In [1]:
```
# DSC530-T302
# Stephen Smitshoek
# Week04
# Exercise 3-2
```

In [2]:
```
import numpy as np
import nsfg
import thinkstats2
import thinkplot
```

In [3]:
```
def PmfMean(pmf):
    '''
    Calculate the mean of a pmf using the formula
        mean = sum( pi*xi )
    '''
    mean = 0
    for x, p in pmf.Items():
        mean += p * x

    return mean
```

In [4]:
```
def PmfVar(pmf):
    '''
    Calculate the mean of a pmf using the formula
        var = sum( pi*(xi - mean)^2 )
    '''
    mean = PmfMean(pmf)
    var = 0
    for x, p in pmf.Items():
        var += p * (x - mean) ** 2

    return var
```

In [5]:
```
def main():
    resp = nsfg.ReadFemResp()
    pmf = thinkstats2.Pmf(resp.numkdhh)

    print('PmfMean Function: {}'.format(round(PmfMean(pmf), 2)))  # Using user PmfMear
    print('ThinkStats PMF mean Module: {}'.format(round(pmf.Mean(), 2)))    # Using th

    print('PmfVar Function: {}'.format(round(PmfVar(pmf), 2)))   # Using user PmfVar f
    print('ThinkStats PMF var Module: {}'.format(round(pmf.Var(), 2)))    # Using thir
```

In [6]:
```
if __name__ == '__main__':
    main()
```

```
PmfMean Function: 1.02
ThinkStats PMF mean Module: 1.02
PmfVar Function: 1.41
ThinkStats PMF var Module: 1.41
```