1. Create a list L containing 1000 ones.
2. Set every third and every fifth entry to zero.
3. Count the number of ones remaining.[533]
4. Append to L a second list containing the first 500 multiples of 4.
5. Print the sum of the values in the resulting list. [499533]

In [13]:
```
List = [1] * 1000
for i in range(len(List)):
    if ((i + 1) % 3 == 0 or (i + 1) % 5 == 0):
        List[i] = 0

print("Number of ones in List",List.count(1))

table_4 = [i * 4 for i in range(1,500)]
List.extend(table_4)
sum_val = sum(List)
print("Sum of Value of resulting List", sum_val)
```

```
Number of ones in List 533
Sum of Value of resulting List 499533
```

1. Create three lists called stars, absmags, and distances containing stars: Vega, Deneb, Rigel, Sirius, Arcturus absmags: 0.582, -8.38, -7.84, 1.42, -0.30 distances: 7.68, 802, 260, 2.64, 11.26
2. Now create a new list, appmags, containing apparent magnitudes m calculated using m = M + 5(log d - 1) where M is the absolute magnitude and d is the distance in parsecs. Note that the logarithm is base-10, so use the log10 function from the math module. Iterate over the stars, printing for each star “The apparent magnitude of (star) is (appmag).”
3. Practice with dictionaries by creating a dictionary for one of the stars. The keys should be 'm', 'M', and 'd', and the values should be the apparent magnitude and so on as appropriate.
4. Now use the data in the four lists to create a nested dictionary called stardict. Each dictionary entry should have as its key the name of a star, and the value should be itself a dictionary like the one you created in #4 above.
5. Print stardict['Rigel']['m']

In [17]:
```
import math
stars = ["Vega", "Deneb", "Rigel", "Sirius", "Arcturus"]
absmags = [0.582,-8.38, -7.84, 1.42,-0.30]
distances = [7.68,802,260,2.64,11.26]

appmags = []

for M, d in zip(absmags, distances):
    m = M + 5 * (math.log10(d - 1))
    appmags.append(m)
```

```
for star, appmag in zip(stars, appmags):
    print(f"The apparent magnitude of {star} is {appmag}")

dict_ = {"m": appmags[stars.index("Rigel")], "M": absmags[stars.index("Rigel")], "d

star_ = {}
for i, M, d, m in zip(stars, absmags, distances, appmags):
    star_[i] = {"m": m, "M": M, "d": d}
print("Star dictionary Rigel and M",star_['Rigel']['m'])
```

```
The apparent magnitude of Vega is 4.705882312377728
The apparent magnitude of Deneb is 6.138162580421186
The apparent magnitude of Rigel is 4.22649882040626
The apparent magnitude of Sirius is 2.4942192402384897
The apparent magnitude of Arcturus is 4.755736803878988
Star dictionary Rigel and M 4.22649882040626
```