HW 3.4 Ch.13 #22, 23, 17, 19

13.22)

$1\frac{1}{2} \times 3 - 6$

$x \times y - z$

- $1\frac{1}{2}$" = nominal discharge connection size
- 3" = nominal suction connection
- 6" = casting size of largest impeller

13.23) Given: Q = 100 gal/min H = 300 ft

$1\frac{1}{2} \times 3 - 10$

$1\frac{1}{2}$: discharge connection; 3: suction connection; 10: casting size (in).

13.17)

$$\frac{h_{a1}}{n_{s1}} = \left(\frac{N_1}{N_2}\right)^2$$

$$h_{a1} = \left(\frac{.5N_1}{N_1}\right)^2 = .25h_{a1}$$

h_a divided by 4.

13.19) $\frac{Q}{Q_2} = \frac{P_1}{P_2}$

$Q_2 = Q\frac{P_2}{P_1}$

$= Q \cdot \frac{.75D_1}{D_1}$

$= .75Q_1 = 25\%$ reduction.