

Design a circuit using ideal op amps and resistors that takes four inputs, v_a , v_b , v_c , and v_d and produces an output that is a weighted combination of the inputs:

$$v_o = -2v_a - 6v_b + 8v_c + 5v_d.$$

Specify your design in terms of resistor ratios, not absolute resistor values. For example, $R_2/R_1 = 10$ rather than $R_2 = 10 \text{ k}\Omega$ and $R_1 = 1 \text{ k}\Omega$.

Also, you cannot arbitrarily change the polarity of an input voltages. (You cannot “turn it upside down” to get a negative source voltage.) Any issues with signs must be handled through appropriate op-amp sub-circuits.