Snake Planning: Why Did the Nearest Apple Trap Me?

Name: _____ Date: _____

You are a snake facing RIGHT. H is the head, B the body, T the tail, # a wall and * an apple. Move one square. The tail moves away unless you eat; eating keeps the tail and grows the body.

One example, already done

Start H=B3, body=A3, tail=A4. Moving right eats C3: the new body is C3,B3,A3,A4. To judge a move, draw its WHOLE new body, then count legal next exits.

Trap board: rows increase downward

	A	B	C	D	E
1	.	.	.	.	*
2	.	.	#	.	.
3	B	H	*	#	.
4	T	.	#	.	.
5	.	.	.	.	.

Your turn

1. Try RIGHT on paper. It is legal now. After growing, which next exits are legal? Mark walls and the neck; direct reversal is forbidden.

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2. Reset. Try UP instead. Move every body segment and remove the old tail. Name the legal next squares. Compare with the right move on page 2.

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Compare one step now with the following step

First move	Legal now?	New head	Eats?	Legal next exits
RIGHT				
UP				

Tail board: facing UP; head B2, then B3,A3, tail A2

	A	B	C
1	.	.	.
2	T	H	.
3	B	B	.

On the tail board there is NO food at A2. Is turning LEFT into the current tail legal? Draw the new body in order. Why does keeping every old body square blocked give a wrong answer?

Change one thing

On the trap board compare nearest-food, immediate-safe and space-first policies. Space-first counts reachable squares after the move with the new body frozen. Does a larger snapshot prove survival forever?

My puzzle - make it in class

Draw a small board with a tempting apple that leaves no exit. Mark facing, ordered body, walls and food. Keep an answer copy with a safer first move; take it home.

At home (with a parent)

Draw a board with a legal move that traps the snake next. Ask a parent to predict, then check with movable body counters.

My parent tried my puzzle: Yes / Not yet Parent initials: _____