

Module : Rational Numbers

Part B – Integer division and prime factorization

The calculator Can be used to find prime factors to understand integer division. To find the prime factorization of any number enter the number and press **1** **2** **4** **=**. To see it factored press **ALPHA** **□□□** (FACT)

124

124

$2^2 \times 31$

To help you understand how prime factorization works, enter the following into the calculator.

1 **2** **4** **□** **2** **1** **6** **=**

$\frac{124}{216}$

$\frac{31}{54}$

Examine this as a factored numerator and factored denominator. Factor each separately first.

1 **2** **4** **=** **SHIFT** **□□□** (FACT)
2 **1** **6** **=** **SHIFT** **□□□** (FACT)

124

124

$2^2 \times 31$

216

216

$2^3 \times 3^3$

Enter the factored forms into the calculator as a fractions.

$\frac{2^2 \times 31}{2^3 \times 3^3}$

Calculator screen showing the fraction $\frac{2^2 \times 31}{2^3 \times 3^3}$ and its simplified form $\frac{31}{54}$.

Factor the new numerator and denominator and see what factors divided out.

$31 = 31$
 $54 = 2 \times 3^3$

Calculator screen showing the factored numerator 31 and denominator 54, with the denominator further factored into 2×3^3 .

This is another way to see the same expression.

$\frac{2^2 \times 31}{2^2 \times 2^1 \times 2^7}$

Calculator screen showing the fraction $\frac{2^2 \times 31}{2^2 \times 2^1 \times 2^7}$ and its simplified form $\frac{31}{54}$.