#2 simple machines

$$\frac{D_{in}}{D_{out}} = \frac{2\pi r}{P}$$

$$\frac{L}{H} = \frac{D_{in}}{D_{out}} = \frac{F_{out}}{F_{in}}$$

$$\frac{D_{in}}{D_{out}} = \frac{5ft}{1.5ft} = 3.3$$

PHYSIC

1 - 12

w2.weather.gov/climate php?wfo=msc

$$\frac{3790N}{F_N}$$

$$= \frac{282}{F_N} =$$

1128N

$$E = in \qquad R = out$$

wheel / Axle

$$\frac{D_{in}}{D_{out}} = \frac{F_{out}}{F_{in}}$$

Pulley

strings

$$\frac{D_{in}}{D_{out}}$$

Lever

$$\frac{L_{in}}{L_{out}} = \frac{F_{out}}{F_{in}} = \frac{D_{in}}{D_{out}}$$

3 str.

2 89

#3 Gear systems

O
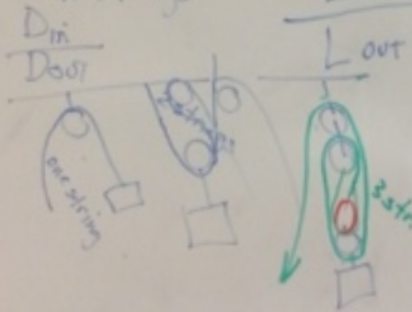
$$\text{ratio} - \frac{\text{teeth in}}{\text{teeth out}} \qquad \frac{n_{in}}{n_{out}} \qquad \frac{8}{24}$$

$$\text{torque} \quad \frac{T_{in}}{T_{out}} = \frac{2 \text{ ft lbs}}{6 \text{ ft lbs}}$$

$$\text{rpm} \quad \frac{\omega_{out}}{\omega_{in}} = \frac{0.33 \text{ rpm}}{1 \text{ rpm}}$$

just transfer
but don't affect

8 24 6 32

$$\frac{5}{x} = \frac{8}{32}$$

5 ft lbs

? 20 ft lbs
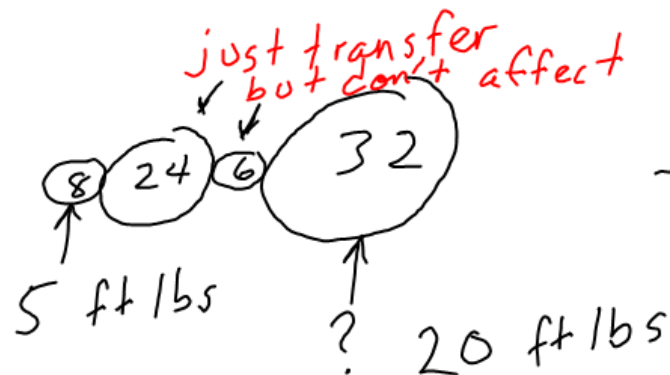
#4 Outline diff. betw renewable/non-ren. energy

Factors

	cost $\$/J$	accessibility abund renew	Pollution	dangers	energy output
		10	5 - 8	9.	2 - 3
solar	3	5	0 - 3	0 - 3	7 - 8
coal	8	10	0	*0	*0	5
nuke	1	5	10	*8	5
hydro	3	(5)			

#5   Wire a circuit

Breadboard
resistor
LED
wires
switch — for a 4
power supply — 1.5 / 3 V

series

V — res — led — A

sw — power
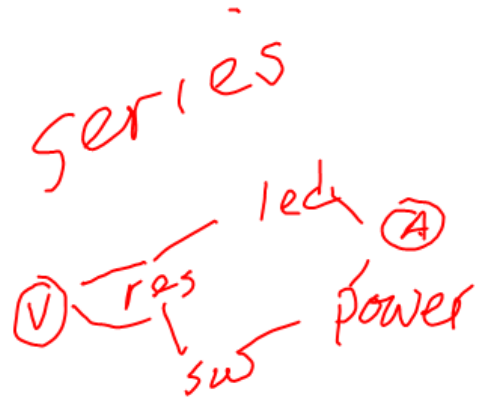
6

Volts and Amps
-
In your circuit

Ammeter: - move the cables!

— In series with circuit

mA   DC 2V

Amps

Volts (com)

10ADC

wiseGEEK

#7 - Efficiency of Motor

$$\frac{\text{Power}_{OUT}}{\text{Power in}} \times 100\%$$

$$P_{OUT} = \frac{mgh}{time} = \frac{kg \times 9.8 \times meters}{seconds} = W$$

$$P_{in} = IV = current \times voltage$$
$$= Amps \times Volts = W$$

#8   Voltage / Current
through solar/hydrogen car

Not sure if I'll assess
this one at all!
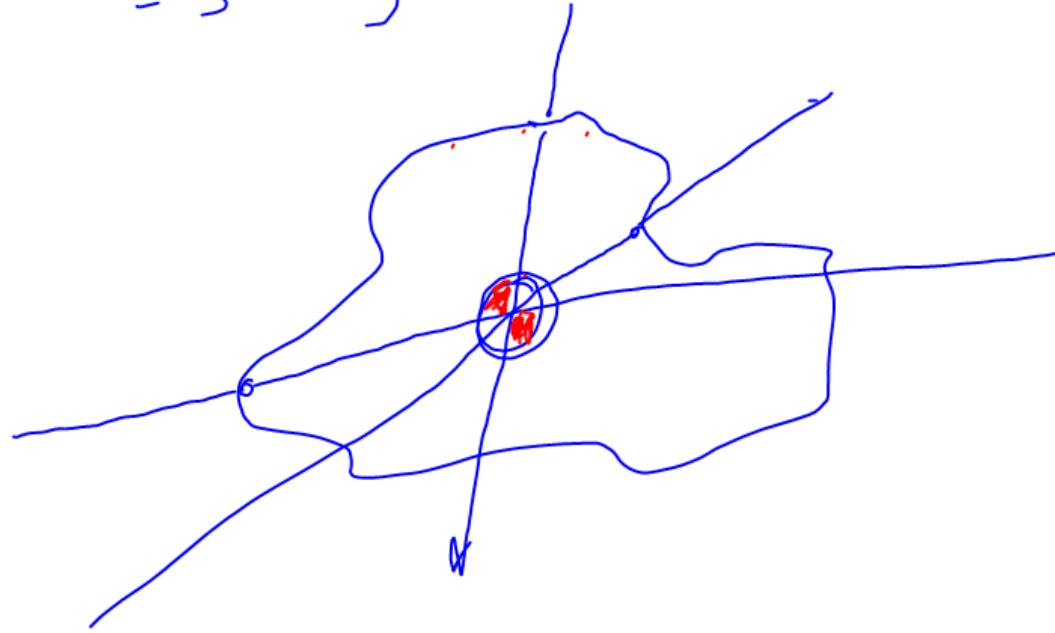
#9   R-value

$$u = \frac{1}{R} = \frac{k}{L}$$

$$P = \frac{k A \Delta t}{L}$$

$$k = \frac{PL}{A \Delta t}$$

Probably will be heat
flow problem, rather
than R value

#10   Centroids

- string method

#11 Beam Deflection

$$\Delta max = \frac{FL^3}{48eI}$$

weight

$lbs \times \frac{feet^3}{inch}$

length of beam (in)

mom. of inertia

~~feet~~ inches

modulus of elasticity

$\frac{lbs}{in^2} \cdot in^4$

#12 Code to turn Vex motor
       at x rpm for t time