

<h2>Tricky tracks</h2>	<h2>Skill practised:</h2>
<p><i>Children use reasoning and logic to play ahead in playing a game on a 1-20 track.</i></p>	<ul style="list-style-type: none"> <li>• Recognising numbers 1–20 on a track</li> </ul>
<p><b>Conjecture:</b> <i>There is a way to play the game on a 1-20 track so that one of you gets 11 points and the other gets 10. This is the largest number of cubes it is possible to collect.</i></p>	
<p><b>What to do:</b>  <i>Children work in pairs.</i></p> <p><i>Children will need copies of the number tracks (see resources) – children can use 1-12 or 1-20 as you deem appropriate. You also need cubes and crayons for each pair.</i></p> <ol style="list-style-type: none"> <li>1. Children play in pairs. Each child takes one track and puts it in front of them. They need a crayon each – the colours must be different!</li> <li>2. They take turns to play.</li> <li>3. One child colours a number on the track. <b>They must say the number out loud. If you don't know it, ask someone to help so that you can go on playing!</b> <ul style="list-style-type: none"> <li>- If it has NO numbers coloured beside it the child takes 2 cubes</li> <li>- If it has 1 number coloured beside it then the child takes 1 cube</li> <li>- If it has a coloured number on each side of it, the child takes NO cubes</li> </ul> </li> <li>4. Now the other player has a turn.</li> <li>5. Children keep colouring numbers until all the numbers on the track are coloured or until they can see that they can collect no more cubes!</li> <li>6. The person with most cubes is the winner.</li> </ol> <p>Children play again! They think about these questions.</p> <ul style="list-style-type: none"> <li>- What numbers are good to colour to start with?</li> <li>- How can you force your partner to take no cubes or only one cube?</li> <li>- If you are both playing really well, how many cubes does the winner get?</li> </ul> <p><b>CHALLENGE:</b> When children have played several times, they make up a game where both players get the most cubes possible. Can you show me that this really is the way for you both to collect the MOST cubes? Which numbers are uncoloured at the end?</p>	
<p><b>Aim:</b></p> <ul style="list-style-type: none"> <li>- To use logic and reasoning to plan ahead in a game</li> </ul>	<p><b>Minimum number of calculations expected</b></p> <p>N/A</p>

# Tricky Tracks

1. Play with a partner, take one track each and a different coloured crayon and put them in front of you.
2. Take it in turns to play. One of you colours a number on the track.  
**You must say the number out loud.** If you don't know it, ask someone to help you so that you can go on playing!
  - If it has NO numbers coloured beside it you take 2 cubes
  - If it has 1 number coloured beside it you take 1 cube
  - If it has a coloured number on each side of it, you take NO cubes
3. Your partner has a turn. Keep colouring numbers in until all the numbers on the track are coloured or until you can see that you can't collect any more cubes!
4. The one with the most cubes is the winner.

Play again! Think about these questions:

- What numbers are good to colour to start with?
- How can you force your partner to take no cubes or only one cube?
- If you are both playing really well, how many cubes does the winner get?

## Challenge

Make up a game where you both get the most cubes possible. Can you show that this really is the way for you both to collect the MOST cubes?  
Which numbers are uncoloured at the end?

# Tricky tracks

1	2	3	4	5	6	7	8	9	10	11	12
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1	2	3	4	5	6	7	8	9	10	11	12
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1	2	3	4	5	6	7	8	9	10	11	12
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1	2	3	4	5	6	7	8	9	10	11	12
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# Tricky tracks

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
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