

# How can I find the F critical value in Python?

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The process of finding the F critical value in Python involves using statistical functions and libraries to calculate the probability of obtaining a specific F statistic. This value is typically used in hypothesis testing to determine the significance of the relationship between two variables. By inputting the appropriate degrees of freedom and alpha level, Python can generate the F critical value, which is then compared to the calculated F statistic to make a decision about accepting or rejecting the null hypothesis. This process can be easily carried out in Python using available functions and methods, making it a convenient tool for statistical analysis.

## Find the F Critical Value in Python

**When you conduct an F test, you will get an F statistic as a result. To determine if the results of the F test are statistically significant, you can compare the F statistic to an F critical value. If the F statistic is greater than the F critical value, then the results of the test are statistically significant.**

**The F critical value can be found by using an or by using statistical software.**

**To find the F critical value, you need:**

**A significance level (common choices are 0.01, 0.05, and 0.10) Numerator degrees of freedom Denominator degrees of freedom**

**Using these three values, you can determine the F critical value to be compared with the F statistic.**

## How to Find the F Critical Value in Python

To find the F critical value in Python, you can use the `scipy.stats.f.ppf`, which uses the following syntax:

```
scipy.stats.f.ppf(q, dfn, dfd)
```

where:

**q:** The significance level to use  
**dfn:** The numerator degrees of freedom  
**dfd:** The denominator degrees of freedom

This function returns the critical value from the F distribution based on the significance level, numerator degrees of freedom, and denominator degrees of freedom provided.

For example, suppose we would like to find the F critical value for a significance level of 0.05, numerator degrees of freedom = 6, and denominator degrees of freedom = 8.

```
import scipy.stats
```

```
#find F critical value
```

```
scipy.stats.f.ppf(q=1-.05, dfn=6, dfd=8)
```

**3.5806**

The F critical value for a significance level of 0.05, numerator degrees of freedom = 6, and denominator degrees of freedom = 8 is 3.5806.

Thus, if we're conducting some type of F test then we can compare the F test statistic to 3.5806. If the F statistic is greater than 3.580, then the results of the test are statistically significant.

Note that smaller values of alpha will lead to larger F critical values. For example, consider the F critical value for a significance level of 0.01, numerator degrees of freedom = 6, and denominator degrees of freedom = 8.

```
scipy.stats.f.ppf(q=1-.01, dfn=6, dfd=8)
```

**6.3707**

```
scipy.stats.f.ppf(q=1-.005, dfn=6, dfd=8)
```

**7.9512**

***Refer to the for the exact details of the `f.ppf()` function.***

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