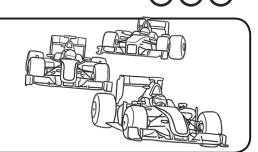


To show quarter past and quarter to times on a clock.

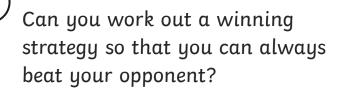
You will need:

- 2 players
- A clock with moveable hands



Game Instructions

- 1. Set the time on the clock to quarter past 6 to start the game.
- 2. Decide who will go first and be player 1 and who will go second and be player 2.
- 3. Take it in turns to move the hands of the clock by either half an hour or one hour. For example, player could choose one hour, so the clock hands move to quarter past 7. Player 2 may choose half an hour, so the clock hands then move to quarter to 7.
- 4. The winner is the player who moves the hands exactly onto quarter past 12.



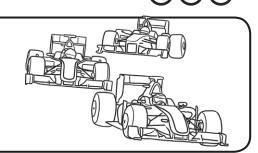




To show quarter past and quarter to times on a clock.

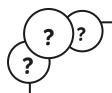
You will need:

- 2 players
- A clock with moveable hands

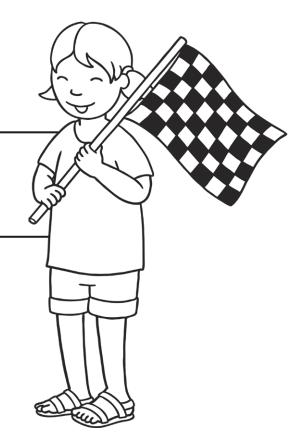


Game Instructions

- 1. Set the time on the clock to quarter past 3 to start the game.
- 2. Decide who will be Player 1 and who will be Player 2.
- 3. Take it in turns to move the hands of the clock by either half an hour, one hour or quarter of an hour. For example, player could choose one hour, so the clock hands move to quarter past 4. Then, Player 2 may choose half an hour, so the clock hands then move to quarter to 5.
- 4. The winner is the player who moves the hands exactly onto quarter past 12.



Can you work out a winning strategy so that you can always beat your opponent?

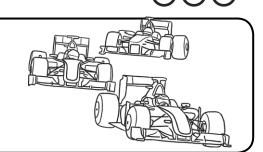




To show quarter past and quarter to times on a clock.

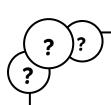
You will need:

- 2 players
- · A clock with moveable hands



Game Instructions

- 1. Set the time on the clock to quarter past 3 to start the game.
- 2. Decide who will be Player 1 and who will be Player 2.
- 3. Take it in turns to move the hands of the clock by either an hour, half an hour, quarter of an hour or three quarters of an hour. For example, Player 1 could choose one hour, so the clock hands move to quarter past 4. Then, Player 2 may choose half an hour, so the clock hands then move to quarter to 5.
- 4. The winner is the player who moves the hands exactly onto quarter past 12 o'clock.
- 5. Record the times that are made and the intervals chosen in order to help you notice any patterns. Explain how this can help you to find a winning strategy so that you can always beat your opponent.



Can you work out a winning strategy so that you can always beat your opponent?





				_
Start	Player 1	Player 2	Player 1	Player 2
11 12 1	11 12 1	11 12 1	11 12 1	11 12 1
9 • 3	9 • 3	9 • 3	(9 • 3)	9 • 3
8 4	8 4	8 4	8 4	8 4
7 6 5	7 6 5	7 6 5	7 6 5	7 6 5
Player 1	Player 2	Player 1	Player 2	Player 1
11 12 1	11 12 1	11 12 1	11 12 1	11 12 1
9 • 3	[9 • 3]	[9 • 3]	9 • 3	[9 • 3]
8 4	8 4	8 4	8 4	8 4
6 5	6 5.	6 5	6 5	6.5
Player 2	Player 1	Player 2	Player 1	Player 2
Player 2	Player 1	Player 2	Player 1	Player 2
Player 2	Player 1	Player 2	Player 1	Player 2
Player 2	Player 1 10 2 9 3 8 4	Player 2	Player 1 10 2 9 3 8 4	Player 2
Player 2	Player 1 10 2 9 3 8 7 6 5	Player 2 11 12 1 12 1 13 3 8 4	Player 1 11 12 10 2 9 3 8 4 7 6 5	Player 2
Player 2 10 10 2 3 8 7 6 5 Player 1	Player 1 10 10 2 9 4 Player 2	Player 2 10 10 2 3 8 7 6 5 Player 1	Player 1 10 10 2 3 8 7 6 5 Player 2	Player 2
11 12 1 10 2 9 • 3 8 4	11 12 1 10 2 9 • 3 8 4	11 12 1 10 2 9 3 3 8 4	11 12 1 10 2 9 3 8 4 7 6 5	Player 2
11 12 1 10 2 9 • 3 8 4	11 12 1 10 2 9 • 3 8 4	11 12 1 10 2 9 3 3 8 4	11 12 1 10 2 9 3 8 4 7 6 5	Player 2
11 12 1 10 2 9 • 3 8 4	11 12 1 10 2 9 • 3 8 4	11 12 1 10 2 9 3 3 8 4	11 12 1 10 2 9 3 8 4 7 6 5	Player 2

Can you explain how to win the game?