Demo day Numicon 5/6 – Fractions, Decimals, Percentages

Teacher's brief: Students are struggling with the terms and relationships of fractions, decimals and percentages and then converting from one to another.	**Refer to:** **Numicon 5 and Pupil Books** NNS 3 Understanding fractions (introduced NPC4) CAL 11 Percentages NNS 7 Solving problems with fractions, decimals and percentages **Numicon 6 and Pupil Books** CAL 5 Exploring Fractions, decimals and percentages
This introductory activity reviews Numicon 5 NNS 3, to explore equivalences between fractions and decimals, relating this understanding to percentages from Numicon 5 CAL 11. This will enable the students to then calculate conversions between the three, and do activities from Numicon 6 Calculating 5	
Resources to have ready per group of 4: Decimal baseboard, Selection of Numicon shapes, Fraction, decimal and percentage cards pack (Numicon 5 PCM 52 Washing Line cards), Word problems, Posters and word cards	
1 Introductions and Modelling: 2 Discuss Poster and words from Numicon 5 and 6 3 Give students the Decimal Baseboard and Numicon shapes to illustrate fractions decimals and percentages given to each group. 4 Explorations to show 1/10, 1/100, 50/100	
In your group talk about and write a description of 'percentage' 'fraction', 'decimal' Show examples of these with Numicon or PV blocks, or draw as a Number line	
Class discussion and sharing	If chn are struggling - refer to NPC5 NNS3 and CAL11. See Pupil Book 5 p 11
Group Problems – see PCM below Can you write 30% in its simplest form as a fraction? Now as a decimal.	Activity from PB 5 page 102
Use the decimal baseboard to show and sort fraction, decimal and percentage cards and in order from the cards	
Compare these two offers on bikes. Which is the better offer? 1/3 off a bike for sale $100 and 30% off a bike for sale for $100 Explain the calculations you need to do to figure this out.	Numicon 6 Pupil Book Page 34
Decide which is greater? How do you know? A 2/3 or 0.66, B 28% or 13/50, C 0.75 or 80% Which of the pairs was the easiest to compare? Why?	
Esme sees a mountain bike in a sale in the shop. It has a 30% discount which means she would pay $140. Then she sees a bike online to buy. It has a 50% discount. It would cost her $160 though. Explain why the bike with the bigger discount would actually cost her more.	
A bed costs $2200. There is a 'special' this week of 40% off. What will the saving be? What will the discounted cost of the bed be?	2200 ÷100 = 22 (1%) 22 x 40 = 880 (40%) 2200 – 880 = 1320
Reflection: A 'discount' is an addition or subtraction problem? Interest on a bank loan is an addition or a subtraction problem?	Class
Teacher follow up: Complete Numicon 6 Calculating 5 and matching Pupil Book pages (See Contents) See Sequence on Page 18 of the Teaching Handbook Other activity groups on fractions, decimal and percentages are: Calculating 8 Converting fractions and decimals Preparing for formal testing 4 Investigating 2 What did I do? Investigating 4 Decimal Patterns, Investigating 5 Which is the best value? Investigating 6 An enterprise project	

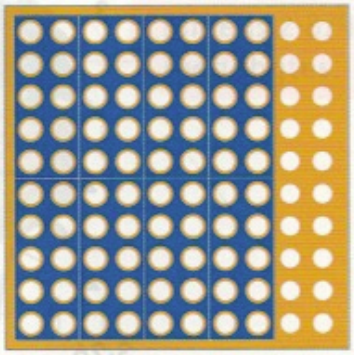
Group Activities – cut these and hand out during the lesson

Make 30% on the baseboard. Can you write 30% in its simplest form as a fraction? Now as a decimal.
Use the decimal baseboard to show and sort fraction, decimal and percentage cards and in order from the cards
Compare these two offers on bikes. Which is the better offer? 1/3 off a bike for sale $100 and 30% off a bike for sale for $100 Explain the calculations you need to do to figure this out.
Decide which is greater? How do you know? A: 2/3 or 0.66 B: 28% or 13/50 C: 0.75 or 80% Which of the pairs was the easiest to compare? Why?
A bed costs $2200. There is a 'special' this week of 40% off. What will 1% be? What will the saving be? What will the discounted cost of the bed be?

Converting fractions to decimals

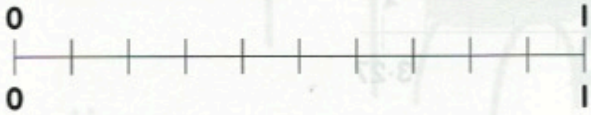
Practice

1 a How much of this baseboard is covered in blue?



b Can you write your answer as a fraction and a decimal?

2 Draw a number line like this.



Can you show your fraction and decimal from **question 1b** on it?
How did you work out where these numbers go?

3 See if you can make a list of all the proper fractions that have denominators of 2, 4, 5, or 10.

a Can you write them all down in order of size?

b Can you write these fractions as decimals?

c Now can you order the decimals on a blank number line?

Going deeper

1 a How many ways can you find to convert $12\frac{3}{4}$ to a decimal?

b Which method do you prefer? Can you explain why to your partner?

2 Can you work any of your methods from **question 1** backwards?
For example, what is 18·4 as a fraction?

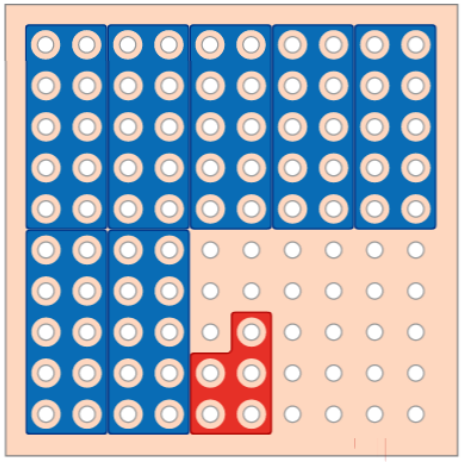
3 Can you find a way to convert $\frac{2}{3}$ into a decimal?

4 Using a calculator, try investigating proper fractions that have denominators of 3 and 9. What happens when you convert these into decimals? Can you explain any of these results?

Pupil book 5 Page 11

Fractions Decimals Percentages

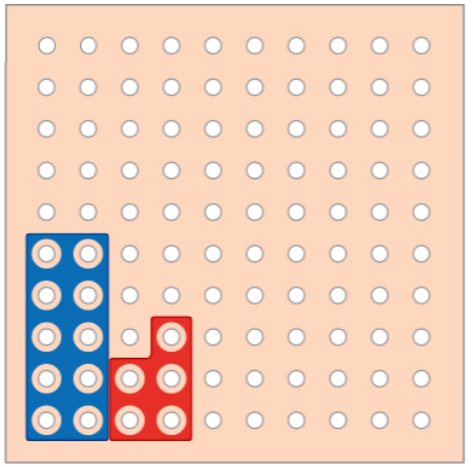
Fractions are equal parts or divisions of a whole. The 'whole' can be a unit or a group. A line or slash separates the parts (numerator) of the whole ('denominator). Example ¾



¾, 75/100, .75, 75%

Decimals are fractions written in a different way and always in tenths, hundredths etc. with a point separating the whole from the parts. Example .75

15/100, .15, 15%, GST



A **percentage** is a fraction of 100 Percentages can be compared more easily than fractions. Example 75%

Numicon 5 NNS7 and below Numicon 6 CAL 5

fraction	percentage	numerator	part-whole relationship
decimal	per cent	proportion	proper fraction
factor	equivalent	Simplest form	improper fraction
multiple	denominator	common factor	mixed number

fraction	percentage	numerator	discount
decimal	per cent	proportion	reduction
hundredth	equivalent	for every	money off
simplify	denominator	common factor	quarter

Print larger if necessary

50%	1	0·75	0·1
0·25	10%	$\frac{80}{100}$	$\frac{25}{100}$
$\frac{75}{100}$	20%	0	$\frac{50}{100}$
$\frac{1}{10}$	75%	$\frac{100}{100}$	0·5
100%	0·2	$\frac{20}{100}$	$\frac{10}{100}$
80%	25%	0·8	0%