Termite Instructions

Working as a small group work out the sequence of instructions to program two termites to build a stack of wood chips.

There are many right answers, but try to use as few commands as possible. The commands are given overleaf.

Rules:

1. Place the 2 termites on any of the squares on the board, facing any edge of the square.

2. The wood chips are represented by the 10 blocks. Randomly scatter them around the board, one block per board space.

3. Both termites must follow the same, small set of instructions (about 3-5).

4. The instructions is repeated over and over, in a loop.

5. The termite can turn left or right 90, 180, or 270 degrees.

6. If the termite hits the edge of the grid, turn 180°, and finish executing the instruction.

7. Each termite can only carry one chip at a time.

8. You may combine some of the commands to make an If statement.

    Example 1: If (have chip?)

    Then forward 4.

    Example 2: If (not)(have chip?)

    Then right 90.

9. Write each instruction statement on separate cards, arranged in a stack.

10. Test your algorithm by executing each instruction on the board, then placing the card to the bottom of the stack.

Hints:

1. How can you get your termite to pick up a chip?

2. If your termite picked up a chip, where should the termite drop it?

3. If it's holding a chip, how do you stop it picking another one up?

4. How can you stop it dropping a chip where it picked it up?

5. How can your termites move around the grid to find chips?

Termite Commands

	Command	Description	Blocks
Movement	Forward ( )	Move forward by the number of steps given.	forward steps 1
	Forward (roll dice)	Move forward a number of steps depending on what number is rolled on the dice.	Termites forward (roll dice)
	Left ( )	Turn left by the given number of degrees.	left degs 90
	If heads, left 90.	Toss a coin, and turn left if the coin lands on heads.	Termites if heads, left 90
	Right ( )	Turn right by the given number of degrees.	right degs 90
	If heads, right 90.	Toss a coin, and turn right if the coin lands on heads.	Termites if heads, right 90
Take / Drop	Take Chip	If the termite is currently standing on a chip, pick it up.	Termites Take Chip
	Drop Chip	If the termite is carrying a chip, drop it here.	Termites Drop Chip
Conditional Structures	If (test, then)	If the *test* is true, runs the commands attached under *then*.	test if then
	And	Is true only if both attached tests are true.	and
	Or	Is true if either attached test is true.	or
	Not	Gives the opposite of what is attached to it.	not
Conditions	Have chip?	Is true if the termite is carrying a chip, and false otherwise.	Termites have chip?
	Standing on chip?	Is true if the termite is standing on a chip, and false otherwise.	Termites standing on chip?