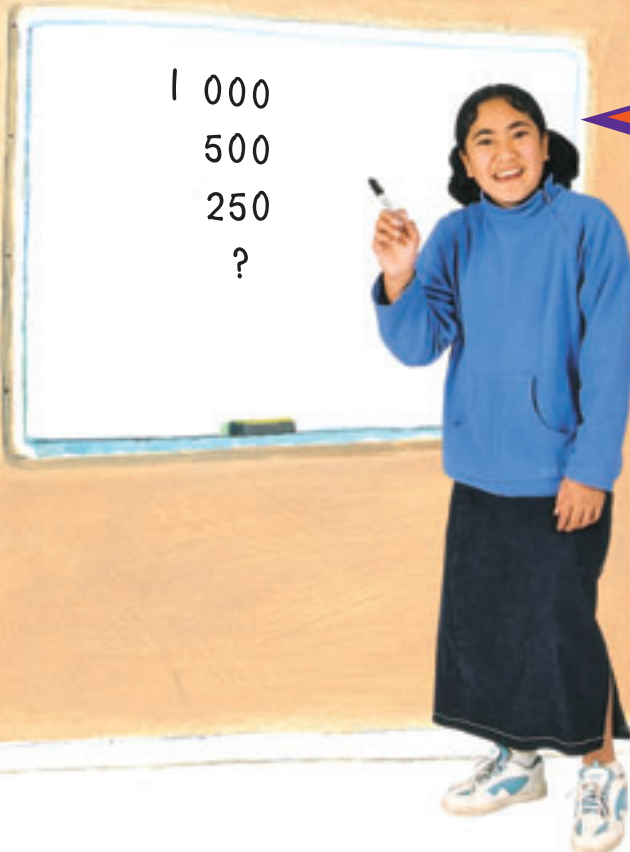# Double and Halve

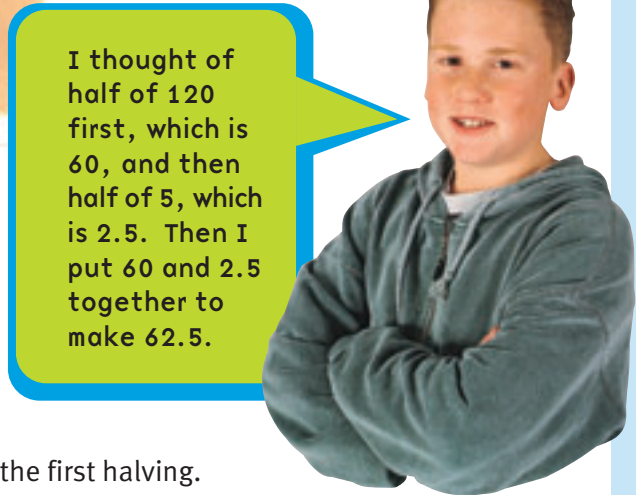**ACTIVITY ONE**

Mr Goodman put the number 1 000 on the board. Then he wrote 500 underneath it. "We have to keep halving until we get a number with a decimal point," he said. Hōne came up to the board and halved the 500. Then it was Kali's turn.

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1 000
 500
 250
  ?
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Hmm ... Half of 200 is 100. Half of 50 is 25. So half of 250 is 125.

It was Jarod's turn next. He wrote 62.5 under the 125. Mr Goodman asked him how he got his answer.

I thought of half of 120 first, which is 60, and then half of 5, which is 2.5. Then I put 60 and 2.5 together to make 62.5.

1. Try Mr Goodman's activity starting with:
   a. 2 000
   b. 2 500
   c. 32

2. Find some numbers that produce a decimal on the first halving.
   Is anything the same about these numbers?

3. Find some numbers that produce a decimal after three halvings, for example,
   12 ÷ 2 = 6, 6 ÷ 2 = 3, 3 ÷ 2 = 1.5.
   Do the numbers you found have anything in common?

ACTIVITY TWO

1. At home that night, Jarod decided he would try some doubling moves.
   How many times did he have to double 1 000 to reach 1 000 000?

2. If you started with $40 and you could double your money every day, how long would it take before you had at least $10,000? (Count the $40 as the first day.)