NO clickers & yes calculators

Have out the study guide from ch. 8 to correct and a red pen.

Mar 15-11:36 AM

Do page 200 problems 1-9 all 10 is extra credit.

Try doing sit-ups with your arms behind your head and with your arms straight out in front of you.

Mar 15-11:38 AM

A force applied to a spinning object will change its angular velocity. (starting a lawn mower)

Door - Where to push?

a) Farthest from the hinge -

b) Closest to the hinge -

Remove a lug nut on a tire with a torque wrench at different angles.

a) 

b) 

c) 

which would be the easiest to move? If no idea look in your book on page 201.

Mar 15-11:41 AM

A was the easiest because the wrench is perpendicular = 90°

Which would be second B or C?

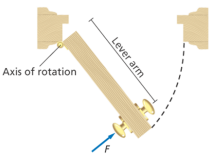
B 60° = 8 C 30° = 7

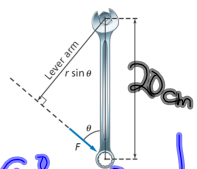
Let's calculate: $L = r \cdot \sin\theta$

$r = .20\ m$

$L_B = (.2)(\sin 60°) = 0.17\ m$

$L_C = (.2)(\sin 30°) = 0.10\ m$





90° = 0.2m

by pulling at a angle less than 90 degrees decreases the length of the wrench

Shorter length = MORE force required

Mar 15-11:49 AM

Torque -

a) measure of how effectively a force causes rotation

b) Measured in N-m

Newton meters

c) τ (Greek letter tau)

d) Formula: $\tau = f \cdot r \cdot \sin\theta$

$f \cdot L$

Mar 15-11:56 AM

A bolt on a car engine needs to be tightened with a torque of 35 N-m. You use a 25 cm long wrench and pull on the end of the wrench at an angle of 60 degrees. How long is the lever arm, and how much force do you exert?

$r = .25m$

$\tau = 35\ N\text{-}m$

$\theta = 60°$

$\tau = f \cdot r \cdot \sin\theta$

$L = r \cdot \sin\theta$

$L = (25m)(\sin 60°)$

$L = 0.22m$

Shortens the wrench

$\frac{35\ Nm}{0.22} = \frac{f \cdot 0.22m}{0.22}$

$= 159N$

$\frac{35\ Nm}{(.25m)(\sin 60°)} = \frac{f \cdot (.25m)(\sin 60°)}{(.25m)(\sin 60°)}$

$= 162N$

Mar 15-12:15 PM

A bolt on a car engine needs to be tightened with a torque o 35 N-m. You use a 25 cm long wrench. How long is the lever arm and the least amount of force?

toget

$r = .25\text{cm}$

$\tau = 35\text{N-m}$

$\theta = 90^\circ$

*

$L = .25(\sin 90^\circ)$

$L = .25\text{ m}$

$\frac{35}{.25} = \frac{.25 \cdot f}{.25}$

$f = 140\text{ N}$

Mar 15-12:18 PM

GOING OUTSIDE - MIGHT WANT a COAT!!

No clickers & yes calculators.

Have out the 8.2 notes to complete AND find the ANGLE to use for the LAST problem!!

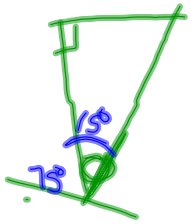
Mar 16-10:05 AM

A bolt on a car engine needs to be tightened with a torque of 35 N-m. You use a 25 cm long wrench and pull on the end of the wrench at an angle of 75 degrees to the perpendicular. How long is the lever arm and how much force do you exert?

$L = r \cdot \sin\theta$

$L = .25 \cdot \sin 15$

$L = .065\ m$



$\tau = f \cdot r \cdot \sin\theta$

$540.92N$

$F = 538.46N$

$\frac{35}{.065} = \frac{f \cdot .065}{.065}$

$\frac{35}{.25\sin 15} = \frac{f \cdot .25\sin 15}{.25\sin 15}$

Mar 15-12:25 PM

b. $\frac{1}{2.36 \times 10^{6}} = 2.66 \times 10^{-6}$

$V = r \cdot \omega$

(1.74×10^{6})

$a = r \cdot \alpha$

$\frac{a}{\alpha} = r$

Mar 16-1:07 PM