Name: _____ Date: _____

How Does Formula 1 Work?

Reading level 10 (6th grade) · 1321 words

On Wednesday night, Maya gets a text from her cousin. It says: How does Formula 1 work? Maya is a race engineer on a team, so she can answer in one breath. Eleven teams each bring two cars, which makes 22, and they race on tracks around the world. Every race is a weekend of practice, qualifying and the Grand Prix. Everything else is engineering, plus the rules that decide what engineers may build.

Practice comes first. On a standard weekend there are three one-hour sessions, two on Friday and one on Saturday. Teams usually use the first to check that the car works. The second is for long runs that copy the race, and the third is for short runs that prepare for qualifying. Practice times can mislead, because cars carry different fuel loads and use different tires. After the third session, parc ferme rules begin, and most work on the car is banned.

On Saturday Maya watches qualifying set the starting order, and it works by elimination. All 22 cars start the first round, and the slowest are out. The second round is shorter, and the slowest are out again. That fixes the back half of the grid, the starting lineup. Only ten cars are left for the third round, the shortest session of all. Their lap times set the front of the grid, and the fastest takes pole position, the front spot for Sunday.

The Grand Prix is the main event, and its length is not a fixed number of laps. It is the fewest laps needed to go past 305 kilometers, about 190 miles. A long track therefore means fewer laps. Monaco is a slower street circuit, so it uses a shorter limit. On the formation lap, the drivers weave from side to side to heat their tires. Then five red lights come on one by one, and when they all go out together, the race begins.

Points turn races into a championship. The top ten finishers score, and a win is worth 25 points. The points add up all season, and two titles are decided. The Drivers' Championship began with a race at Silverstone, in England, in 1950, and it has been contested every year since. The Constructors' Championship is the title for teams. There are no play-offs, so whoever has the most points at the end of the year wins the title.

Her cousin texts: why do the cars stick to the road? Maya gets to the part she loves. Downforce is the vertical part of the force of the air on the car. The air pushes the car down into the road, and more downforce lets it take corners faster. The same air also slows the car, and that is called drag. One team's guide to its 2022 car made a guess. At the end of a straight, it said, the downforce was probably three or four times the car's weight. The 2026 cars are built to make less.

Where does it come from? On the 2022 to 2025 cars, most of it came from the floor, with big contributions from the wings. For 2026 the tunnels under the car were replaced by a flatter floor. The wings are the easier parts to adjust, so teams change them to suit a track. There is a trade. More downforce makes the car feel planted in corners, but on a straight it can feel like a parachute. In Mexico, high above sea level, the air is thin. The same wings press the car down less.

Her cousin texts again: why can't a car just follow another one closely? Maya says it is because of the churned air behind a car, which engineers call dirty air. F1 research found that older cars lost nearly half of their downforce one car length, about 10 meters, behind another car. The 2022 design aimed to cut that loss to under a fifth. That was a design figure, not a result. FIA simulations reported in November 2025 put the loss for 2025 cars at about a third. The 2026 rules try again with a flatter floor.

Her cousin asks about pit stops, and Maya starts with tires. Pirelli is the sole tire supplier. In 2026 it makes five dry compounds, or rubber types, from C1, the hardest, to C5, the softest. It brings three of them to each race. Teams call them hard, medium and soft, marked white, yellow and red. A soft tire is fastest but wears out first, and that loss of speed is called degradation. In a dry race each driver must use at least two kinds, so every driver stops at least once.

The stop is Maya's favorite thing to watch. Three crew members work on each wheel. One loosens and tightens the nut, one takes off the old wheel, and one puts on the new one. A light lets the driver go only when the wheels are secure and the pit lane is clear. The fastest stop on record is 1.80 seconds, set by a McLaren crew in Qatar in October 2023. Through the Mexico City race in October 2026, nobody has beaten it.

Behind the driver sits what teams call a power unit, not just an engine. Until 2025 it was a turbocharged V6 with electric machines. They recovered energy from braking and from exhaust heat. Formula 1 calls those units the most reliable and most economical F1 engines of all time, and says they powered the fastest F1 cars ever. For 2026 the rules keep the V6 and drop the heat machine. They aim to raise the electric share of power from about 20 percent to about 50 percent.

Her cousin asks about passing. Maya says the tools changed this year. For years, F1 used DRS, a flap on the rear wing. A driver within one second of the car ahead could open it in marked zones. Some fans called its passes artificial, while others said it saved F1 from processional races. In 2026 DRS is gone. On marked straights any driver can open the wings to cut drag, and they close again in the corners. A new Overtake Mode gives a driver within one second of the car ahead extra electric energy for the next lap.

When something goes wrong, the track has several answers. Flags warn the drivers. Yellow means danger and no overtaking, and red stops the race. For bigger problems there is the

safety car, which leads the field with passing banned. The first was used in the 1973 Canadian Grand Prix, and it caused confusion over who was leading. For smaller problems there is the Virtual Safety Car. It sets a minimum time for each lap, so every driver has to slow down.

Her cousin asks if the cars are safe. Maya starts with the halo, a titanium roll cage that arches over the cockpit. It became part of the rules in 2018, to protect drivers from debris. One team's technical director said the chassis had to be strengthened for it. In his rough words, it had to take the weight of a London double-decker bus. He also admitted that drivers get out slower and some angles put bodywork in the line of sight. Still, he said, it stops some very rare but very real risks to a driver's life.

The last rule Maya mentions is about money. Before the cap, spending was unregulated, so richer teams could buy the best people and the best technology. The cost cap now limits spending that relates directly to the car's performance. In 2026 it is 215 million dollars per team, before a yearly adjustment for inflation. Formula 1 says that is roughly neutral once new items are counted inside it. Her cousin texts back, asking what the rules are all for. Maya opens the rule book to the aerodynamic section. The first aim it lists is simple: to promote close racing.

Questions

1. How is the length of a Grand Prix decided?

A. It is always 50 laps
B. It lasts exactly two hours
C. It is the fewest laps that go past 305 kilometers

2. Why does a car with a lot of downforce feel like it has a parachute on a straight?

A. The same air that presses it down also slows it
B. The tires are too hard
C. The engine is switched off

3. In the tire screen, "degradation" means

A. a tire's color code
B. a steady loss of performance from wear
C. a new tire supplier

4. What replaced DRS in 2026?

A. A bigger rear wing
B. A longer race
C. Wings that open on straights, plus Overtake Mode

5. Why does the book say a driver must stop at least once in a dry race?

A. The rules require at least two kinds of dry tire

B. The track closes after 30 laps

C. Teams must change drivers

6. What does the cost cap limit?

A. How fast the cars may go

B. Spending that relates directly to the car's performance

C. How many people attend a race

Words to know

downforce: air pushing down

drag: air slowing

degradation: wearing down

compound: tire rubber type

halo: cockpit roll cage

Answer key: How Does Formula 1 Work?

1. C. It is the fewest laps that go past 305 kilometers
2. A. The same air that presses it down also slows it
3. B. a steady loss of performance from wear
4. C. Wings that open on straights, plus Overtake Mode
5. A. The rules require at least two kinds of dry tire
6. B. Spending that relates directly to the car's performance