Interpret R output in Holt Winters function

	Smoothing Equation	R out put language
Simple Exponential $= \beta_0 + \varepsilon_t$ ← wh. noise ↑ mean/level	$l_t = \hat{Y}_t = \alpha Y_{t-1} + (1-\alpha) l_{t-1}$; $0<\alpha<1$. ↑ smoothing filter.	estimate of β_0 is $\hat{\beta}_0 = a$ (in R) α = alpha (in R)
olt Exponential Smoothing. $= \beta_0 + \beta_1 t + \varepsilon_t$. ↑ mean/level ↖ Growth (trend rate)	$l_t = \hat{Y}_t = \alpha Y_t + (1-\alpha)(l_{t-1} + b_{t-1})$ → smoothing eqn for level $b_t = \gamma (l_t - l_{t-1}) + (1-\gamma) b_{t-1}$ → smoothing eqn for trend smoothing filters α, γ.	$\hat{\beta}_0 = a$ (in R) $\hat{\beta}_1 = b$ (in R) α = alpha (in R) γ = beta (in R.
t Winters ponential method $= (\beta_0 + \beta_1 t) S_{N_t} \times \varepsilon_t$ (I_{R_t}) Multiplicative $= (\beta_0 + \beta_1 t) + S_{N_t} + \varepsilon_t$ Additive.	$l_t = \alpha (y_t / Sn_{t-l}) + (1-\alpha)(l_{t-1} + b_{t-1})$ $b_t = \gamma (l_t - l_{t-1}) + (1-\gamma) b_{t-1}$ $Sn_t = \delta (y_t / l_t) + (1-\delta) Sn_{t-l}$ l = no of seasons in a year For monthly $l=12$, for quarterly $l=4$	$\hat{\beta}_0 = a$ (in R) $\hat{\beta}_1 = b$ (in R) $s_1, s_2, \ldots, s_{12}$ = seasonal effect estimation (monthly data) α = alpha (in R) γ = beta (in R) δ = delta (in R)