22.1 Use $V_{emf} = vB\ell$, and solve for v.

22.7 (a) Use $P = \frac{V_{emf}^2}{R}$ and $V_{emf} = vB\ell$.

(b) Use $F = IB\ell$ and $I = \frac{P}{V}$

22.17 (a) Use $|V_{emf}| = N\frac{\Delta\Phi}{\Delta t}$

(b) Use Ohm's law.

22.21 Use $|V_{emf}| = \frac{\Delta\Phi}{\Delta t}$ and $\Phi = BA$, then solve for Δt.

22.31 Ask the instructor.

22.35 (a) Use $f = 1/T$.

(b) Use $\omega = 2\pi f$

(c) Use $V_{emf_0} = NAB\omega$

22.45 Use $N\Phi = LI$; $\Phi = BA$; $B = \mu_0 n I$; $N = n\ell$.

22.49 Use Energy density $= \frac{\text{Energy}}{\text{Volume}} = \frac{1}{2\mu_0}B^2$, but the energy is "Energy density" × "Volume."

22.55 Use $\frac{N_S}{N_P} = \frac{V_S}{V_P}$.

22.59 (a) Find the total resistance.

Use $I = \frac{P}{V}$, then $P = I^2R$

(b) Use $\frac{V_S}{V_P} = \frac{N_S}{N_P}$. Find $I = \frac{P}{V}$.

Then calculate $P = I^2R$.