National Professional Standards for Teachers

Illustration of Practice

Decimal Unit

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Lesson Sequence	Decimal Unit – Year 6
Foci of lessons	This unit was planned to provide opportunities for students to • use place value to determine the size and order of whole numbers to tens of thousands and decimals to hundredths • comprehend the size and order of small numbers to thousandths and large numbers to • devise and use algorithms for the addition, subtraction and multiplication of numbers to two decimal places • divide by a single digit to two decimal places • recognise and generate decimal patterns • compare decimal fractions with common fractions • order whole numbers, decimals and fractions on a number line
Mathematical language:	millions, hundreds of thousands, tens of thousands, thousands, hundreds, tens, ones, tenths, hundredths, thousandths, place value, greater than, less than, order, smallest, largest, ascending, descending

Introductory Task

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- Revision of whole number place value.
- Students enter digits into calculators, thousands down to ones as teacher calls the numbers; "Let's read these numbers together", e.g. 1 356, 7 896, 4 023, 5 205, 2 450.
- Students focus on zero as a place-holder.
- Individual students read numbers.

Tuning In

Purpose – to develop an understanding of place value, whole numbers and decimals.

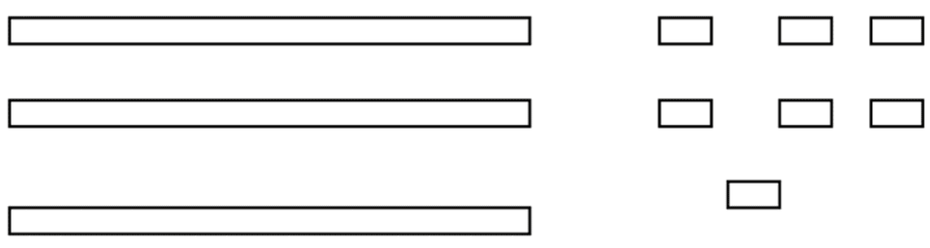
- The students examine a set of Linear Arithmetic Rods (*Source*: Department of Science & Mathematics Education, The University of Melbourne) and describe the relative magnitude of the individual pieces.
  (*Note*: The rods comprise washers that represent thousandths, and 20mm plastic tubing cut to represent hundredths, tenths and ones. Ones are represented as a whole long piece of tubing. A piece of blue tack represents the decimal point).
- Discussion of place value and the powers of ten; the class examine the value and relationship of whole numbers and decimals.

Key mathematics ideas to emphasise:

- Ones are 10 times longer than tenths; tenths are 10 times longer than hundredths.
- 1 = 10 tenths; 1tenth = 10 hundredths
- What does the decimal point mean? It divides the whole numbers from the decimal places.
- Discuss the difference between tens and tenths.

Activity 1

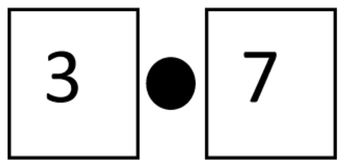
- Purpose – to reinforce the main teaching ideas of place value.
- Students use the LAB to represent the following numbers:
  3.7 1.2 0.6 0.04
  For example 3.7 would be shown as



- Students then use digit cards to show how numbers an be written. For example:

Design lesson sequences incorporating strategies based on well-established bodies of knowledge about how students learn.

Select content and develop associated strategies to address core concepts and skills in the learning area.

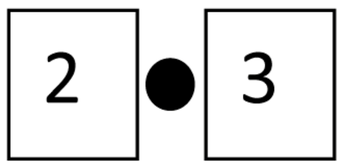


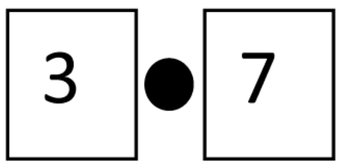
- Students then use a Place Value Chart to record numbers:

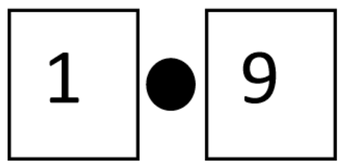
Hundreds	Tens	Ones	● Tenths	Hundredths
		3	7	

Activity 2:

- Students work in groups using number cards to make the largest possible numbers using the decimal point. One child from each group then justifies why their number is the largest.
- Then students make the smallest number and justify this to the class.
- Example: Given the following cards the student with 3.7 says their number is the largest because they have 39 tenths which is more than 23 tenths or 19 tenths (or the largest number of ones) while the student with 1.9 recognises that they have the smallest number as they only have 19 tenths which is less than 23 tenths or 37 tenths (or smallest number of ones).







- Students could then be given three cards and asked to make the largest and smallest numbers. Given the numbers 4, 2 and 7 and a decimal point, can students decide that the largest number is 74.2 while the smallest number is 2.47?

Student reflection:

- To consolidate the learning that has taken place ask students to write a short report (e.g. two sentences) in their journals, naming the learning that has been special to them in this lesson.
- Ask students to share their understandings of place value.

Teacher summary:

- Numerals have different values according to their place in the number.
- The decimal point is a divider between the whole numbers and the decimal fractions.

Plan and implement a lesson sequence incorporating learning goals, lesson outline, direct instruction/task establishment, learning/assessment tasks, and lesson summary.