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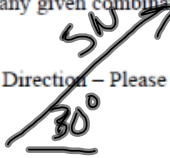
Power times time equals Energy.

- 20. Conservation of Energy:** Energy output of any given process cannot exceed the energy input to that process. Efficiency (η) of any machine or process = (Work Out)/(Work In) x 100% = (Energy Out)/(Energy In) x 100%, and is always less than "100%" unless an ideal machine or process is involved.
- 21. Coefficient of Friction (*unit-less*) = μ (*mu*) = F_f/F_N** = Friction Force divided by the Normal Force which is generally less than "1". There are distinct differences between the "Static" Coefficient of Friction and the "Dynamic" Coefficient of Friction for any given combinations of surfaces in that the "Static" Coefficient is usually larger.
- 22. Vector Delineation via Magnitude and Direction** – Please refer to associated document link on this "Study Guides" pull-down tab page.

- 23. Momentum = $P = (m)(V)$** = mass times velocity. In the absence of external forces momentum of a system is conserved, e.g. P_i (*Initial Momentum before a collision*) = P_f (*Final Momentum after a collision*).
- 24. Impulse, Change in Momentum:** (Force)(Δt) = $m(\Delta V) = \Delta P$.
- 25. Hooke's Law or Force due to a Spring:** $F_s = -(k)(x)$, where " F_s " is the force due to the spring due to its tension (*stretch*) or compression, " k " is the Spring characteristic in Newtons per Meter and " x " is the displacement (*stretch or compression*) of the Spring.

3

Done Unknown Zone



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finding + "center of mass" + "odd shapes"

Submit New Answers To Question 1 Save Work

2. +3.33 points Notes

An archer pulls her bow string back 0.50 m by exerting a force that increases uniformly from zero to 290 N.

(a) How much work does the archer do in pulling back the bow?
 J

(b) With what kinetic energy will the arrow leave the bow?
 J

(b) With what speed will the 0.35 kg arrow leave the bow?
 m/s

Submit New Answers To Question 2 Save Work

3. +3.33 points Notes

$F_{\text{Avg}} = ? = 145 \text{ N}$

$W_{\text{ork}} = [F][\Delta d]$

$= 72.5 \text{ J}$

0.5 m

Submit New Answers To Question 1 Save Work

2. 2.22/3.33 points All Submissions Notes

An archer pulls her bow string back 0.50 m by exerting a force that increases uniformly from zero to 290 N.

(a) How much work does the archer do in pulling back the bow?

72.5 ✓ J

(b) With what kinetic energy will the arrow leave the bow?

72.5 ✓ J

(b) With what speed will the 0.35 kg arrow leave the bow?

_____ m/s

$$72.5 = \frac{1}{2} m v^2$$

$$v = 20.35 \text{ m/s}$$

$$72.5 = (\frac{1}{2} \times 0.35) v^2$$

$$414.28 = \frac{72.5}{0.175} = \frac{(0.175) v^2}{0.175}$$

$$v^2 = 414.28$$

$$\therefore v = \sqrt{414.28}$$

Submit New Answers To Question 2 Save Work

3. -3.33 points Notes

$$.0138 \text{ s} \rightarrow 137.68$$

vs

$$0.0163 \text{ s} \rightarrow v = 116 \frac{\text{cm}}{\text{s}}$$

$$.0112 \text{ s} \rightarrow v = 169 \frac{\text{cm}}{\text{s}}$$

$$\frac{1.9 \text{ cm}}{\Delta t} =$$