Gain-Stage Arithmetic

Track a peak through a simple series of level changes.

Name _____ Date _____

This clean mono signal starts at -18 dBFS. Each stage is only a gain change: add its signed dB value. No compression, limiting, or mixing occurs. The final fixed-point output must stay below 0 dBFS.

Stage	Gain change	Order
A	+6 dB	First
B	+3 dB	Second
C	-4 dB	Third

Use the model above. Write a brief answer for each item.

1. What is the peak after A?

2. What is the peak after B?

3. What is the final peak after C?

4. What is the net gain change across A, B, and C?

5. How far below 0 dBFS is the final peak?

6. Replace C with +10 dB. What final peak would the arithmetic predict?

7. In that changed chain, reduce gain by 4 dB. What peak is predicted?

8. Would this arithmetic alone prove that a real recording is free of distortion?

Gain-Stage Arithmetic

Track a peak through a simple series of level changes.

Name _____ Date _____

This clean mono signal starts at -18 dBFS. Each stage is only a gain change: add its signed dB value. No compression, limiting, or mixing occurs. The final fixed-point output must stay below 0 dBFS.

Stage	Gain change	Order
A	+6 dB	First
B	+3 dB	Second
C	-4 dB	Third

Use the model above. Write a brief answer for each item.

1. What is the peak after A?

-12 dBFS

2. What is the peak after B?

-9 dBFS

3. What is the final peak after C?

-13 dBFS

4. What is the net gain change across A, B, and C?

+5 dB

5. How far below 0 dBFS is the final peak?

13 dB

6. Replace C with +10 dB. What final peak would the arithmetic predict?

+1 dBFS: above the stated output limit.

7. In that changed chain, reduce gain by 4 dB. What peak is predicted?

-3 dBFS

8. Would this arithmetic alone prove that a real recording is free of distortion?

No. Check the actual signal and listen for distortion.