30. Correct. The answer is true.

	Y	Y1	Y2	E	E1	E2	S1= Y1/Y	S2= Y2/Y	I= E/Y	I1= E1/Y1	I2= E2/Y2
2000	100	40	60	21	6	15	0.40	0.60	0.27	0.30	0.25
2010	200	50	150	70	40	30	0.25	0.75	0.35	0.80	0.20

From the share and energy intensity of each sector, you can see that

a. Sector 2 is larger in 2000 and 2010: $S2_{2000} > S1_{2000}$ (0.60 > 0.40) and $S2_{2010} > S1_{2010}$ (0.75 > 0.25)

b. Sector 2 must be growing faster since its share is increasing.

Remember a growth rate for a variable in the discrete case is $\Delta X/X$. To get the continuous growth rate, take the log of the variable lnX and its derivative with respect to t to get $\partial \ln(X)/\partial t = (\partial X/\partial t)/X$ = the growth rate of X. To investigate the growth rate of S1 and S2 note the

$$\frac{\partial \ln S1}{\partial t} = \frac{\partial \ln(Y1/Y)}{\partial t} = \frac{\partial \ln Y1}{\partial t} - \frac{\partial \ln Y}{\partial t}$$

Or the growth rate in the share of sector 1 equals the growth rate in sector 1 minus the growth rate for the economy.

$$\frac{\partial \ln S2}{\partial t} = \frac{\partial \ln(Y2/Y)}{\partial t} = \frac{\partial \ln Y2}{\partial t} - \frac{\partial \ln Y}{\partial t}$$

Or the growth rate in the share of sector 2 equals the growth rate in sector 2 minus the growth rate for the economy.

Since sector 1's share is decreasing $\partial \ln(S1)/\partial t < 0$ and its growth rate must be less than that for the whole economy.

Since sector 2's share is increasing $\partial \ln(S2)/\partial t > 0$ and its growth rate must be greater than that for the whole economy.

Thus, sector 2 is growing faster than sector 1.

c. Sector 2 is the least energy intensive in 2000 and 2010. $I2_{2000} < I1_{2000}$ (0.25 < 0.30) and $I2_{2010} < I1_{2010}$ (0.20 < 0.80)