Binomial Theorem states that:

Coefficient of x^m in $(x+y)^n = \binom{n}{m}$

for example, Coefficient of x^3 in $(x+y)^5$ =>

$(x+y)^{5}$ $\to n=5$; x^{3} $\to m=3$

=> Coefficient of $x^3 = \binom{5}{3} = \dfrac{5!}{3!(5-3)!} = 10$

Now, we will use the extension of this Binomial Theorem to calculate the Coefficient of x^m in $(ax+b)^n$ which states this coefficient is equal to:

$$\text{Coefficient of } x^m \text{ in } (ax+b)^n = \boxed{\binom{n}{m}(a)^m(b)^{n-m}}$$

which if you compare it to the original Binomial Theorem you can clearly see the Simalarities to that formula.

In the written Matlab code after getting the coefficients and powers from the user (a,b,n,m), this line calulates the Previously shown formula.

```
coefficient = (factorial(n)/(factorial(m)*factorial(n-m))) * (a^m) * (b^(n - m));
```

$$= \frac{n!}{m! \times (n-m)!}$$

$$= a^m$$

$$= b^{n-m}$$