

# Trimming Trees

You need  a classmate  a photocopy of the tree nursery copymaster

## Activity

Hamish's father owns a tree nursery. One Saturday, Hamish's job is to prune some of the trees.

The trees where Hamish is working are set out in rows and are numbered. That part of the nursery is divided into two sections, like this:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

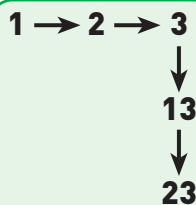
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

Hamish thinks of the hundreds board in his classroom and of an arrow code that he used to work out the difference between numbers:

<b>right</b> → = + 1	3 + 1 = 4	→ + 1	← - 1			
<b>left</b> ← = - 1	7 - 1 = 6	3	4	5	6	7
<b>down</b> ↓ = + 10	7 + 10 = 17	13	14	15	16	17
<b>up</b> ↑ = - 10	47 - 10 = 37	23	24	25	26	27
		33	34	35	36	37
		43	44	45	46	47

↓ +10  
↑ -10

Hamish decides to make up number stories while he works. For his first number story, he is standing beside tree number 1 and needs to go to number 23. He can only walk along or down the rows of trees, not diagonally.



To get to tree 23, I'll walk along to tree 3, then down past tree 13 to tree 23.

So my number story to get from 1 to 23 is  
1 + 1 + 1 + 10 + 10 = 23.



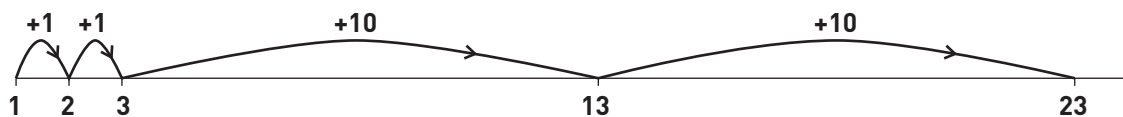
1. Hamish has these trees on his job sheet:

**Trees to prune:**

First section: 23, 33, 42, 55, 77, and 80

Second section: 102, 119, 148, 176, and 195

- Using only  $+1$ ,  $-1$ ,  $+10$ , and  $-10$ , record the number stories that Hamish would say as he goes from one tree to the next tree on his list. (After he has finished at 80, he has to start again at 102.)
- Show each number story on a number line like this:



2. Using the arrow code and also  $\Rightarrow = +100$  and  $\Leftarrow = -100$ , choose some numbers and make up your own problem for a classmate to solve. For example:

Begin at number 56,  $\Downarrow \Downarrow \rightarrow \rightarrow \Rightarrow = \square$

3. What if I don't always take the shortest route?  
If I go  $1 + 10 + 10 + 10 + 1 + 1 + 1 - 1 - 10$ ,  
do I still get to 23?

- Does Hamish still get to 23? Why does this happen?
- Make up some longer paths for the tree numbers in question 1 and see what happens.