Everything You Need To Know About Formula One (14:03)

An F1 Grand Prix is an absolute festival of excitement and entertainment. Taking place over 3 to 4 days with all of the roaring action culminating in the race itself, a traditional Grand Prix weekend starts much sooner than that though, with three free practice sessions taking place over a couple of days before race day to kick things off. These sessions give the teams and drivers the chance to learn the track, experiment with the conditions and test the different setups and configurations they want to use in qualifying and the race.

After those practice sessions are completed, it's time for qualifying. In essence, this is where all the drivers go out and try to set up the fastest possible lap times they can across three knockout sessions: Q1, Q2 and Q3. The fastest driver to survive all knockouts starts the race from the very front of the grid, or pole position. Behind them are the other drivers ordered from qualifying lap time set in the rest of the starting positions for the race. The cars use a formation lap to line up in their starting or grid positions on a start/finish straight and wait for the lights to go out. And the race begins.

So, how is the duration of an F1 race decided? It's a case of simple maths. A Grand Prix distance is three hundred and five kilometers. So divide that by the length of a single lap and round it up to a whole number, and hey presto that's the number of laps for the race. The only exception is if any stoppages in the race cause it to run over a two-hour time limit. On the final lap, the first car to cross the finish line and take the checkered flag wins. Championship points are awarded for all drivers in the top ten at the end of the race, with 25 points being awarded for first place, just one single point for 10th place, plus a point if they set the fastest lap in the race. Drivers outside the top ten don't get any points though, even if they set the fastest lap in the race.

This traditional F1 race format is a little different on Sprint race weekends however. Teams only have one practice session before the competitive weekend starts, with Sprint qualifying and a shorter race called the F1 Sprint with extra points up for grabs. A Sprint weekend happens a few times per season at

predetermined races on the calendar. In some ways, it's like a regular F1 Grand Prix weekend with practice sessions to start things off and a Grand Prix race to finish. A key difference on Sprint weekends is with fewer practice sessions. It makes way for two exhilarating high tempo sessions: Sprint qualifying and the Sprint itself, a short race held the following day. Sprint qualifying decides the grid order for Saturday's Sprint. It's a shorter distance designed to be run with no mandatory pit stops, so more or less flat-out racing. Only the top eight finishes in a Sprint get points and fewer of them, but these extra points could prove crucial in a tight championship.

You may be surprised to learn that even getting an F1 race started successfully is not at all a straightforward process. Loads of moving parts and rolls are all required to work in complete harmony together to put on the show that is Formula 1 racing. Let's look at how it all goes down. The cars are moved from the garages to the grid around 40 to 50 minutes before the race is due to start. The drivers know which grid slot they need to place their cars into to get ready for racing. The qualifying session results decide that. Mechanics and engineers will keep the cars in the shape they need to be in the race whilst they sit on the grid. An F1 grid is also where some of the world's biggest celebrities, actors, sports stars, musicians and special guests can be seen amongst the drivers and cars.

Once race start time is approaching, the teams, mechanics and crew return to the garage, the cars roar into life, and we begin what's called the formation lap. This is a reduced speed tour around the circuit giving the drivers a chance to check all systems, to examine the conditions and crucially warm up their tyres and brakes before race start. F1 cars work best when those components are just the right temperature, so the formation preparation by a driver can help towards their race start and opening laps. This is why you see cars driving on the racing line in single file on a formation lap, avoiding any dust on the dirtier sides of the track which drivers don't want on their tyres potentially impacting their race start.

Once two cars have returned to their correct starting positions, if all is well, a green flag is waved at the back of the grid to communicate to the race starter that everything and everyone is ready to go. Finally the grandstands full quiet, hearts

are firmly in mouths, and attention shifts to the start lights above the start/finish line, as five red lights come on one by one.

You may be wondering why it's red lights going out rather than a green light to start the race. When red and green lights were used in the past, the red lights would go out and then green lights would start the race, a bit like your standard traffic lights for road cars. But here's a fun fact. Most drivers don't actually look directly at the lights at race start. They keep them in their periphery and focus on the track, which means that because of a minute pause between red lights extinguishing and green lights coming on, drivers learned that they could react more quickly to the red lights going off rather than waiting for the green. As a result of the green lights essentially becoming redundant, they were removed from the grid start procedure. But in terms of the race start procedure, as soon as those lights go out, it's race time.

There are times when a race start needs to be aborted. This could happen for many different reasons, from a car breaking down on a grid to there being a technical issue with officiating equipment like the lights or timing equipment, or of course, a drastic change in weather conditions. If a start does end up being aborted, the cars slowly lap the circuit just like on the formation lap, with no overtaking allowed. In the event of bad weather or reduced visibility, there is also the option of the race starting behind the safety car until it's deemed safe to race normally.

Whether it's pirates or train drivers or battleships, flags have been used as a form of visual communication for centuries. So why does something as technologically advanced as Formula 1 use this seemingly archaic system in its racing? It's the quickest, simplest and easiest form of communication if you need to get a message to all twenty racing drivers in one goal. Think of motorsports flags as like a very basic language with different flags used to communicate key messages to drivers visually as they travel at super fast speed around the track. These days it's not just flags. The same system is supported by track side electronic boards and driver dash displays on their steering wheels. This just makes it easier not to miss any messages and have them being displayed in more areas of the track.
So, what do all of the F1 flags mean? Let's start with one of the more commonly seen, yellow flags. A single yellow flag is waved when there is an incident in the

section of track ahead and tells the driver to reduce their speed and be prepared to navigate a hazard ahead. No overtaking is allowed during any yellow flag conditions, and it must be obvious that drivers have slowed their speed or they face being penalized. A double waved yellow flag means that drivers must reduce their speed significantly or be ready to stop. This may be because of a blockage on the track ahead or marshals either on or beside the track.

If a single or double yellow flag is waved during qualifying, drivers should abandon their current lap and visibly demonstrate they have done so by slowing down. A slight catch being that as yellow flags can be section specific that might not affect every driver trying to put in a fast lap depending on where in the lap they are when the flag or flags are waved, which means sometimes an element of luck either good or bad can help or hinder a driver during Quali when a yellow flag is waved. In some cases, during a double yellow flag period, the race director may impose a full course yellow, or FCY. This means that yellow flag rules apply to the entirety of the track until further notice. A yellow flag with red stripes is used to show drivers that the section of track ahead has suffered a significant reduction in grip due to something like an oil spillage or excess water. A big dropping grip can have pretty big consequences at F1 speeds.

What follows a yellow flag once a car is past the affected area of the track or when the issue is resolved completely, is a green flag. Green flag equals clear to go racing. Easy. So, go, go, go! A red flag means slow down immediately and prepare to stop while returning slowly and carefully to the pit lane with no overtaking permitted. The red flag is most commonly used in the event the circuit is deemed temporarily unraceable. A red flag neutralizes the race, preserving current race positions while pausing the action to allow any problems to be cleared up.

Then we have the blue flag, which can be a common thing to spot during a session. A blue flag's meaning differs based on the type of session. During free practice and qualifying, a blue flag indicates to a driver that faster cars are approaching behind or when they are leaving the pit lane. When shown during a race, a blue flag is shown to a driver or drivers that they are about to be lapped. When shown, the driver must allow the approaching car or cars to pass at the earliest opportunity.

A black and white flag is used for unsportsmanlike behaviour, overly aggressive or unsafe driving, but more commonly applied as an exceeding track limits warning. This flag tells the driver they're on their final warning before being given a time penalty. The rarely seen black flag with an orange dot, or the meatball flag if you're feeling particularly hungry, is a way of warning a driver that their car has damage and must return to the pits for repairs. Much like my grandmother's bolognese, the meatball black flag with an orange dot is final. Once it's shown, a driver will incur severe penalties if they fail to enter the pit for repairs.

A full, completely black flag is something no driver wants to see. It means the end of a driver's race and not in a good way. It means the driver is disqualified and must return to the pits immediately, the ultimate shame. They could be disqualified for their on-track behaviour or a technical infringement by the team might have been discovered. Either way, a black flag is terminal.

Then, there is of course the checkered flag. In practice or qualifying, it means time's up. Lap times are recorded until drivers see the flag. But once they pass this flag, they must return to the pits. For the race though, the checkered flag signals glory. It's waved at the finish line to the driver who completes the race distance first and then every driver behind them.

The F1 safety car isn't just something nice to look at, which it most definitely is. It's an essential part of hosting a successful and safe event. The race director decides when to deploy the safety car, and it's generally used when the incident is deemed too serious to be dealt with via the flag system alone, and it's time to get the big guns out. Once deployed, the safety car enters the circuit from the pit lane, and the car in first place must then follow the safety car at a reduced speed while the rest of the pack follows behind. No overtaking is permitted under safety car conditions, and drivers must drive at about the same speed as the car in front. This will help make for a tight pack of cars moving around the circuit at relatively low speed while any incidents can be dealt with. Safe as houses, any driver getting too close or too far from the cars around them will be penalized. Once an incident has been cleared, the race director will instruct the safety car driver on when they're expected to return to the pits. As the safety car peels away into the pit lane, the car in first place dictates and controls the pace of the rest of the pack. A driver is

forbidden from overtaking until their car passes the safety car line, a white line on the track that is usually placed around the beginning of the start/finish straight, making for a pretty tense and strategic restart where a race can be won or lost on the finest margins.

A virtual safety car, or VSC, is another way the race director can neutralize the race in the event of an incident. A VSC applies to the whole circuit and limits the drivers to a set slower, variable speed limit and lap time. The race director may use the VSC in situations that warrant a full safety car but need something more than double waved yellow flags. The benefit of a VSC over a regular safety car is that it preserves the gaps between the cars. If a driver has a huge lead and a regular safety car is deployed, that driver will lose the lead they've built up because all cars are required to line up single file behind the safety car. With a VSC, all drivers are kept to the same minimum lap time but without a physical safety car on track, meaning that any gaps between cars will be more or less preserved as they are.

Let's summarize. We've learnt about all the different flags used to send messages to drivers in the race, qualifying or practice session to keep them safe and playing by the rules. When they're not enough, there's the safety car and virtual safety car. These are all used in regular and shorter sprint races, which have different weekend formats. But both formats have a grid determined by qualifying with pole position at the front and the same race start procedure of five lights coming on then going out to signal to the drivers it's time to race. Let's go!