

# Game Theory Introduction: Zero-Sum Games PLAYER 1

You have a number of strategies you can choose from each time you play the game. The outcome will depend on what you choose and on what your opponent chooses.

*These games are zero-sum games, meaning your loss is your opponent's gain & vice versa.*

## Game 1: Chicken & Egg

Your opponent's strategies →	<b>Chicken</b>	<b>Egg</b>
Your strategies ↓		
<b>Chicken</b>	-2	3
<b>Egg</b>	1	2

Play this game a few times, keeping track of who chose what and how much you won/lost:

Turn	My choice (circle it)	My opponent's choice	My outcome
1	Chicken Egg	Chicken Egg	
2	Chicken Egg	Chicken Egg	
3	Chicken Egg	Chicken Egg	
4	Chicken Egg	Chicken Egg	
5	Chicken Egg	Chicken Egg	
6	Chicken Egg	Chicken Egg	
7	Chicken Egg	Chicken Egg	
8	Chicken Egg	Chicken Egg	

What initial thoughts do you have about this game?

Did your play or your opponent's play become predictable?

Were there any moves you ended up avoiding? Why?

Can you justify any of your strategies or intuition using the payoff matrix?

Who is more likely to come out on top in the long run with this game? Why?

**Game 2: Colour Wars**

Your opponent's strategies →	<b>Cyan</b>	<b>Magenta</b>	<b>Yellow</b>
Your strategies ↓			
<b>Red</b>	3	0	-1
<b>Blue</b>	-4	5	7
<b>Green</b>	2	-2	-5

Play this game a few times, keeping track of who chose what and how much you won/lost:

Turn	My choice (circle it)	My opponent's choice	My outcome
1	R B G	C M Y	
2	R B G	C M Y	
3	R B G	C M Y	
4	R B G	C M Y	
5	R B G	C M Y	
6	R B G	C M Y	
7	R B G	C M Y	
8	R B G	C M Y	
9	R B G	C M Y	
10	R B G	C M Y	

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Can you justify any of your strategies or intuition using the payoff matrix?

Who is more likely to come out on top in the long run with this game? Why?

# Game Theory Introduction: Zero-Sum Games PLAYER 2

You have a number of strategies you can choose from each time you play the game. The outcome will depend on what you choose and on what your opponent chooses.

*These games are zero-sum games, meaning your loss is your opponent's gain & vice versa.*

## Game 1: Chicken & Egg

Your opponent's strategies →	<b>Chicken</b>	<b>Egg</b>
Your strategies ↓		
<b>Chicken</b>	2	-1
<b>Egg</b>	-3	-2

Play this game a few times, keeping track of who chose what and how much you won/lost:

Turn	My choice (circle it)	My opponent's choice	My outcome
1	Chicken Egg	Chicken Egg	
2	Chicken Egg	Chicken Egg	
3	Chicken Egg	Chicken Egg	
4	Chicken Egg	Chicken Egg	
5	Chicken Egg	Chicken Egg	
6	Chicken Egg	Chicken Egg	
7	Chicken Egg	Chicken Egg	
8	Chicken Egg	Chicken Egg	

What initial thoughts do you have about this game?

Did your play or your opponent's play become predictable?

Were there any moves you ended up avoiding? Why?

Can you justify any of your strategies or intuition using the payoff matrix?

Who is more likely to come out on top in the long run with this game? Why?

**Game 2: Colour Wars**

Your opponent's strategies →	<b>Red</b>	<b>Blue</b>	<b>Green</b>
Your strategies ↓			
<b>Cyan</b>	-3	4	-2
<b>Magenta</b>	0	-5	2
<b>Yellow</b>	1	-7	5

Play this game a few times, keeping track of who chose what and how much you won/lost:

Turn	My choice (circle it)	My opponent's choice	My outcome
1	C M Y	R B G	
2	C M Y	R B G	
3	C M Y	R B G	
4	C M Y	R B G	
5	C M Y	R B G	
6	C M Y	R B G	
7	C M Y	R B G	
8	C M Y	R B G	
9	C M Y	R B G	
10	C M Y	R B G	

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