

$$\begin{aligned}
& B_1 + B_2 + 2B_3 \\
&= B_1 + (B_3 - B_1) + B_1 + 2(B_2 - B_3) + 2B_3 \\
&= 2B_1 + (B_3 - B_1) + 2(B_2 - B_3) + 2(B_3 - B_1) + 2B_3 \\
&= 4B_1 + 3(B_3 - B_1) + 2(B_2 - B_3)
\end{aligned}$$

$$B_1 \sim \text{NORMAL}(0, 1) \quad 4B_1 \sim \text{NORMAL}(0, 4^2)$$

$$B_3 - B_1 \sim \text{NORMAL}(0, 2) \quad 3(B_3 - B_1) \sim \text{NORMAL}(0, 2 \cdot 3^2)$$

$$2(B_2 - B_3) \sim \text{NORMAL}(0, 4 \cdot 2^2)$$

RESULT HAS EXPECTATION 0, VARIANCE $4^2 + 2 \cdot 3^2 + 4 \cdot 2^2 = 50$
 AND IT IS NORMAL: SO $\text{NORMAL}(0, 50)$