

**Taxicab problem, clip 1 of 5: the shortest distance between two points.**

Rutgers University has made this article freely available. Please share how this access benefits you.  
Your story matters. <https://rucore.libraries.rutgers.edu/rutgers-lib/29292/story/>

**Citation to Publisher Version:** Not provided.

**Citation to *this* Version:** Maher, C. Taxicab problem, clip 1 of 5: the shortest distance between two points., 2000-05-05  
Retrieved from <http://dx.doi.org/doi:10.7282/T39W0FBQ>



**Terms of Use:** Copyright for scholarly resources published in RUcore is retained by the copyright holder. By virtue of its appearance in this open access medium, you are free to use this resource, with proper attribution, in educational and other non-commercial settings. Other uses, such as reproduction or republication, may require the permission of the copyright holder.

*Article begins on next page*

<b>Description: Clip 1 of 5: The Shortest Distance Between Two Points</b> <b>Parent Tape: Taxicab Geometry</b> <b>Date: 2000-05-05</b> <b>Location: David Brearley High School</b> <b>Researcher(s): Professor Carolyn Maher</b>	<b>Transcriber(s): Powell, Arthur; Milonas, Jeremy</b> <b>Verifier(s): McGowan, Will; Brookes, Elijah</b> <b>Date Transcribed: Spring 2010</b> <b>Page: 1 of 7</b>
--	---

1	00;01;15	Jeff	You have to stay on the lines, right? Those would be streets?
2		T/R1	Exactly.
3		JEFF	I agree.
4		ROMINA	Isn't it like anyway you go-
5		BRIAN	Pretty much, because look-
6		ROMINA	As long as you don't go like past it. [Facing Brian's direction.]
7		BRIAN	The first one- No, 'cause.
8		MICHAEL	Well what if you go to the last one-
9		BRIAN	You can go all the way down and go over, and go down three and go over, and then down two. [Tracing the routes above the problem sheet with a black marker in his right hand.]
10		ROMINA	Isn't it- Don't they all come out to be the same amount of blocks? [Jeff beginning to draw.]
11		BRIAN	Five.
12		JEFF	Five?
13		ROMINA	Five? I got seven.
14		JEFF	Uh, which one- Yeah, we were both looking at the red one.
15		BRIAN	I'm looking at blue. [Michael tapping his pen on the grid along intersection points.]
16		JEFF	Yeah.
17		ROMINA	Oh, okay.
18		JEFF	All right. I mean pretty much.
19		ROMINA	As long as you don't go like past it you're fine. So it's the same thing.
20		BRIAN	So, let's prove it.
21		T/R1	Okay, does somebody want to tell me what you think you understand the problem to be asking?
22		JEFF	Um, what's the shortest route from there

<b>Description: Clip 1 of 5: The Shortest Distance Between Two Points</b> <b>Parent Tape: Taxicab Geometry</b> <b>Date: 2000-05-05</b> <b>Location: David Brearley High School</b> <b>Researcher(s): Professor Carolyn Maher</b>	<b>Transcriber(s): Powell, Arthur; Milonas, Jeremy</b> <b>Verifier(s): McGowan, Will; Brookes, Elijah</b> <b>Date Transcribed: Spring 2010</b> <b>Page: 2 of 7</b>
--	---

			to here staying on the streets, right?
23		T/R1	Okay, is there more than one shortest route?
24		BRIAN	Yes.
25		ROMINA	Yeah.
26		T/R1	In other words, if there is, how many?
27		ROMINA	Ah-
28		BRIAN	Let's do the blue.
29		T/R1	Okay?
30		JEFF	All right, how many different shortest routes are there?
31		T/R1	Yes.
32		JEFF	Is what you're asking right now? //All right.
33		T/R1	//Mm hm.
34		BRIAN	Blue's got five.
35		T/R1	Okay. And how do you know? You're going to have to convince us. Okay.
36		BRIAN	All right.
37		T/R1	If you need us call me or Gina. [Inaudible].
38		ROMINA	I have five.
39		JEFF	Can we have like a- You have colored like markers? Word! [Responding to T/R2's statement that she will give them some markers.]
40		BRAIN	For what?
41		JEFF	Because then we can just do each route a different color. To like- [Waving his hand.]
42		ROMINA	Yeah, but they all kind of go on top of each other.
43		JEFF	Well, I mean, I don't know. I mean, let's see what it looks like. If it get too ugly then- Which one are you doing?
44		ROMINA	Which one do you want to do?
45		JEFF	I'll go to red.
46		ROMINA	I've got blue.
47		BRIAN	I did blue.

<b>Description: Clip 1 of 5: The Shortest Distance Between Two Points</b> <b>Parent Tape: Taxicab Geometry</b> <b>Date: 2000-05-05</b> <b>Location: David Brearley High School</b> <b>Researcher(s): Professor Carolyn Maher</b>	<b>Transcriber(s): Powell, Arthur; Milonas, Jeremy</b> <b>Verifier(s): McGowan, Will; Brookes, Elijah</b> <b>Date Transcribed: Spring 2010</b> <b>Page: 3 of 7</b>
--	---

48		JEFF	Brian already-
49		ROMINA	One-
50		BRIAN	It's just going to look like you're filling //in the boxes.
51		ROMINA	//Two. Yeah, it is.
52		JEFF	That's what it's going to end up looking like, right?
53		ROMINA	Yeah so screw it. There's- Okay, so we know five-
54		JEFF	Well,- [Romina writing "Blue 5" on her paper to the right of the grid and tracing routes with her pen on the grid.]
55		BRIAN	Just count them and then make sure you know how you got them. You know? [Jeff and Romina counting by tapping their pen or marker on the grid. Each of them counts on their own grid.]
56		JEFF	Yeah.
57		ROMINA	One, two-
58		JEFF	So why- why is it the same every time?
59		MICHAEL	You're going left and right.
60		ROMINA	Ours is a four by one, right?
61		MICHAEL	Yeah, it's a four by one, unless you go backwards a couple of times.
62		ROMINA	You can't go, well-
63		MICHAEL	I know that would be dumb.//
64		BRIAN	//[inaudible] the shortest route only if you go forward.
65		MICHAEL	But the only- You can't go diagonal so you have to go up and down. So if the thing is down this many and//
66		JEFF	//Over that many, //it's the same
67		MICHAEL	//It's the same-
68		ROMINA	//It's the same area
69		MICHAEL	No matter how you do it, no matter how you do it it's you have to- you can't //get around doing that. [Pointing and gesturing around his grid]
70		ROMINA	//All right.

<b>Description: Clip 1 of 5: The Shortest Distance Between Two Points</b> <b>Parent Tape: Taxicab Geometry</b> <b>Date: 2000-05-05</b> <b>Location: David Brearley High School</b> <b>Researcher(s): Professor Carolyn Maher</b>	<b>Transcriber(s): Powell, Arthur; Milonas, Jeremy</b> <b>Verifier(s): McGowan, Will; Brookes, Elijah</b> <b>Date Transcribed: Spring 2010</b> <b>Page: 4 of 7</b>
--	---

71		MICHAEL	//You can't get around going four down and right one 'cause -.
72		JEFF	All right, yeah. All right.
73		MICHAEL	You can't go over there. You can't get around doing that.
74		JEFF	Yeah.
75		ROMINA	What if I were to go like to the red when I go one, two, three, four- [Pointing at her problem sheet.]
76		MICHAEL	But they're not asking for like a //[Inaudible].
77		ROMINA	//Five, //six, seven.
78		JEFF	//Five, six, seven. //It's the same thing.
79		ROMINA	//Like //how- how am I going to- like //how would I-
80		JEFF	//It's the same thing.
81		MICHAEL	//It's the same.
82		ROMINA	-devise an area for that? Like this- this area up here? [Motioning with her pen on her grid, indicating the area of the rectangular space whose vertices are taxi stand and the red pick-up point.]
83		BRIAN	Like plus and [Inaudible].
84		JEFF	Well, it's not area.
85		MICHAEL	It's not area. It's //just a-
86		JEFF	//It's the perimeter. It's like //each one being one.
87		MICHAEL	//One, two, three, four, five, six, seven. [Pointing at Romina's paper and counting the length of a route to the red pick-up point.] [Jeff scratching his head.]
88		ROMINA	All right.
89		MICHAEL	There's no way you can get around going- [Gesturing with his hands]
90		JEFF	//Going seven blocks.
91		ROMINA	//No, yeah, I understand.
92		MICHAEL	Across that many and down that many because you can't go diagonally. Can't- [Gesturing with his hands over his

<b>Description: Clip 1 of 5: The Shortest Distance Between Two Points</b> <b>Parent Tape: Taxicab Geometry</b> <b>Date: 2000-05-05</b> <b>Location: David Brearley High School</b> <b>Researcher(s): Professor Carolyn Maher</b>	<b>Transcriber(s): Powell, Arthur; Milonas, Jeremy</b> <b>Verifier(s): McGowan, Will; Brookes, Elijah</b> <b>Date Transcribed: Spring 2010</b> <b>Page: 5 of 7</b>
--	---

			problem sheet across to the left and then down]
93		JEFF	Yeah.
94		MICHAEL	Can't get around it, so- [gesturing with his hands]
95		JEFF	I mean, that's the most sensible way I think to say that. Right? And they want to know how many though.
96		BRIAN	Are there seven possibilities, though? You know how like blue was five? There's five possibilities but-
97		JEFF	Ah, so-
98		BRIAN	You know how it's only like five spaces. Like one, two, three, four, five. [Pointing at the grid on his problem sheet.]
99		ROMINA	Yeah, so if it goes more.
100		BRIAN	Is there seven for blue, I mean red?
101		JEFF	Well, check it out.
102		BRIAN	You've got one- [Pointing at the grid on his problem sheet]
103		ROMINA	Here, I'll- //Me and Michael do
104		MICHAEL	//Is that the shortest routes?
105		ROMINA	Me and Michael do greens. The green one.
106		BRIAN	All right.
107		MICHAEL	//Oh, like that's the biggest one. [Pointing at paper]
108		ROMINA	//And they'll do red.
109		BRIAN	Green is nine I think. [Then he begins to check this idea.]
110		ROMINA	Well //count how many ways. [They use their pens or markers to count on the grid.]
111		JEFF	//All right, we'll look for it.
112		MICHAEL	One, two- [counting and pointing at paper]
113		BRIAN	Ten. My bad. [Correcting himself on the length of a shortest path to green.]
114		MICHAEL	There's a lot.
115		ROMINA	Yes I know. I'm trying to devise a- like a-
116		JEFF	The- the way to do it?
117		ROMINA	Yeah.

<b>Description: Clip 1 of 5: The Shortest Distance Between Two Points</b> <b>Parent Tape: Taxicab Geometry</b> <b>Date: 2000-05-05</b> <b>Location: David Brearley High School</b> <b>Researcher(s): Professor Carolyn Maher</b>	<b>Transcriber(s): Powell, Arthur; Milonas, Jeremy</b> <b>Verifier(s): McGowan, Will; Brookes, Elijah</b> <b>Date Transcribed: Spring 2010</b> <b>Page: 6 of 7</b>
--	---

118		JEFF	This is hard. [Romina draws routes on her grid with her pen.] (00
119		ROMINA	Two-
120		JEFF	How many was there? For, um, for the blue dot. How many different ways.
121		BRIAN	Five.
122		ROMINA	Ha...I already lost count. [of the number of shortest routes to the green pick-up point.]
123		JEFF	How many //you got for red so far? [Talking to Brian]
124		ROMINA	//Well, I'm saying like if you go //all the way over. [Leaning over and pointing with her finger at the grid on Michael's problem sheet.]
125		BRIAN	//Two, three- [pointing at paper]
126		ROMINA	And then //you go all the way// over and leave only one space. [Romina points to Michael's grid and motions with her finger.]
127		MICHAEL	//Yeah. One, two, three- Yeah, one, two, three, four, five, six. Six going like that. [Outlining routes on his problem sheet.]
128		BRIAN	One, two, three, //four.
129		JEFF	//You only got five?
130		BRIAN	No I'm just.
131		JEFF	Oh, I can't. //I can't keep //track of what I'm doing. [While Romina watches, Michael traces routes with his marker on the grid, without writing.]
132		MICHAEL	//Six this way. //Then you got-
133		JEFF	You know what I'm //saying?
134		MICHAEL	//possibility of doing this. //One, two-
135		ROMINA	//Yeah. How do we get that.
136		MICHAEL	-three, four. Oh, got one. But then you got // Ah, this is a lot
137		ROMINA	//Yeah, you could do this. [Michael counting by tracing with his pen.]
138		MICHAEL	You guys want to do the green? We'll do

<b>Description: Clip 1 of 5: The Shortest Distance Between Two Points</b> <b>Parent Tape: Taxicab Geometry</b> <b>Date: 2000-05-05</b> <b>Location: David Brearley High School</b> <b>Researcher(s): Professor Carolyn Maher</b>	<b>Transcriber(s): Powell, Arthur; Milonas, Jeremy</b> <b>Verifier(s): McGowan, Will; Brookes, Elijah</b> <b>Date Transcribed: Spring 2010</b> <b>Page: 7 of 7</b>
--	---

			the blue.
139		JEFF	No that's all right. //We already did the blue.
140		BRIAN	//We already did the blue.
141		ROMINA	Yeah, the blue is fine.
142		BRIAN	We're doing red.
143		ROMINA	Okay, we can't count. Like we need a- can't we- can't we do towers on this? (00
144		JEFF	That's what I'm saying. Look, all right, you go to here
145		ROMINA	And they're like blocks.
146		JEFF	All right, you go to here and you got a choice of going there or there. Right? [Indicating a choice of across or down at an intersection point of the grid on his problem sheet.] So then you pick one of those and then you got a choice of there or there. When you get to you know what I'm saying? Maybe we can add all those up or something and get like a whole- [Explaining routes on grid paper.]
147		ROMINA	All right.
148		MICHAEL	There's a lot.
149		ROMINA	Okay, for ours there's ten //
150		MICHAEL	There's more than ten.
151		ROMINA	No. I mean there's ten blocks. Like ten lines to get to that thing, right?
152		MICHAEL	Yeah, six by five.
153		ROMINA	So if there's ten, ten could be like the number of blocks we have in the tower. (00
154		MICHAEL	This is one-
155	00:07:25	ROMINA	How do we do that? Two to the $n$ ? [Moving her pen cap on and off of her pen.]