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| NATURAL SCIENCES DEPARTAMENT | Unit 7 practice examPhysics and Chemistry 10º  |
| Name and surname  |
| Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Mark. A\_\_\_\_\_. B\_\_\_\_\_. MYP\_\_\_\_\_. VC\_\_\_\_\_.\_\_\_\_\_.  |

1. **State** Newton´s 1st law.
2. **Show** which of the following produces the greatest pressure: 8 N on 2 m2, 200 N on 20000 cm2 and 50 N on 0.5 m2.
3. **Label** the following forces acting on the diagram below – gravity, normal, centripetal and friction.



1. **State** the equation for the law of universal gravitation and **describe** how it relates mass and distance to force.
2. The hydraulic system below is set up to lift a car with a mass of 500 kg on piston 2. **Calculate** the minimum force required at F1 to lift the car if A1 = 0.5 m2 and A2 = 4 m2.
3. A standard mercury barometer at sea level supports 760 mm Hg in a column with a cross sectional area of 1 cm2. **Explain** what would happen if the barometer was taken to the edge of the Dead Sea (no tinto the water) which has an altitude of 400 m below sea level.
4. **Calculate** the **difference** in hydrostatic pressure felt by a submarine at a depth of 200 and 400 m respectively. *Data: dsea water=1030 kg/m3*
5. A 600 kg car accelerates uniformly from rest for 30 seconds and reaches a speed of 120 m/s. It then collides with a tree. **Calculate** the force applied by the car hitting the tree.
6. The graph below shows data collected from a Hooke´s law invesitgation. **State** the equation for Hooke´s law and use it to **calculate** the extension constant, k.



1. **Explain** why liquids are more suitable in their use in hydraulic systems than gases and solids.
2. A cube of material X is placed in a container of distilled water. Half of the cube remains above the surface of the water as it floats. **Calculate** the mass of the cube. *Data: ddistilled water=1 g/cm3; cube side length = 2 m.*
3. The table below gives data about “*ratios compared with Earth*”. **Compare** and **explain** the similar values seen for force due to gravity on Venus and Saturn.



**Formulation**

1. Potassium permanganate 🡪
2. Sodium hydroxide 🡪
3. Calcium phosphate 🡪
4. Lead(II) iodide 🡪
5. Sulfuric acid 🡪
6. Beryllium oxide 🡪
7. Sodium nitrite 🡪
8. Zinc(II) arsenate 🡪
9. Iron(III) sulfite 🡪
10. Ammonia 🡪
11. LiCN 🡪
12. Mg(IO4)2 🡪
13. Fe(NO3)2 🡪
14. Zn(SCN)2 🡪
15. CH4 🡪
16. HBr 🡪
17. Mn(OH)2 🡪
18. Na3BO3 🡪
19. PdS 🡪
20. Au2O 🡪