The player with the larger decimal keeps both cards. Children record the decimals as number statements in their learning logs, e.g. 0·3 > 0·28.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.10 I can compare and order decimals showing tenths and hundredths

Decimal ordering Ask children to write a range of decimals onto small pieces of paper or card, e.g. 1·4 and 0·75. They pick sets of five cards and order them, recording the decimals in order in their learning logs. They could include extra cards where they write the decimals in words, e.g. *six point three or zero point seven five.*

FDP2.11 I can round decimals to the nearest whole number or nearest tenth

Research round Ask children to research a topic such as sporting measurements, world records or an alternative theme involving lengths, masses or capacities, given as decimals. Ask them to record the information in their learning logs and to round them, including rounding appropriately to estimate related facts, e.g. *The height of the tallest man alive is about 2·72 m which is about twice my height of 1·32 m.*

FDP2.11 I can round decimals to the nearest whole number or nearest tenth

Round and about Ask children to find as many examples as they can of decimals being rounded up or down to make them easier to work with. Examples could be found in newspapers or magazines. They draw, stick or write about them in a page for the learning log.

FDP2.12 I can multiply decimal numbers by 10, 100 or 1000

True statements Ask children to make the following cards:
3, ·, 5, ×, 1, 10, 100, 1000, 0, =.
Then they choose cards and arrange them in as many different ways as they can to make true statements. Cards can be used more than once in each statement, e.g. 5·03 × 10 = 50·3.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.12 I can multiply decimal numbers by 10, 100 or 1000

My height Ask children to write their height in metres. They then record their height in centimetres (by multiplying by 100), and in millimetres (by multiplying by 1000). They record these in their learning logs. Children do the same with the heights of other family members.

FDP2.13 I can divide numbers by 10, 100 or 1000 which create decimal answers

True statements Ask children to make the following cards:
3, ·, 5, ÷, 1, 10, 100, 1000, 0, =.
Then they choose cards and arrange them in as many different ways as they can to make true statements. Cards can be used more than once in each statement, e.g. 5·3 ÷ 10 = 0·53.

FDP2.13 I can divide numbers by 10, 100 or 1000 which create decimal answers

My height Ask children to write their height in centimetres. They record their height in metres (by dividing by 100), in millimetres (by multiplying by 10) and in kilometres (by dividing by 1000). They record these in their learning logs. They do the same with the heights of other family members.

FDP2.14 I can explain what a percentage is and how it relates to fractions and decimals

Percentage search Ask children to collect items, food or clothing labels or newspaper or magazine cuttings that involve percentages, e.g. 10% less fat, 95% cotton, and to stick them into their learning logs. Ask them to write the percentages as decimals and as fractions in their simplest form, e.g. *95% = $^{19}\backslash_{20}$ = 0·95.*

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.14 I can explain what a percentage is and how it relates to fractions and decimals

Pattern colouring *squared paper* Give children a 10×10 piece of squared paper.
Ask them to colour the paper using up to five colours to make a pattern. They should only colour whole squares. Children then write statements about what fraction, decimal and percentage of their pattern is each colour, e.g. 0·25, $^{25}\backslash_{100}$ and 25% of this pattern is red.

FDP2.15 I can find a simple percentage of an amount using my knowledge of fractions

True or false? Give children true or false statements involving finding percentages of whole numbers, such as:
- 50% of 80 is less than 10% of 500
- 5% of 60 is greater than 25% of 16.

Ask children to show their working in their learning logs.

FDP2.15 I can find a simple percentage of an amount using my knowledge of fractions

Puzzle time Ask children to solve the following puzzle:
A farmer has 180 animals in a field. $^{1}\backslash_{5}$ *are sheep, 25% are cows, 5% are horses and the rest are pigs. What percentage are pigs? How many of each animal?* Children can then write their own puzzle for others to solve back at school.

FDP2.16 I understand that a division with a remainder can be represented as a decimal or a fraction

Lots of answers Give children three questions of this type, e.g. 27 ÷ 4, 15 ÷ 2 or 37 ÷ 10, and ask them to write the answers in as many different ways as they can, using a remainder, or expressed as a whole number, fraction or decimal or the answer as an improper fraction.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.16 I understand that a division with a remainder can be represented as a decimal or a fraction

The answer is … Ask children to find division questions that have the answer 4·5, e.g. 27 ÷ 6, 45 ÷ 10, 9 ÷ 2, etc. For each question, they should also write alternative answers, e.g. 4 r 3, $4\frac{1}{2}$, etc.

FDP2.17a I can add and subtract decimals using my mental strategies and written methods – Tenths

Mix and match Ask children to copy these decimals: 5·9, 3·1, 8·8, 26·9, 17·7, 36·8 and 40·6. Ask them to choose pairs of the numbers and find the totals and differences, using appropriate mental or written methods. *Which pair of numbers has a total closest to 45?*

FDP2.17a I can add and subtract decimals using my mental strategies and written methods – Tenths

Paper cut-outs *newspapers and magazines* Ask children to cut out 1-place decimal numbers from magazines and newspapers. They group them in pairs and stick them into their learning logs, then find the totals and differences of the numbers in each pair.

FDP2.17b I can add and subtract decimals using my mental strategies and written methods – Tenths and hundredths

Mix and match Ask children to copy these decimals, 5·39, 0·31, 0·8, 0·69, 1·77, 3·68 and 4·06. Ask them to choose pairs of the numbers and find the totals and differences using appropriate mental or written methods. *Which pair of numbers has a total closest to 5?*

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.17b I can add and subtract decimals using my mental strategies and written methods – Tenths and hundredths

Decimal digits Ask children to make as many 3-digit decimals as they can using the digits 5, 8 and 3, e.g. 5·38, 35·8, 8·35. Children then find sums and differences of the numbers, using appropriate mental or written methods and record this in their learning log. Challenge children to make the largest/smallest possible answers.

FDP2.18a I can multiply decimals by a single digit using my mental strategies and written methods – Tenths

Four, five, six Ask children to use the digits 4, 5 and 6 to form the six possible questions that can be made in the form ☐·☐ × ☐, e.g. 5·4 × 6, 6·5 × 4, 4·6 × 5, etc. Ask them to find all the answers, using appropriate mental or written methods.
Which question produces the answer that is closest to 25, 29 or 22?

FDP2.18a I can multiply decimals by a single digit using my mental strategies and written methods – Tenths

Puzzle time Ask children to find as many different solutions as they can for the following puzzle:
9·☐ × ☐ = ☐ ☐·4.
They find missing digits that could make the number sentence true, e.g. 9·3 × 8 = 74·4, 9·6 × 4 = 38·4, etc.

FDP2.18b I can multiply decimals by a single digit using my mental strategies and written methods – Tenths and hundredths

Puzzle time Ask children to find as many different solutions as they can for the following puzzle:
2 · ☐☐ × ☐ = ☐ · ☐ 5
They find missing digits that could make the number sentence true, e.g. 2·45 × 3 = 7·35, 2·85 × 1 = 2·85, etc.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.18b I can multiply decimals by a single digit using my mental strategies and written methods – Tenths and hundredths

Which is largest? Ask children to work out which of the following four calculations has the largest answer:
3·51 × 6 2·25 × 9
2·89 × 7 3·89 × 5
They should predict first and then use an appropriate written or mental method to perform each calculation.

FDP2.19a I can divide decimals by a single digit using my mental strategies and written methods – Tenths

Two to ten Ask children to choose digits to make five U·t ÷ U calculations which have either whole-number answers or answers with tenths. To help, suggest children think about the facts they know and can use.

FDP2.19a I can divide decimals by a single digit using my mental strategies and written methods – Tenths

Which is largest? Ask children to work out which of the following four calculations has the largest answer:
5·4 ÷ 6 3·5 ÷ 5
3·2 ÷ 4 8·1 ÷ 9
They should predict first and then use a mental or expanded method to perform each calculation.

FDP2.19b I can divide decimals by a single digit using my mental strategies and written methods – Tenths and hundredths

Digit dilemmas Ask children to use the digits 3, 4, 5 and 6 and write all the possible U·t h ÷ U divisions, e.g. 4·56 ÷ 3, 6·34 ÷ 5, etc. Ask children to work out which of the questions has the largest answer, the answer closest to $^{1}\backslash_{2}$, etc.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.19b I can divide decimals by a single digit using my mental strategies and written methods – Tenths and hundredths

Two to ten Ask children to choose a 3-digit decimal (with 1 or 2 decimal places), e.g. 7·63, and divide it by all the numbers from 2 to 10, using an appropriate method. They record their answers as decimal numbers. (It may be appropriate to suggest a neat number to some children so they avoid answers with three decimal places or recurring decimals.)

FDP2.20a I can solve problems involving percentages – Find a percentage of an amount

Check it out Ask children to explore the order of two percentages in a question and to determine whether they produce the same answer, e.g. to find out whether 50% of 10% of 900 is more, less than or equal to 10% of 50% of 900. Children should choose a range of examples and write an explanation in their learning log.

FDP2.20a I can solve problems involving percentages – Find a percentage of an amount

True or false? Give children some true or false statements involving finding percentages of whole numbers, such as:
- 5% of 800 is less than 1% of 5000
- 7% of 600 is greater than 80% of 20

Ask children to show their working in their learning logs.

FDP2.20b I can solve problems involving percentages - Increase or decrease by a percentage

Check it out Ask children to explore the order of percentage changes in a question and determine whether they produce the same answer, e.g. to find out whether a 50% increase followed by a 10% decrease is the same as a 10% decrease followed by a 50% increase. Children choose a range of examples and write an explanation in their learning log.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.20b I can solve problems involving percentages - Increase or decrease by a percentage

True or false? Give children true or false statements involving finding percentage changes, such as:
• 800 increased by 5% is less than 3000 decreased by 60%
• £40 decreased by 90% is greater than £2·50 increased by 50%.
Ask children to show their working in their learning logs and to explain their reasoning.

FDP2.20c I can solve problems involving percentages – Work out a percentage

Badges *squared paper* Ask children to draw some badges on to squared paper that are made from 10, 20, 25 or 50 small squares. For each badge, children colour the badge using different colours and then write statements about what percentage of each badge is each colour, e.g. *4 out of 25 squares are red so 16% of the badge is red.*

FDP2.20c I can solve problems involving percentages – Work out a percentage

Teach them how Ask children to write a short explanation in their learning logs for children of a younger age. These should explain how to convert a fraction into a percentage and include examples of this. The best explanations can be used for display purposes.

FDP2.21 I can select and use the most appropriate strategy to solve a calculation

Tool time *APM 354* Give each child three different toolkit cards. In their learning logs they write three different questions that could be solved using each of the strategies and answers as evidence that they can use the strategy.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010

FDP2.21 I can select and use the most appropriate strategy to solve a calculation

Teach them how Focusing on one of the strategies used in the lesson, e.g. comparing and ordering fractions or making equivalent fractions, ask children to write an explanation in their learning logs for other children to read. The explanation should outline what is involved in the strategy, together with related diagrams. The best explanations could be displayed for future reference.

Heinemann Active Maths Second Level Exploring Number Homework cards © Pearson Education Limited 2010