Growing goats, 45 Alpine and 45 Nubian, were used in a 3 × 3 factorial arrangement to quantify the influence of dietary energy and protein levels on daily DM intake and nutrient utilization for growth. Goats had ad libitum access to complete mixed diets containing either 2.46, 2.77 or 3.05 Mcal/kg ME plus 11.2, 12.7 or 15.1% CP for 16 wk. Dry matter intake decreased curvilinearly as dietary ME density increased ($P < .001$). Dry matter intake increased linearly ($P < .05$) as dietary CP level increased during all growth intervals except wk 25 to 28 of age. Average daily gain was 115, 113 and 99 g/d for goats fed diets containing 2.46, 2.77 and 3.05 Mcal/kg ME, respectively. Average daily gain was 104, 106 and 117 g/d for goats fed diets with 11.2, 12.7 and 15.1% CP, respectively. Dry matter intake was higher ($P < .01$) for Alpine than for Nubian goats, whereas ADG was similar between breeds. Intake of ME was 248, 260 and 198 kcal/(kg.75.d) for goats fed the low- medium- and high-energy diets, respectively. Intake of CP was 9.1, 10.7 and 13.2 g/(kg.75.d) for goats fed low-, medium- and high-protein diets, respectively. Average requirements for growth derived from regression analysis of all data points were 4.6 kcal ME and .26 g CP/g ADG. The prediction equation for intake of growing goats of 4 to 8 mo of age was: DMI, g/d = 1,749 - 496 DE, kcal/g + 18 live weight, kg + 3 ADG, g/d; r2 = .73 (Sy.x = 127, $P < .0001$, n = 90). The requirement of ME for growth was 33% lower than the value recommended in 1981 by the National Research Council.