**Science 1.1 AS 90940** Demonstrate understanding of aspects of mechanics



Writing Excellence answers to **Pressure** questions

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| **Pressure QUESTION** | |
| **Question: Q 1:** The chair (15.0 kg) has four legs in contact with the floor, whereas the base of the footstool (15.0 kg) does not have legs and is entirely in contact with the floor. The area of each chair leg in contact with the floor is 0.001 m2. Calculate the pressure that the chair (mass 15.0 kg) exerts on the carpet.  In your answer you must determine:  • the area of the chair legs in contact with the floor  • the weight force of the chair  • the pressure acting on the carpet.  A person sat on the chair and then sat on the footstool for the same period of time. They noticed that the chair legs left deeper marks in the carpet than the footstool did, although both the chair and footstool have the same mass.  Explain these differences in terms of pressure, force, and surface area. | |
| **ANSWER** | |
| 1. calculate the **surface area** of the chair (remember units and multiply by number of legs) |  |
| 2. calculate the **weight** of the chair  *F*w = *m* × *g* |  |
| 3. calculate the **pressure** of the chair with units  *P* = *F/A*  (some questions may ask you to calculate 2 objects) |  |
| 4. state the **surface area** of both and compare |  |
| 5. state the **weight** of both and compare |  |
| 6. explain the ***P* = *F* / *A*** *in words* |  |
| 7. **link pressure** to the situation in the question |  |

NOTE: The white column is how your answer would appear on your test paper so make sure you **write out complete sentences**. The grey area is just to help you structure your answer and would not appear in the question.