



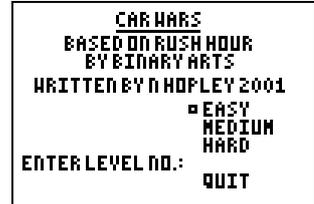
Teacher Notes for Car Wars

Compatibility: TI-83/83+/83+SE/84+/84+SE

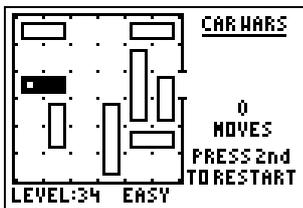
Run The Program Called: **CARWARS**

► Summary

This logic game is based upon “Parking Lot” written by MK Software for Palm OS, which in turn was based upon “Rush Hour” by Binary Arts. The objective of the game is to move the other cars and trucks in the car park so that you can move your car out of the car park. There are 159 levels of difficulty - each one can be solved!



► Features



From the title page, either select a difficulty or enter the actual level number. When entering the level number, use the four arrow keys to change the number by ± 1 and/or ± 10 .

The car park will then be displayed - your car is the solid coloured one. The other rectangles are other cars (short) and trucks (long). The exit is the gap in the wall on the right hand side.



All vehicles may only be moved either up/down, or left/right, in the direction that they are aligned.

To move a vehicle, use the arrow keys to move the marker anywhere over the vehicle to be moved and press ENTER.

That vehicle will then move in the only direction that it can go. Where it's ambiguous, it moves it either down, or right, as appropriate.

When completed, you should have moved the vehicles around so that your car is clear to leave the car park's exit - see the above screenshot.

► Suggestions

Students can very easily see this as merely a game to play, but the teacher can highlight how it can help with the other aspects of the maths course content that is being covered.

Firstly, the puzzle inherently demands that students plan ahead, and decide upon the priorities for moving the cars in order to succeed with each level.

Secondly, the teacher can stress that it is not just a solution that is wanted, but the best solution. This, in turn, leads to finding the optimal solution for each puzzle in the sense that it has the minimum number of moves.

If the teacher highlights both of these issues, then subsequent lessons can refer back to the “CarWars Lesson” and the need to think ahead in order to obtain the best solution to a problem.

If this plan of approach is adopted, then it requires all students to be working on the same puzzles. Therefore the best way is to have the class start off on puzzle 1, then puzzle 2, then puzzle 3. Once a student solves a puzzle, the number of moves they took can be recorded on the board. The task for the rest of the class is to match it, or beat it, before they move onto the next puzzle.

If a solution with a smaller number of moves is found by anyone, then the whole class must re-tackle the puzzle in that number of moves, regardless of whether they have already moved onto a later puzzle.

Conducting this exercise with several classes has yielded the following optimal solutions to the first 15 levels of puzzle. These levels can be done in these numbers of moves, but these solutions are not guaranteed to be optimal. Furthermore, the teacher is advised not reveal them to a class, as the challenge is for them to find their own optimal solutions, rather than recreate the teacher's.

<u>Level</u>	<u>Moves</u>
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1.	5
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2.	10
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3.	5
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4.	6
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5.	9
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<u>Level</u>	<u>Moves</u>
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6.	9
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7.	11
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8.	10
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9.	5
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10.	7
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<u>Level</u>	<u>Moves</u>
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11.	8
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12.	13
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13.	9
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14.	8
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15.	10
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