

7 MINUTES OF TERROR CHALLENGE!

Before it lands on Mars, the Perseverance rover (nicknamed Percy!) will first have to go through a hair-raising descent through the atmosphere, known as the 'seven minutes of terror'.



ENTRY

1 Percy enters the Martian atmosphere inside its protective aeroshell. It is travelling at 20,000 km/h and needs to slow down fast!
CHALLENGE: Run on the spot for 1 minute and 20 seconds.



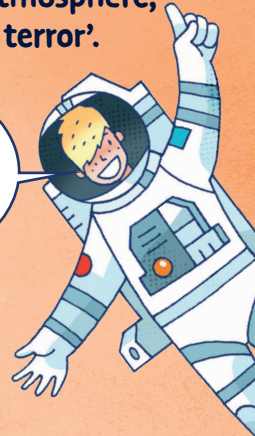
IT'S GETTING HOT!

2 The atmosphere slows the spacecraft to about 1,600 km/h. Air resistance causes the heat shield to glow as it heats up to 1,300 °C. Safe inside, Percy is only at about room temperature.
CHALLENGE: Put on as many jumpers, coats, hats, gloves and scarves as you can for 1 minute and 40 seconds.

You will need:

- Warm clothes
- Stopwatch
- Sheet
- Frisbee

Find out all about the rover's journey and take on your own seven-minute challenge!



PARACHUTE

3 At about 11 km above the surface, it's time to deploy the huge parachute.
CHALLENGE: Tie one end of a sheet around your waist, so the sheet is behind you, and hold the other two corners in your hands. Hold your hands above your head and run around for 20 seconds.



HEAT SHIELD DROP

4 At a speed of about 580 km/h, the heat shield separates and drops away. Percy now starts using its cameras and instruments to compare the surface below to its onboard maps and pick the safest spot to land.
CHALLENGE: Take off the warm clothes you put on in challenge 2 and throw a frisbee for 2 minutes, 30 seconds.



BACK SHELL SEPARATION

5 At just over 2 km above the surface, the rover is travelling at 320 km/h – still way too fast to land. It cuts loose its backshell and parachute and from now on it will be slowed by the 'descent stage' – a sort of jet pack on top of the lander carrying eight rocket engines.
CHALLENGE: Do push-ups for 58 seconds.

You can watch the last part of Percy's landing 'live' on February the 18th at 8pm here: go.nasa.gov/383zq1X
Messages sent from Mars take more than 11 minutes to reach Earth, so by the time you start watching, Percy will already be on the ground!



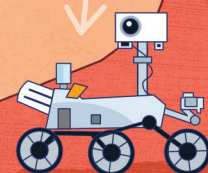
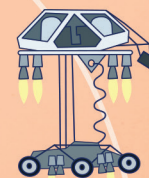
SKYCRANE

6 The rockets can't fire all the way to the ground because they would create a huge dust cloud that could damage the rover. At about 21 meters up, the descent stage lowers Percy on cables about 6.4 meters long.
CHALLENGE: Do one final push-up and then make your descent last for 12 seconds, until your nose gently touches the ground.



TOUCHDOWN

7 As soon as Percy senses that its wheels are on the ground, the cables are released and the descent stage flies away to crash-land a safe distance away.
YOUR CHALLENGE IS OVER: Have a rest and a drink of water!



Because of its thin atmosphere, landing on Mars is a tricky business, with only 40% of missions succeeding.

