Name

Date

Period

Practice Problems from Torque PowerPoint

1) What is the torque produced by a 10N force applied to a door 0.5m from the hinge?

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| --- | --- | --- | --- |
|  |  |  | T= 5 N.m |

2) Calculate the torque due to gravity on a 3.0kg simple pendulum attached to a 1 meter long string at 10, 30, and 45 degrees from it’s at rest position. At what angle is the torque at its maximum?

(YOU NEED 3 SEPARATE SMALL EQUATIONS)

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| --- | --- | --- | --- |
| T- ?  m- 3.0kg  g- 9.81 m/s2  F- (3.0 kg \* 9.81m/s2)=29.43 N  d- 1 m  theta- 10, 30, 45 |  |  |  |

3) What is the mechanical advantage of a pulley that can raise a 80 N (output force) box by applying a 12 N (input force)force?

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|  |  | MA= 80 N  12 N |  |

4) If a machine has an efficiency of 55%, how much work would be done by 400 J with that machine?

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| --- | --- | --- | --- |
| Efficiency- 55% / 100= .55  W out- ?  W in- 400 J |  |  |  |

5) A teeter-totter is 3.0m long with the fulcrum in the middle. You notice that your friend has to sit 0.25m from one end with you on the other to balance the teeter-totter. If your mass is 45kg what is the mass of your friend?

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| --- | --- | --- | --- |
|  | F1 x d1 = F2 x d2 |  |  |

6) A meter stick has a 2.0kg mass on one end and a 5.0 kg mass on the other. Where would you place your finger to balance the meter stick?

EXTRA CREDIT # 6 ONLY

7) A spool of wire is being wound clockwise by a 20 N force applied 0.6 m from the center. The wire itself is resisting with a counter-clockwise pull of 7.0 N applied 0.2 m from the center. What is the net torque on the spool?

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|  | T1= Fd  T2= Fd  Net T= T1 – T2 |  |  |

8) Mindy who has a mass of 20.0 kg walks onto a support beam hanging 2.0 m off the edge of a building. Buttons grabs the other end of the beam which is 3.0 m away from the edge. What is the minimum force Buttons needs to apply to keep Mindy from falling?

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| M1- 20 kg  g- 9.81 m/s2  F1- (20 x 9.81)= 196.2 N  d1- 2 m  M2- ?  F2- ( x 9.81)= ?  d2- 3 m |  |  |  |