Cancelling in Fractions Example

Math 130 *Kovitz*

Reduce to an equivalent form that has no fractions.

$$\frac{-8 \pm 24\sqrt{3}}{-4}$$

This problem may be done by factoring the numerator, then cancelling; or by splitting into two fractions and then cancelling in each fraction. The factoring method is to be preferred because—while in this case both work just as well—when there are many terms, the factoring method is more efficient.

Strategy: Factoring First

$\frac{(-4)(2 \pm 6\sqrt{3})}{-4}$	From the numerator factor -4, not the largest common factor -8.
$2 \pm 6\sqrt{3}$	The factor -4 is now a factor of the entire numerator and the entire denominator. So cancel it.

Strategy: Separating Fractions First

$\frac{-8}{-4} + \frac{\pm 24\sqrt{3}}{-4}$	Write as two separate fractions, retaining the denominator.
$2 \pm 6\sqrt{3}$	Cancel -4 into each fraction. For the second fraction we get minus or plus 6, but it is the same thing.

Wrong Method

Do not cancel the -4 into the -8, ignoring the second term. Such a cancellation is an incorrect first step. That is a common error.