2 individual physics task:

Edited at 2am 22.10.2017.

s is your student number. k = s mod 10000. T = s mod 100. m = s mod 35. a = s mod 25.

L = s mod 10. $d\_{2}=\frac{T-L}{10}$. e = s mod 8. m7 = s mod 7. m6 = s mod 6. m5 = s mod 5. m4 = s mod 4.

m3 = s mod 3. m2 = s mod 2. u = s + 10000.

1. Why do you need physics?

2. How many significant figures are there in your student number?

3. How many significant figures are in your T number?

4. Give the number of significant figures of the number for your T.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1: 8778000 | 2: 0.000567 | 3: 80600 | 4: 0.00067900 | 5: 346000 |
| 6: 0.000673 | 7: 95328000 | 8: 943258000 | 9: 0.000774 | 10: 9900 |
| 11: 987890 | 12: 0.0000561 | 13: 94034600 | 14: 900653540 | 15: 0.005469 |
| 16: 4365600 | 17: 0.003268 | 18: 456700 | 19: 467000 | 20: 0.0000676 |
| 21: 36.00800 | 22: 65.00 | 23: 0.00000 | 24: 7890000 | 25: 0.0003 |
| 26: 65765700 | 27: 0.000500 | 28: 56456000 | 29: 0.00056 | 30: 6756700 |
| 31: 674670 | 32: 0.00654 | 33: 434500 | 34: 0.020450 | 35: 8760076 |
| 36: 0.0065400 | 37: 5689400 | 38: 0.000600 | 39: 5930300 | 40: 0.007700 |
| 41: 4920010 | 42: 4090330 | 43: 0.0750000 | 44: 490304457 | 45: 0.0060700 |
| 46: 4790650 | 47: 0.0006277 | 48: 50403460 | 49: 0.0060600 | 50: 490400600 |
| 51: 000000 | 52: 589500 | 53: 96400800 | 54: 0.0045045 | 55: 358000500 |
| 56: 0.00143 | 57: 32122000 | 58: 1258000 | 59: 0.001474 | 60: 51200 |
| 61: 187890 | 62: 0.000021 | 63: 94034100 | 64: 200653540 | 65: 0.005419 |
| 66: 4362600 | 67: 0.003268 | 68: 412700 | 69: 427000 | 70: 0.0000671 |
| 71: 174170 | 72: 0.00214 | 73: 434300 | 74: 0.020410 | 75: 8230021 |
| 76: 0.0012400 | 77: 2189400 | 78: 0.000200 | 79: 1930300 | 80: 0.003200 |
| 81: 1920010 | 82: 4020330 | 83: 0.0120000 | 84: 490304432 | 85: 0.0060300 |
| 86: 000000 | 87: 589100 | 88: 92400800 | 89: 0.0041045 | 90: 358000200 |

5. Draw the example of:

m4 = 0: accurate and precise.

m4 = 1: accurate and NOT precise.

m4 = 2: NOT accurate and precise.

m4 = 3: NOT accurate and NOT precise.

6. Calculate the compound errors for x = s, dx = 1/T; y = T, dy = 1/k.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/compound\_errors.txt

7. Find x and y for projectile with x0 = y0 = 0, v0 = T m/s, t = T seconds, A = T degrees.

Find maximum distance and maximum height.

8. Find the angular speed and total acceleration for the rotational motion of the material point around the circumference with radius of T meters and constant linear speed of s meters per second.

9. Find gravity acceleration g, orbital velocity Vo and escape velocity Ve for planet with mass s billion tons and radius s millimeters.

https://physics18.weebly.com/uploads/5/9/8/5/59854633/g1orbital1velocity1escape1velocity13oct2017.txt

10. Calculate the Schwarzschild radius for the k grams desk.

http://physics16.weebly.com/uploads/5/9/8/5/59854633/radius4schwarzschild.txt

11. Find the displacement of a harmonic oscillator after s seconds with amplitude k, frequency k and initial phase k/2.

 http://physics16.weebly.com/uploads/5/9/8/5/59854633/harmonic4oscillator.txt

12. Solve the string oscillatory equation for v = T, frequency = L, Amplitude = T.

 Find the displacement after s seconds at m meters.

 https://physics18.weebly.com/uploads/5/9/8/5/59854633/string1wave1oscillation22oct2017.txt

13. The thermal expansion rate α is 1/k. The temperature change is T degrees.

 a. Find the extension of m meters rod due to the temperature change.

 b. Find the approximate volume change of m meters cubed cube due to the temperature change.

 http://physics16.weebly.com/uploads/5/9/8/5/59854633/thermal4expansion.txt

14. There are two bodies in a thermodynamically isolated system: C1 m1 T1 and C2 m2 T2. Find the resulting temperature T. m1 = k, m2 = 2k. C1 = k/11, C2 = k/222, T1 = k/111, T2 = k/22

 http://physics16.weebly.com/uploads/5/9/8/5/59854633/result4temperature.txt

15. Estimate the distances between the atoms of element number T in the periodic table of elements.

 http://physics16.weebly.com/uploads/5/9/8/5/59854633/distance\_between\_particles.txt

16. Find the force between two charges of L and T Coulombs for the distance apart of m meters.

 http://physics16.weebly.com/uploads/5/9/8/5/59854633/coulomb\_force.txt

17. Solve the simplified Maxwell Equations for c = 300000000-s, frequency = L, Amplitude = T.

 Find the intensity of electric field after s seconds at m meters.

 https://physics18.weebly.com/uploads/5/9/8/5/59854633/maxwel1wave1oscillation22oct2017.txt

18. Solve the password and the number puzzles problems for your s.

 http://calculus17.weebly.com

19. Try to solve the newest Zimmermann problem: http://azspcs.com/Contest/PrimorialSoup

20. Try to apply for USA citizenship.

https://www.dvlottery.state.gov/(S(ryg2hlfimnixem33etvdxxmd))/default.aspx

21. Try to apply for all grants, scholarships, fellowships, etc. in embassies of USA, Canada, Europe, Australia, Japan, etc.

22. Improve your project.

Deadline: 31.10.2017.