contents and sample pages

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D T E S

Count down

Developing subtraction

Purpose

To develop students' understanding of the subtraction process; that is, the decomposition or the breaking up of bundles of ten to make ten ones.

You will need:

- 6-sided dot die
- elastic bands
- collection of craft sticks
- trading boards, p. 6 (one each)

Method

- Each player begins with 99 craft sticks on a trading board.
- Players take turns to roll a die and remove that many craft sticks from their playing board.
- The first player to remove all of his/her craft sticks (reach zero) is the winner.

Recording

Always encourage students to record the progress of a game.

- Draw pictures or write words.
- Take 'before and after' digital photographs.
- Complete the game progress chart (opposite)
- Produce a recorded set of instructions to present to a new group of players.
- A PowerPoint™ presentation could be prepared.

Activities of this nature help reinforce the concepts and ideas, which are so important.

Avoid the temptation to formalise the 'unbundling' process. Basically, this 'unbundling' is the key idea behind the decomposition algorithm for subtraction. The focus of this activity is on gaining an intuitive understanding of this process. The symbols and abstraction come later.

Looking for learning

Note how students exchange 1 ten for 10 ones (sticks) as they do this automatically. Do they count individual craft sticks or do they perform a mental calculation then show it with the materials? If they perform a mental calculation, they are ready to move on.

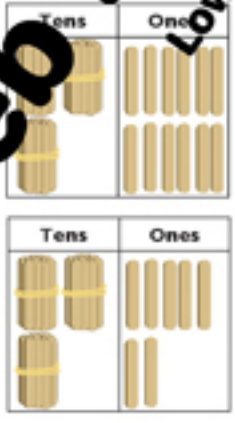
Problem solving

At times students will be faced with the problem of what to do if they do not have enough craft sticks that they can remove.

Example

42 is shown on the board. A 5 has been thrown and the player faced with the problem that there are not 5 ones to be taken. Only the 2 ones shown on the board.

A bundle of ten needs to be broken up into 10 ones. Now 5 ones may be taken from the 12 ones.



At the end of the turn, everything is returned to its balance, with no more than 9 craft sticks remaining in the ones column.

Extension

Combine '99 and over' and 'Count down'.

- Alternate between composing (adding) and decomposing (subtracting)
- Start at an agreed point, then add (compose) for three throws and subtract (decompose) for one throw. The first to an agreed target wins.
- Students will invent other variations; e.g. use two different coloured dice, one for adding and one for subtracting.

Renaming numbers

D T E S

Purpose

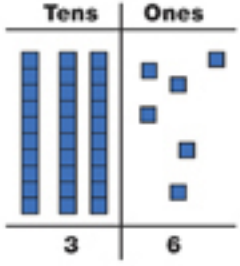
Students will learn to rename numbers in a variety of ways.

Background

It is important that students recognise alternative ways to name/represent numbers. This will help them gain a better understanding of numbers—which in turn will assist them later when comparing numbers and calculating.

Partitioning numbers in standard and non-standard ways

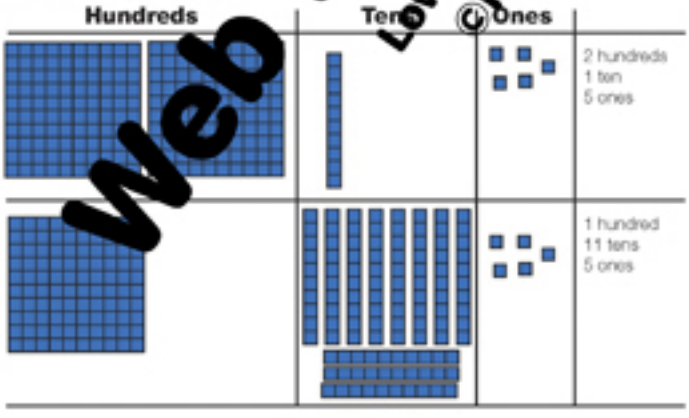
1. Show students a two-digit number represented by Base Ten blocks; for example:



2. Ask the students to show alternative representations; for example:

Set some other challenges.

3. Extend to three digit numbers.



Guide to using this photocopiable resource

(see p. 32)

Pick up a handful of longs and minis and place them in the appropriate columns. Then partition them in different ways.

Record on the 'Renaming numbers' board.