**Standard Form - Real World Problems**

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| **1)** Use the information in the table to answer the questions below

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| **Planet** | **Image** | **Mass (kg)** | **Distance to Sun (km)** |
| **Saturn** | **http://www.mathster.com/assessment/qimages/Saturn_0.jpg** | $5.69×10^{26}$ | $1.43×10^{9}$ |
| **Neptune** | **http://www.mathster.com/assessment/qimages/Neptune.jpg** | $1.02×10^{26}$ | $4.5×10^{9}$ |
| **Jupiter** | **http://www.mathster.com/assessment/qimages/Jupiter.jpg** | $1.9×10^{27}$ | $7.78×10^{8}$ |
| **Mars** | **http://www.mathster.com/assessment/qimages/Mars.jpg** | $6.42×10^{23}$ | $2.28×10^{8}$ |

     a) Which planet is heaviest?     ..........     b) Which planet is nearest the sun?     ..........      | [1]   |
| **2)** Neptune is approximately  $4,504,299,596$ km from Earth.How many cars of length 3m could be placed end to end to reach Neptune from Earth?Give your answer in **standard form rounded to 3 significant figures**.       | [1]   |
| **3)** Uranus has a diameter of  $50724000$ metres. Calculate the volume of Uranus in  $m^{3}$, **giving your answer in standard form to 3 decimal places**.Note that the formula for volume of a sphere is  $V$ $=$ $\frac{4}{3}$ $π$ $r$ $\^3$ where  $r$ is radius.       | [1]   |
| **4)** Uranus is approximately  $2.87098924×10^{9}$kilometres from the Sun. Calculate the time is would take light to travel from the Sun to Uranus, **giving your answer to the nearest minute**.Note that the speed of light is  $2.99792458×10^{8}$ metres per second.       | [1]   |
| **5)** Uranus has a mass of  $8.682×10^{25}$kg and a volume of  $6.833×10^{22}$m $\^3$.Calculate the density of Uranus, giving your answer to 3 decimal places.Note that density is found by dividing mass (g) by volume (cm $\^3$).       | [1]   |

**Solutions for the assessment Standard Form - Real World Problems**

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| **1)** a) Jupiter, b) Mars | **2)**  $1.5×10^{12}$ |
| **3)**  $6.833×10^{22}$  $m^{3}$ | **4)** 160 minutes |
| **5)** 1.271  $\frac{g}{c}m^{3}$ |  |