

AS

$$(a) A_1 U_1 = A_2 U_2$$

$$W h_1 U_1 = W h_2 U_2$$

$$U_2 = \frac{h_1}{h_2} U_1 = \frac{5}{-2} U_1 = \underline{2.5} U_1$$

$$(b) g h_1 + \frac{U_1^2}{2} = g h_2 + \frac{U_2^2}{2}$$

$$\frac{1}{2} (U_1^2 - U_2^2) = g (h_2 - h_1)$$

$U_2 = 2.5 U_1$ & ~~substitute into eq 2~~

$$U_1 = \underline{3.3} \text{ m/s}$$

$$(c) U_2 = \underline{8.3} \text{ m/s}$$

$$(d) Q = A_1 U_1 = W h_1 U_1 = \underline{132} \text{ m}^3/\text{s}$$