In[10]:= $P(l\_, k\_) := \sum_{i=0}^{l-1} \left(p^2 (1-p)^{l-1}\right);$

In[11]:= $Pe(l\_, k\_) := P(l, k) + \left((1-p)^{k+1} + (k+1)\, p\, (1-p)^k\right);$

In[12]:=
```
FullSimplify[Sum[P[l, k] * l, {l, 1, k - 1}] + Pe[k, k] * k]
```

Out[12]=
$$\frac{2 - p + (1 - p)^{k} (-2 + p - k\, p)}{p}$$

In[13]:=
```
Es[k_] := FullSimplify[Sum[P[l, k] * l, {l, 1, k - 1}] + Pe[k, k] * k]
```

In[14]:=
```
FullSimplify[Sum[Es[k], {k, 1, n - 1}] / (n - 1)]
```

Out[14]=
$$\frac{-3+2\,p+2\,n\,p-n\,p^2+(1-p)^{n}\,(3+(-2+n)\,p)}{(-1+n)\,p^2}$$

large output | show less | show more | show all | set size limit...