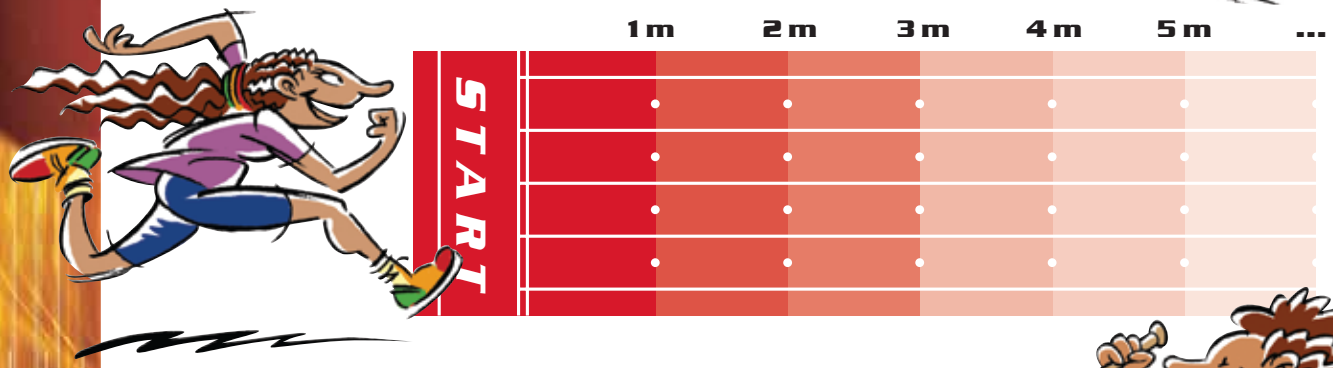
Pegged Out

ACTIVITY

One of the events in the interhouse relay competition involves competitors collecting 15 pegs set out at 1 metre intervals.

Each competitor's first peg is set in the ground 1 metre away from the starting point, their second peg is 2 metres away, their third peg is 3 metres away, and so on.



Each competitor begins at the starting line, runs to collect their first peg, and returns it to the start. Then they race off to get their next peg and return it to the start. This continues until all the pegs are collected and returned.

1. How far altogether does each competitor have to carry their pegs? (Remember that sometimes they are running without a peg.)

2. If the race were extended so that each competitor carried pegs for a total of 210 metres, how many pegs would be needed?

3. Trudie comes up with a short cut to work out how far a competitor must run carrying pegs. She does the working for a competition with just 7 pegs like this:

$1 + 2 + 3 + 4 + 5 + 6 + 7$	⟶ Distance run without pegs
$7 + 6 + 5 + 4 + 3 + 2 + 1$	⟶ Distance run with pegs
$8 + 8 + 8 + 8 + 8 + 8 + 8$	⟶ Total distance run

   a. Trudie completes the calculation 7 x 8 and then halves her answer to get 28. What does this value tell her?
   b. Repeat Trudie's process to work out how far a competitor must run carrying pegs when there are 19 pegs.

4. a. Write a simple rule to work out how far a competitor must run carrying pegs for any number of pegs.
   b. Use your rule to work out how far a competitor must run carrying pegs when there are 50 pegs.