# SPACE Maths Word Problems – Upper Key Stage 2 – Year 6

1. The Milky Way galaxy contains about 100,000,000,000 stars. If each star is home to 5 planets, how many planets are there in total in the Milky Way galaxy?

2. Astronomers discovered a new galaxy with 2,387,654 stars. Last year, they counted 1,982,345 stars in another nearby galaxy. How many more stars are there in the new galaxy compared to the nearby one?

3. A spacecraft travels at a speed of 25,000 km per hour. If it travels for 36 hours, how far will it have travelled in total?

4. On a mission to explore Mars, astronauts found that ⅗ of the mission's water supply had been used after 10 days. If they had brought 600 litres of water for the mission, how much water had been used, and how much is left?

5. To sustain astronauts in space, a spacecraft needs a mix of oxygen and nitrogen gases in the ratio of 3:7. If there are 210 litres of nitrogen gas, how much oxygen gas is needed?

6. A planet is 4 times the size of Earth. If Earth has a radius of 6,371 km, express the radius of this planet in terms of Earth's radius (r) and then calculate its size.

7. It takes 8 minutes for light to travel from the Sun to Earth, which is a distance of 149.6 million kilometres. If a spacecraft could travel at the same speed as light, how long would it take to travel to a planet that is 4 times as far away as Earth?

8. The International Space Station (ISS) has a solar panel that is 73 metres long and 32 metres wide. What is the area of one solar panel? If the ISS has 8 of these panels, what is the total area?

9. A new rocket has a cylindrical fuel tank with a radius of 3 metres and a height of 12 metres. Calculate the volume of the fuel tank. (Use $\pi = 3.14$)

10. NASA is monitoring solar flares on the surface of the Sun. In one month, they recorded the following number of solar flares each week: 5, 8, 6, 9, and 7. What is the average number of solar flares per week? What is the range?

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MARK SCHEME

1. The Milky Way galaxy contains about 100,000,000,000 stars. If each star is home to 5 planets, how many planets are there in total in the Milky Way galaxy?
   100,000,000,000 × 5 = 500,000,000,000 planets.

2. Astronomers discovered a new galaxy with 2,387,654 stars. Last year, they counted 1,982,345 stars in another nearby galaxy. How many more stars are there in the new galaxy compared to the nearby one?
   2,387,654 – 1,982,345 = 405,309 more stars.

3. A spacecraft travels at a speed of 25,000 km per hour. If it travels for 36 hours, how far will it have travelled in total?
   25,000km / h × 36hours = 900,000km.

4. On a mission to explore Mars, astronauts found that ⅗ of the mission's water supply had been used after 10 days. If they had brought 600 litres of water for the mission, how much water had been used, and how much is left?
   Water used:
   35 × 600 = 360 litres
   Water remaining:
   600 – 360 = 240 litres

5. To sustain astronauts in space, a spacecraft needs a mix of oxygen and nitrogen gases in the ratio of 3:7. If there are 210 litres of nitrogen gas, how much oxygen gas is needed?
   Ratio of oxygen to nitrogen = 3:7.
   For every 7 parts of nitrogen, there are 3 parts of oxygen.
   If 210 litres of nitrogen = 7 parts,
   then each part = 210/7 = 30 litres
   Oxygen needed = 3 × 30 = 90 litres

6. A planet is 4 times the size of Earth. If Earth has a radius of 6,371 km, express the radius of this planet in terms of Earth's radius (r) and then calculate its size.
   The planet's radius is 4r, where r = 6,371 km
   So the planet's radius = 4 × 6,371 = 25,484 km

7. It takes 8 minutes for light to travel from the Sun to Earth, which is a distance of 149.6 million kilometres. If a spacecraft could travel at the same speed as light, how long would it take to travel to a planet that is 4 times as far away as Earth?
   Distance to the planet = 4 × 149.6million km = 598.4million km.
   Time = 4 × 8 = 32 minutes.

8. The International Space Station (ISS) has a solar panel that is 73 metres long and 32 metres wide. What is the area of one solar panel? If the ISS has 8 of these panels, what is the total area?
   Area of one panel = 73 × 32 = 2,336 $m^2$
   Total area of 8 panels = 8 × 2,336 = 18,688 $m^2$

9. A new rocket has a cylindrical fuel tank with a radius of 3 metres and a height of 12 metres. Calculate the volume of the fuel tank. (Use $\pi = 3.14$)
   Volume of a cylinder = $\pi r^2 h$
   Volume = $3.14 \times 3^2 \times 12 = 3.14 \times 9 \times 12 = 339.12\ m^3$

10. NASA is monitoring solar flares on the surface of the Sun. In one month, they recorded the following number of solar flares each week: 5, 8, 6, 9, and 7. What is the average number of solar flares per week? What is the range?
    Total solar flares = 5 + 8 + 6 + 9 + 7 = 35.
    Average = 35/5 = 7 solar flares per week
    Range = 9–5 = 4.