

# BLOODHOUND SSC Maths



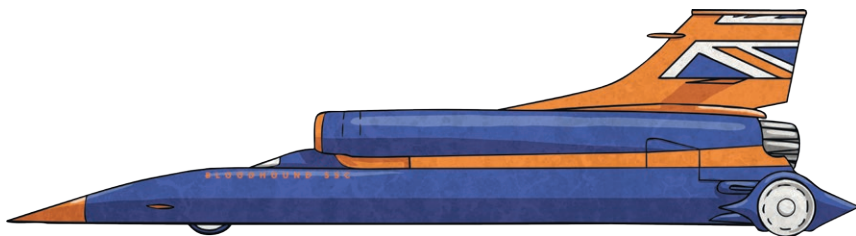
## BLOODHOUND SSC Maths

- 1 There is approximately 50km of wiring inside the BLOODHOUND SSC.  
Each wire is no more than 10m long.  
What is the minimum number of individual wires the car could contain?



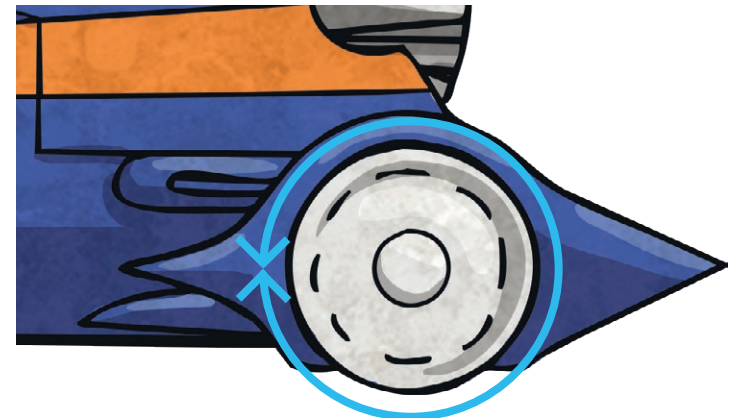
## BLOODHOUND SSC Maths

- 2 In September 1997, Andy Green set the world land speed record with a speed of 713.99mph. In October of the same year, he broke his own record, travelling at 763.035mph.  
What is the difference between the records?



## BLOODHOUND SSC Maths

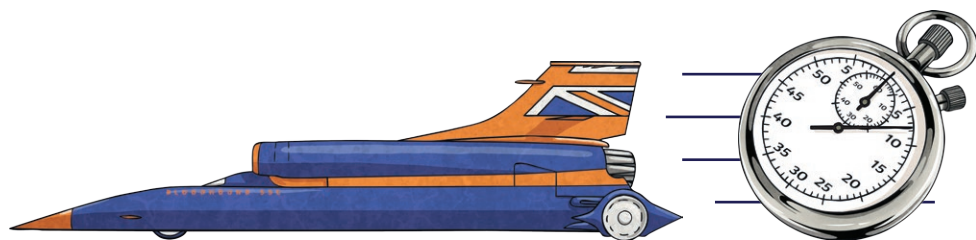
- 3 The circumference of the wheels on the BLOODHOUND SSC is 2.87m  
At top speed, they will rotate 10,000 times per minute.  
How far will the car travel in one minute?



BLOODHOUND SSC Maths

- 4 The BLOODHOUND SSC can carry 400 litres of fuel in its main tank.

If the car uses 5.3 litres of fuel per second at full speed, how long will 400l of fuel last?



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- 5 Scientists and engineers measure the weight of objects in Newtons.

When BLOODHOUND is accelerating, the g-forces increase from 1G to 2G and the weight of objects doubles.

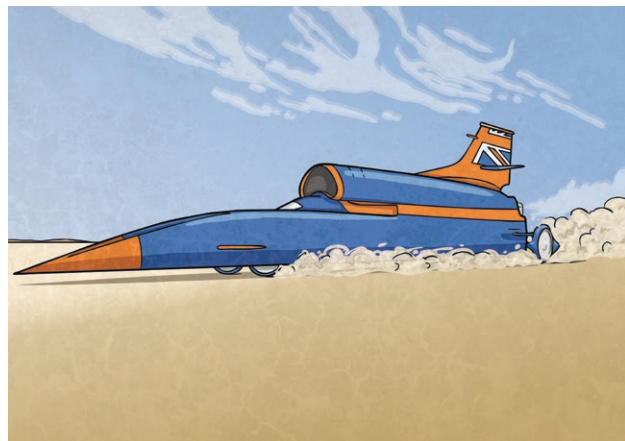
Can you work out the weight of these items at 1G and 2G?

Object	Weight at 1G (Newtons)	Weight at 2G (Newtons)
Andy Green	1000	
EuroJet engine	11,980	
Bloodhound (empty)	47,380	
Rocket engine		9000

BLOODHOUND SSC Maths

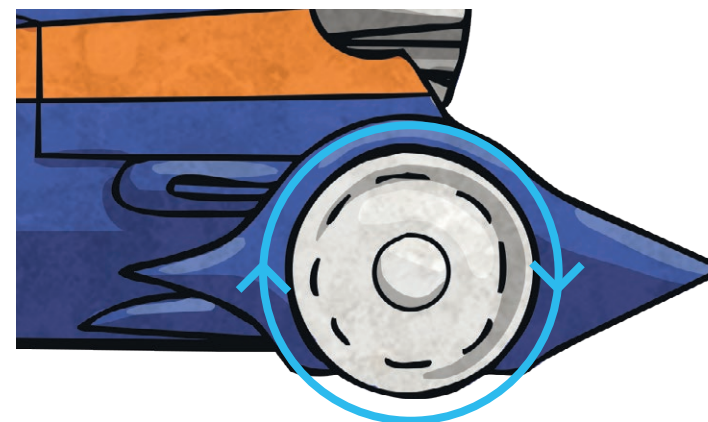
- 6 In September 2015, a practice build of BLOODHOUND used 95% of the final parts. 3002 parts were used.

In total, how many parts will the finished car have?



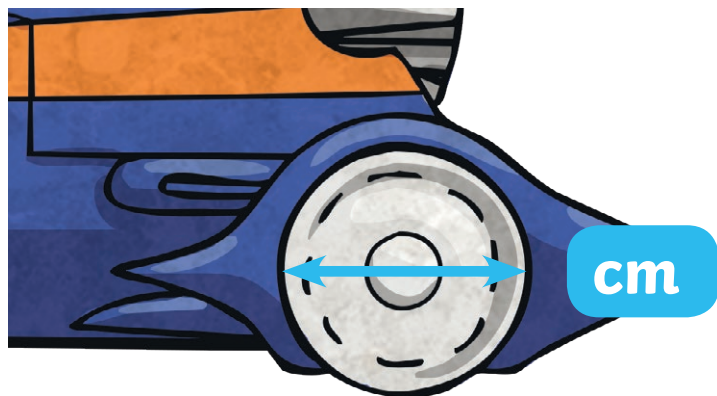
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- 7 The BLOODHOUND wheels were tested at a speed of 174 revolutions per second. How many revolutions is that per minute?



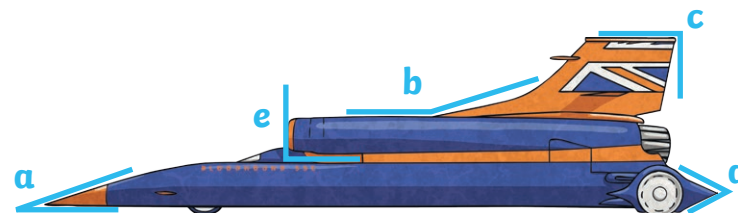
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- 8 One wheel has a diameter of 0.91m. During testing, the wheels grew 0.8cm due to the load on them and 0.35mm due to heat.  
What was the diameter of the wheel, in cm, during testing?



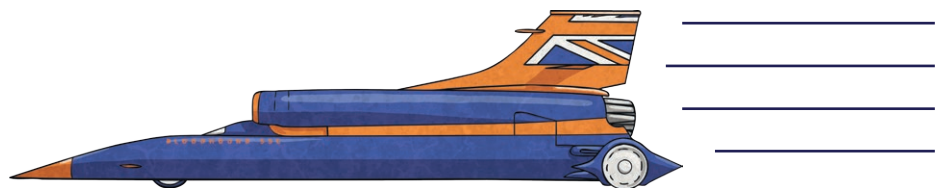
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- 9 Estimate the size of each of the labelled angles.



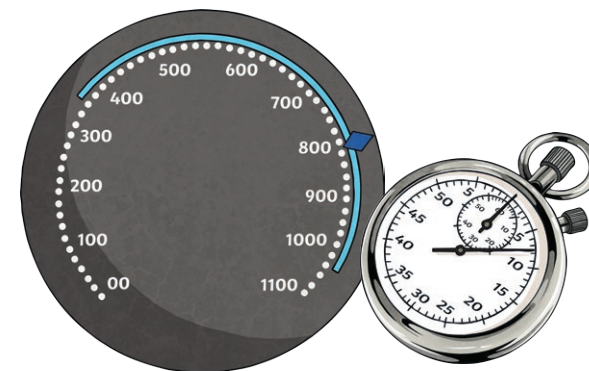
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- 10 The current land speed record is 1227.99km/h  
Round this speed to the nearest whole number.



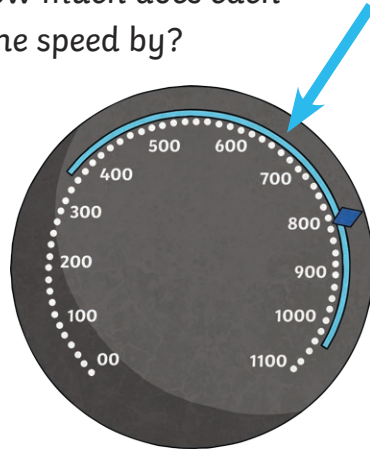
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- 11 The top speed of the BLOODHOUND SSC is designed to be 1050mph.  
How many miles is that per minute?



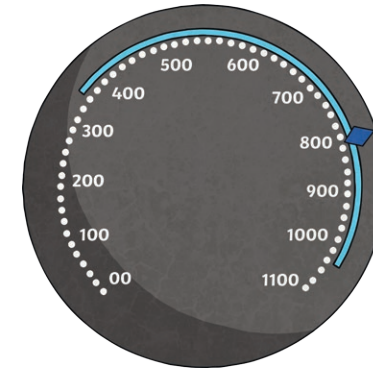
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- 12 The two airbrakes on the BLOODHOUND SSC reduce the car's speed from 800mph to 650mph. On average, how much does each brake reduce the speed by?



BLOODHOUND SSC Maths

- 13 Look at the speedometer below. The blue sector shows when the rocket is at full power. How much does the speed increase?



BLOODHOUND SSC Maths

- 14 To help the driver keep the car in a straight line, the driver steering to car turning ratio is 30:1. If the driver turns the steering wheel  $105^\circ$ , how far will the wheels on the ground turn?



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- 15 The BLOODHOUND SSC's rocket uses 40l of fuel per second. How much fuel does it use in 20 seconds?



# BLOODHOUND SSC Maths Answers

1. **5000**

2. **49.045mph**

3. **28 700m**

4. **75 seconds, or 1 min 15 seconds**

5.

Object	Weight at 1G (Newtons)	Weight at 2G (Newtons)
Andy Green	1000	<b>2000</b>
Parachute	<b>250</b>	500
Wheel	1050	<b>2100</b>
Fuel tank	600	<b>1200</b>

6. **3160**

7. **10 440**

8. **91.835cm**

9. **a – acute, b – obtuse, c – right-angle,  
d – acute, e – right-angle.**

10. **1228km/h**

11. **17.5 miles per minute**

12. **75mph**

13. **680mph**

14. **3.5°**

15. **800l**