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Dd[n_, 0, a_] := 1; Dd[n_, 1, a_] := Floor[n] - a + 1
Dd[n_, k_, a_] :=
  Dd[n, k, a] = Sum[Binomial[k, j] Dd[n / (m^(k - j)), j, m + 1], {m, a, n^(1 / k)}, {j, 0, k - 1}]

Dd[100, 2, 2]
283

Dd[10 000, 5, 2]
635 835

Dd2[n_, 0, a_] := 1
Dd2[n_, 1, a_] := Floor[n] - a + 1
Dd2[n_, k_, a_] := Sum[1, {m, a, n^(1 / k)}] +
  Sum[Binomial[k, j] Dd2[n / (m^(k - j)), j, m + 1], {m, a, n^(1 / k)}, {j, 1, k - 1}]
Dd2[100, 2, 2]
283

Dd3[n_, 0, a_] := 1
Dd3[n_, 1, a_] := Floor[n] - a + 1
Dd3[n_, k_, a_] := (Floor[n^(1 / k)] - a + 1) +
  Sum[Binomial[k, j] Dd3[n / (m^(k - j)), j, m + 1], {m, a, n^(1 / k)}, {j, 1, k - 1}]
Dd3[100, 2, 2]
283

Dd4[n_, 0, a_] := 1
Dd4[n_, 1, a_] := Floor[n] - a + 1
Dd4[n_, k_, a_] :=
  (Floor[n^(1 / k)] - a + 1) + Sum[k Dd4[n / (m^(k - 1))], 1, m + 1], {m, a, n^(1 / k)}] +
  Sum[Binomial[k, j] Dd4[n / (m^(k - j)), j, m + 1], {m, a, n^(1 / k)}, {j, 2, k - 1}]
Dd4[100, 2, 2]
283

Dd5[n_, 0, a_] := 1
Dd5[n_, 1, a_] := Floor[n] - a + 1
Dd5[n_, k_, a_] :=
  (Floor[n^(1 / k)] - a + 1) + k Sum[Floor[n / (m^(k - 1))], m, {m, a, n^(1 / k)}] +
  Sum[Binomial[k, j] Dd4[n / (m^(k - j)), j, m + 1], {m, a, n^(1 / k)}, {j, 2, k - 1}]
Dd5[100, 2, 2]
283

Dd6[n_, 0, a_] := 1
Dd6[n_, 1, a_] := Floor[n] - a + 1
Dd6[n_, k_, a_] := (Floor[n^(1 / k)] - a + 1) +
  k Sum[Floor[n / (m^(k - 1))], {m, a, n^(1 / k)}] - k Sum[m, {m, a, n^(1 / k)}] +
  Sum[Binomial[k, j] Dd6[n / (m^(k - j)), j, m + 1], {m, a, n^(1 / k)}, {j, 2, k - 1}]
Dd6[1000, 3, 2]
11 217

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Dd7[n_, 0, a_] := 1
Dd7[n_, 1, a_] := Floor[n] - a + 1
Dd7[n_, k_, a_] := (Floor[n^(1/k)] - a + 1) +
  k Sum[ Floor[n / (m^(k-1))], {m, a, Floor[n^(1/k)]]] -
  k ( (Floor[n^(1/k)]) (Floor[n^(1/k)] + 1) / 2 - (a-1) (a) / 2) +
  Sum[Binomial[k, j] Dd7[n / (m^(k-j))], j, m+1], {m, a, n^(1/k)}, {j, 2, k-1}]
Dd7[1000, 3, 2]
11 217

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Expand[k ( (Floor[n^(1/k)]) (Floor[n^(1/k)] + 1) / 2 - (a-1) (a) / 2)]

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$$\frac{a k}{2} - \frac{a^2 k}{2} + \frac{1}{2} k \text{Floor}\left[n^{\frac{1}{k}}\right] + \frac{1}{2} k \text{Floor}\left[n^{\frac{1}{k}}\right]^2$$

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Dd8[n_, 0, a_] := 1
Dd8[n_, 1, a_] := Floor[n] - a + 1
Dd8[n_, k_, a_] := (Floor[n^(1/k)] - a + 1) +
  k Sum[ Floor[n / (m^(k-1))], {m, a, Floor[n^(1/k)]]] +
  (-a k / 2 + a^2 k / 2 - k / 2 Floor[n^(1/k)] - k / 2 Floor[n^(1/k)]^2) +
  Sum[Binomial[k, j] Dd8[n / (m^(k-j))], j, m+1], {m, a, n^(1/k)}, {j, 2, k-1}]
Dd8[1000, 3, 2]
11 217

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Dd9[n_, 0, a_] := 1
Dd9[n_, 1, a_] := Floor[n] - a + 1
Dd9[n_, 2, a_] := (Floor[n^(1/2)] - a + 1) +
  2 Sum[ Floor[n / (m^(2-1))], {m, a, Floor[n^(1/2)]]] +
  (-a + a^2 - Floor[n^(1/2)] - Floor[n^(1/2)]^2)
Dd9[n_, k_, a_] := (Floor[n^(1/k)] - a + 1) +
  k Sum[ Floor[n / (m^(k-1))], {m, a, Floor[n^(1/k)]]] +
  (-a k / 2 + a^2 k / 2 - k / 2 Floor[n^(1/k)] - k / 2 Floor[n^(1/k)]^2) +
  Sum[Binomial[k, j] Dd9[n / (m^(k-j))], j, m+1], {m, a, n^(1/k)}, {j, 2, k-1}]

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Dd9[1000, 2, 2]

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5070

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Dd9a[n_, 0, a_] := 1
Dd9a[n_, 1, a_] := Floor[n] - a + 1
Dd9a[n_, 2, a_] :=
  (Floor[n^(1/2)] - a + 1) + (-a + a^2 - Floor[n^(1/2)] - Floor[n^(1/2)]^2) +
  2 Sum[ Floor[n / m], {m, a, Floor[n^(1/2)]]]
Dd9a[n_, k_, a_] := (Floor[n^(1/k)] - a + 1) +
  k Sum[ Floor[n / (m^(k-1))], {m, a, Floor[n^(1/k)]]] +
  (-a k / 2 + a^2 k / 2 - k / 2 Floor[n^(1/k)] - k / 2 Floor[n^(1/k)]^2) +
  Sum[Binomial[k, j] Dd9a[n / (m^(k-j))], j, m+1], {m, a, n^(1/k)}, {j, 2, k-1}]
Dd9a[1000, 3, 2]
11 217

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FullSimplify[
  Expand[(Floor[n^(1/2)] - a + 1) + (-a + a^2 - Floor[n^(1/2)] - Floor[n^(1/2)]^2)]
]

$$(-1 + a)^2 - \text{Floor}\left[\sqrt{n}\right]^2$$

Dd9b[n_, 0, a_] := 1
Dd9b[n_, 1, a_] := Floor[n] - a + 1
Dd9b[n_, 2, a_] := (a - 1)^2 - Floor[n^(1/2)]^2 +
  2 Sum[Floor[n/m], {m, a, Floor[n^(1/2)]}]
Dd9b[n_, k_, a_] := (Floor[n^(1/k)] - a + 1) +
  k Sum[Floor[n/(m^(k-1))], {m, a, Floor[n^(1/k)]}] +
  (-a k / 2 + a^2 k / 2 - k / 2 Floor[n^(1/k)] - k / 2 Floor[n^(1/k)]^2) +
  Sum[Binomial[k, j] Dd9b[n / (m^(k-j)), j, m+1], {m, a, n^(1/k)}, {j, 2, k-1}]
Dd9b[1000, 3, 2]
11217
Dd9c[n_, 0, a_] := 1
Dd9c[n_, 1, a_] := Floor[n] - a + 1
Dd9c[n_, 2, a_] :=
  (a - 1)^2 - Floor[n^(1/2)]^2 + 2 Sum[Floor[n/m], {m, a, Floor[n^(1/2)]}]
Dd9c[n_, k_, a_] := (1/2) (a - 1 - Floor[n^(1/k)]) (a k - 2 + k Floor[n^(1/k)]) +
  k Sum[Floor[n/(m^(k-1))], {m, a, Floor[n^(1/k)]}] +
  Sum[Binomial[k, j] Dd9c[n / (m^(k-j)), j, m+1], {m, a, n^(1/k)}, {j, 2, k-1}]
Dd9c[10000, 4, 2]
487043
FullSimplify[Expand[(Floor[n^(1/k)] - a + 1) +
  (-a k / 2 + a^2 k / 2 - k / 2 Floor[n^(1/k)] - k / 2 Floor[n^(1/k)]^2)]
]

$$\frac{1}{2} \left( -1 + a - \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \left( -2 + a k + k \text{Floor}\left[n^{\frac{1}{k}}\right] \right)$$

Dd9d[n_, 0, a_] := 1
Dd9d[n_, 1, a_] := Floor[n] - a + 1
Dd9d[n2_, 2, a2_] :=
  (a2 - 1)^2 - Floor[n2^(1/2)]^2 + 2 Sum[Floor[n2/m2], {m2, a2, Floor[n2^(1/2)]}]
Dd9d[n_, k_, a_] := (1/2) (a - 1 - Floor[n^(1/k)]) (a k - 2 + k Floor[n^(1/k)]) +
  k Sum[Floor[n/(m^(k-1))], {m, a, Floor[n^(1/k)]}] +
  Sum[(k (k - 1) / 2)
    ((m + 1) - 1)^2 - Floor[(n / (m^(k-2)))^(1/2)]^2 + 2 Sum[Floor[(n / (m^(k-2))) / m2],
      {m2, (m + 1), Floor[(n / (m^(k-2)))^(1/2)]}], {m, a, n^(1/k)}) +
  Sum[Binomial[k, j] Dd9d[n / (m^(k-j)), j, m+1], {m, a, n^(1/k)}, {j, 3, k-1}]
Dd9d[10000, 4, 2]
487043
((m + 1) - 1)^2 - Floor[(n / (m^(k-2)))^(1/2)]^2 +
  2 Sum[Floor[(n / (m^(k-2))) / m2], {m2, (m + 1), Floor[(n / (m^(k-2)))^(1/2)]}]

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Dd9e[n_, 0, a_] := 1
Dd9e[n_, 1, a_] := Floor[n] - a + 1
Dd9e[n2_, 2, a2_] :=
  (a2 - 1)^2 - Floor[n2^(1/2)]^2 + 2 Sum[Floor[n2/m2], {m2, a2, Floor[n2^(1/2)]}]
Dd9e[n_, k_, a_] := (1/2) (a - 1 - Floor[n^(1/k)]) (a k - 2 + k Floor[n^(1/k)]) +
  k Sum[Floor[n/(m^(k-1))], {m, a, Floor[n^(1/k)]}] +
  Sum[
    (k (k - 1) / 2) (m^2 - Floor[(n / (m^(k - 2)))^(1/2)]^2 +
      2 Sum[Floor[(n / (m^(k - 2))) / m2], {m2, m + 1, Floor[(n / (m^(k - 2)))^(1/2)]})],
    {m, a, n^(1/k)}] +
  Sum[Binomial[k, j] Dd9e[n / (m^(k - j)), j, m + 1], {m, a, n^(1/k)}, {j, 3, k - 1}]
Dd9e[10 000, 4, 2]
487 043

Dd9f[n_, 0, a_] := 1
Dd9f[n_, 1, a_] := Floor[n] - a + 1
Dd9f[n2_, 2, a2_] :=
  (a2 - 1)^2 - Floor[n2^(1/2)]^2 + 2 Sum[Floor[n2/m2], {m2, a2, Floor[n2^(1/2)]}]
Dd9f[n_, k_, a_] := (1/2) (a - 1 - Floor[n^(1/k)]) (a k - 2 + k Floor[n^(1/k)]) +
  k Sum[Floor[n/(m^(k-1))], {m, a, Floor[n^(1/k)]}] +
  (k (k - 1) / 2) Sum[m^2, {m, a, Floor[n^(1/k)]}] -
  (k (k - 1) / 2) Sum[Floor[(n / (m^(k - 2)))^(1/2)]^2, {m, a, n^(1/k)}] +
  (k (k - 1) / 2)
  Sum[2 Sum[Floor[(n / (m^(k - 2))) / m2], {m2, m + 1, Floor[(n / (m^(k - 2)))^(1/2)]}],
  {m, a, n^(1/k)}] +
  Sum[Binomial[k, j] Dd9f[n / (m^(k - j)), j, m + 1], {m, a, n^(1/k)}, {j, 3, k - 1}]
Dd9f[10 000, 4, 2]
487 043

FullSimplify[(k (k - 1) / 2) Sum[Floor[(n / (m^(k - 2)))^(1/2)]^2, {m, a, n^(1/k)}]]


$$\frac{1}{2} (-1 + k) k \sum_{m=a}^{\frac{1}{n^k}} \text{Floor}\left[\sqrt{m^{2-k} n}\right]^2$$


FullSimplify[(k (k - 1) / 2) Sum[m^2, {m, a, Floor[n^(1/k)]}]]


$$-\frac{1}{12} (-1 + k) k \left( (-1 + a) a (-1 + 2 a) - \text{Floor}\left[n^{\frac{1}{k}}\right] \left(1 + \text{Floor}\left[n^{\frac{1}{k}}\right]\right) \left(1 + 2 \text{Floor}\left[n^{\frac{1}{k}}\right]\right) \right)$$


FullSimplify[(k (k - 1) / 2)
  Sum[2 Sum[Floor[(n / (m^(k - 2))) / m2], {m2, m + 1, Floor[(n / (m^(k - 2)))^(1/2)]}],
  {m, a, n^(1/k)}]]
$Aborted

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Dd9g[n_, 0, a_] := 1
Dd9g[n_, 1, a_] := Floor[n] - a + 1
Dd9g[n2_, 2, a2_] :=
  (a2 - 1)^2 - Floor[n2^(1/2)]^2 + 2 Sum[Floor[n2/m2], {m2, a2, Floor[n2^(1/2)]}]
Dd9g[n_, k_, a_] := (1/2) (a - 1 - Floor[n^(1/k)]) (a k - 2 + k Floor[n^(1/k)]) +
  
$$\left( -\frac{1}{12} (-1+k) k \left( (-1+a) a (-1+2a) - \text{Floor}\left[n^{\frac{1}{k}}\right] \left( 1 + \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \left( 1 + 2 \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \right) \right) +$$

  k Sum[Floor[n/(m^(k-1))], {m, a, Floor[n^(1/k)]}] -
  (k(k-1)/2) Sum[Floor[(n/(m^(k-2)))^(1/2)]^2, {m, a, n^(1/k)}] +
  (k^2 - k) Sum[Sum[Floor[(n/(m^(k-2)))/m2],
    {m2, m+1, Floor[(n/(m^(k-2)))^(1/2)]}], {m, a, n^(1/k)}] +
  Sum[Binomial[k, j] Dd9g[n/(m^(k-j)), j, m+1], {m, a, n^(1/k)}, {j, 3, k-1}]
Dd9g[10 000, 4, 2]

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FullSimplify[(1/2) (a - 1 - Floor[n^(1/k)]) (a k - 2 + k Floor[n^(1/k)]) +
  
$$\left( -\frac{1}{12} (-1+k) k \left( (-1+a) a (-1+2a) - \text{Floor}\left[n^{\frac{1}{k}}\right] \left( 1 + \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \left( 1 + 2 \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \right) \right) ]$$

  
$$\frac{1}{12} \left( -(-1+a) (12+a (-5+2a (-1+k) -k) k) + \right.$$

  
$$\left. \text{Floor}\left[n^{\frac{1}{k}}\right] \left( (-4+k) (-3+k) + k \text{Floor}\left[n^{\frac{1}{k}}\right] \left( 3 (-3+k) + 2 (-1+k) \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \right) \right) ]$$


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Dd9h[n_, 0, a_] := 1
Dd9h[n_, 1, a_] := Floor[n] - a + 1
Dd9h[n2_, 2, a2_] :=
  (a2 - 1)^2 - Floor[n2^(1/2)]^2 + 2 Sum[Floor[n2/m2], {m2, a2, Floor[n2^(1/2)]}]
Dd9h[n_, k_, a_] := 
$$\frac{1}{12} \left( -(-1+a) (12+a (-5+2a (-1+k) -k) k) + \right.$$

  
$$\left. \text{Floor}\left[n^{\frac{1}{k}}\right] \left( (-4+k) (-3+k) + k \text{Floor}\left[n^{\frac{1}{k}}\right] \left( 3 (-3+k) + 2 (-1+k) \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \right) \right) +$$

  k Sum[Floor[m^(1-k) n], {m, a, Floor[n^(1/k)]}] -
  (k(k-1)/2) Sum[Floor[ $\sqrt{m^{2-k} n}$ ]^2, {m, a, Floor[n^(1/k)]}] +
  (k^2 - k) Sum[Floor[ $\frac{m^{2-k} n}{m2}$ ], {m, a, Floor[n^(1/k)]}, {m2, m+1, Floor[ $\sqrt{m^{2-k} n}$ ]}] +
  Sum[Binomial[k, j] Dd9h[n/(m^(k-j)), j, m+1], {m, a, n^(1/k)}, {j, 3, k-1}]
Dd9h[10 000, 4, 2]

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FullSimplify[(1/2) (a - 1 - Floor[n^(1/k)]) (a k - 2 + k Floor[n^(1/k)]) +
  
$$\left( -\frac{1}{12} (-1+k) k \left( (-1+a) a (-1+2a) - \text{Floor}\left[n^{\frac{1}{k}}\right] \left( 1 + \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \left( 1 + 2 \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \right) \right) ]$$

  
$$\frac{1}{12} \left( -(-1+a) (12+a (-5+2a (-1+k) -k) k) + \right.$$

  
$$\left. \text{Floor}\left[n^{\frac{1}{k}}\right] \left( (-4+k) (-3+k) + k \text{Floor}\left[n^{\frac{1}{k}}\right] \left( 3 (-3+k) + 2 (-1+k) \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \right) \right) ]$$


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Dd9i[n_, 0, a_] := 1
Dd9i[n_, 1, a_] := Floor[n] - a + 1
Dd9i[n2_, 2, a2_] :=
  (a2 - 1)^2 - Floor[n2^(1/2)]^2 + 2 Sum[Floor[n2/m2], {m2, a2, Floor[n2^(1/2)]}]
Dd9i[n_, 3, a_] := -(-1 + a)^3 + Floor[n^(1/3)]^3 + 3 Sum[Floor[m^-2 n], {m, a, Floor[n^(1/3)]}] -
  3 Sum[Floor[√(m^-1 n)]^2, {m, a, Floor[n^(1/3)]}] +
  6 Sum[Floor[m2^(-1) m^-1 n], {m, a, Floor[n^(1/3)]}, {m2, m + 1, Floor[√(m^-1 n)]}]
Dd9i[n_, k_, a_] := 1/12 (-(-1 + a)(12 + a(-5 + 2a(-1 + k) - k)k) +
  Floor[n^(1/k)]((-4 + k)(-3 + k) + k Floor[n^(1/k)](3(-3 + k) + 2(-1 + k) Floor[n^(1/k)]))) +
  k Sum[Floor[m^(1-k) n], {m, a, Floor[n^(1/k)]}] -
  (k(k - 1)/2) Sum[Floor[√(m^(2-k) n)]^2, {m, a, Floor[n^(1/k)]}] +
  (k^2 - k)
  Sum[Floor[m2^(-1) m^(2-k) n], {m, a, Floor[n^(1/k)]}, {m2, m + 1, Floor[√(m^(2-k) n)]}] +
  Sum[Binomial[k, j] Dd9i[n/(m^(k - j)), j, m + 1], {m, a, n^(1/k)}, {j, 3, k - 1}]
Dd9i[10 000, 4, 2]
487 043

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$\text{Dd9j}[n_ , 0, a_] := 1$

$\text{Dd9j}[n_ , 1, a_] := \text{Floor}[n] - a + 1$

$\text{Dd9j}[n2_ , 2, a2_] := (-1 + a2)^2 - \text{Floor}\left[\sqrt{n2}\right]^2 + 2 \sum_{m2=a2}^{\text{Floor}\left[\sqrt{n2}\right]} \text{Floor}\left[\frac{n2}{m2}\right]$

$\text{Dd9j}[n3_ , 3, a3_] := -(-1 + a3)^3 + \text{Floor}\left[n3^{1/3}\right]^3 + 3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\frac{n3}{m3^2}\right] -$

$3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]^2 + 6 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]} \text{Floor}\left[\frac{n3}{m3 m3a}\right]$

$\text{Dd9j}[n_ , k_ , a_] := \frac{1}{12} \left(-(-1 + a) (12 + a (-5 + 2 a (-1 + k) - k) k) + \right.$

$\left. \text{Floor}\left[n^{\frac{1}{k}}\right] \left((-4 + k) (-3 + k) + k \text{Floor}\left[n^{\frac{1}{k}}\right] \left(3 (-3 + k) + 2 (-1 + k) \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \right) \right) +$

$k \text{Sum}\left[\text{Floor}\left[m^{1-k} n\right], \{m, a, \text{Floor}\left[n^{\wedge}(1 / k)\right]\}\right] -$

$(k (k - 1) / 2) \text{Sum}\left[\text{Floor}\left[\sqrt{m^{2-k} n}\right]^2, \{m, a, \text{Floor}\left[n^{\wedge}(1 / k)\right]\}\right] +$

$(k^2 - k)$

$\text{Sum}\left[\text{Floor}\left[m^2 (-1) m^{2-k} n\right], \{m, a, \text{Floor}\left[n^{\wedge}(1 / k)\right]\}, \{m2, m + 1, \text{Floor}\left[\sqrt{m^{2-k} n}\right]\}\right] +$

$\text{Sum}\left[\left(\frac{1}{6} (-2 + k) (-1 + k) k\right) \left(\right.$

$\left. -(-1 + (m + 1))^3 + \text{Floor}\left[(n / (m^{\wedge}(k - 3)))^{1/3}\right]^3 + 3 \sum_{m3=(m+1)}^{\text{Floor}\left[(n / (m^{\wedge}(k - 3)))^{1/3}\right]} \text{Floor}\left[\frac{((n / (m^{\wedge}(k - 3))))}{m3^2}\right] \right.$

$3 \sum_{m3=(m+1)}^{\text{Floor}\left[(n / (m^{\wedge}(k - 3)))^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{(n / (m^{\wedge}(k - 3)))}{m3}}\right]^2 +$

$6 \sum_{m3=(m+1)}^{\text{Floor}\left[(n / (m^{\wedge}(k - 3)))^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{(n / (m^{\wedge}(k - 3)))}{m3}}\right]} \text{Floor}\left[\frac{(n / (m^{\wedge}(k - 3)))}{m3 m3a}\right]$

$\left. \right), \{m, a, n^{\wedge}(1 / k)\}\right] +$

$\text{Sum}[\text{Binomial}[k, j] \text{Dd9j}[n / (m^{\wedge}(k - j)), j, m + 1], \{m, a, n^{\wedge}(1 / k)\}, \{j, 4, k - 1\}]$

$\text{Dd9j}[10\,000, 5, 2]$

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$$\begin{aligned}
 & - (-1 + (m+1))^3 + \text{Floor} \left[\left(\frac{n}{m^k} \right)^{1/3} \right]^3 + 3 \sum_{m3=(m+1)}^{\text{Floor} \left[\left(\frac{n}{m^k} \right)^{1/3} \right]} \text{Floor} \left[\frac{\left(\frac{n}{m^k} \right)}{m3^2} \right] - \\
 & 3 \sum_{m3=(m+1)}^{\text{Floor} \left[\left(\frac{n}{m^k} \right)^{1/3} \right]} \text{Floor} \left[\sqrt{\frac{\left(\frac{n}{m^k} \right)}{m3}} \right]^2 + \\
 & 6 \sum_{m3=(m+1)}^{\text{Floor} \left[\left(\frac{n}{m^k} \right)^{1/3} \right]} \sum_{m3a=1+m3}^{\text{Floor} \left[\sqrt{\frac{\left(\frac{n}{m^k} \right)}{m3}} \right]} \text{Floor} \left[\frac{\left(\frac{n}{m^k} \right)}{m3 \, m3a} \right]
 \end{aligned}$$

$\text{Dd9k}[n_ , 0, a_] := 1$

$\text{Dd9k}[n_ , 1, a_] := \text{Floor}[n] - a + 1$

$\text{Dd9k}[n2_ , 2, a2_] := (-1 + a2)^2 - \text{Floor}\left[\sqrt{n2}\right]^2 + 2 \sum_{m2=a2}^{\text{Floor}\left[\sqrt{n2}\right]} \text{Floor}\left[\frac{n2}{m2}\right]$

$\text{Dd9k}[n3_ , 3, a3_] := -(-1 + a3)^3 + \text{Floor}\left[n3^{1/3}\right]^3 + 3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\frac{n3}{m3^2}\right] -$

$3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]^2 + 6 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]} \text{Floor}\left[\frac{n3}{m3 m3a}\right]$

$\text{Dd9k}[n_ , k_ , a_] := \frac{1}{12} \left(-(-1 + a) (12 + a (-5 + 2 a (-1 + k) - k) k) + \right.$

$\left. \text{Floor}\left[n^{\frac{1}{k}}\right] \left((-4 + k) (-3 + k) + k \text{Floor}\left[n^{\frac{1}{k}}\right] \left(3 (-3 + k) + 2 (-1 + k) \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \right) \right) +$

$k \text{Sum}\left[\text{Floor}\left[m^{1-k} n\right], \{m, a, \text{Floor}\left[n^{\wedge}(1 / k)\right]\}\right] -$

$(k (k - 1) / 2) \text{Sum}\left[\text{Floor}\left[\sqrt{m^{2-k} n}\right]^2, \{m, a, \text{Floor}\left[n^{\wedge}(1 / k)\right]\}\right] +$

$(k^2 - k)$

$\text{Sum}\left[\text{Floor}\left[m^2 (-1) m^{2-k} n\right], \{m, a, \text{Floor}\left[n^{\wedge}(1 / k)\right]\}, \{m2, m + 1, \text{Floor}\left[\sqrt{m^{2-k} n}\right]\}\right] +$

$\text{Sum}\left[\left(\frac{1}{6} (-2 + k) (-1 + k) k\right) \left(-(-1 + (m + 1))^3 + \text{Floor}\left[(n / (m^{\wedge}(k - 3)))^{1/3}\right]^3\right), \{m, a, n^{\wedge}(1 / k)\}\right] +$

$\text{Sum}\left[\right.$

$\left. \left(\frac{1}{6} (-2 + k) (-1 + k) k\right) \left(3 \sum_{m3=(m+1)}^{\text{Floor}\left[(n / (m^{\wedge}(k-3)))^{1/3}\right]} \text{Floor}\left[\frac{(n / (m^{\wedge}(k-3)))}{m3^2}\right]\right), \{m, a, n^{\wedge}(1 / k)\}\right] +$

$\text{Sum}\left[\left(\frac{1}{6} (-2 + k) (-1 + k) k\right) \left(-3 \sum_{m3=(m+1)}^{\text{Floor}\left[(n / (m^{\wedge}(k-3)))^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{(n / (m^{\wedge}(k-3)))}{m3}}\right]^2\right), \right.$

$\left. \{m, a, n^{\wedge}(1 / k)\}\right] +$

$\text{Sum}\left[\left(\frac{1}{6} (-2 + k) (-1 + k) k\right) \left(6 \sum_{m3=(m+1)}^{\text{Floor}\left[(n / (m^{\wedge}(k-3)))^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{(n / (m^{\wedge}(k-3)))}{m3}}\right]} \text{Floor}\left[\frac{(n / (m^{\wedge}(k-3)))}{m3 m3a}\right]\right), \right.$

$\left. \{m, a, n^{\wedge}(1 / k)\}\right] +$

$\text{Sum}[\text{Binomial}[k, j] \text{Dd9k}[n / (m^{\wedge}(k - j)), j, m + 1], \{m, a, n^{\wedge}(1 / k)\}, \{j, 4, k - 1\}]$

$\text{Dd9k}[10\,000, 5, 2]$

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$\text{Dd91}[n_ , 0, a_] := 1$

$\text{Dd91}[n_ , 1, a_] := \text{Floor}[n] - a + 1$

$\text{Dd91}[n2_ , 2, a2_] := (-1 + a2)^2 - \text{Floor}\left[\sqrt{n2}\right]^2 + 2 \sum_{m2=a2}^{\text{Floor}\left[\sqrt{n2}\right]} \text{Floor}\left[\frac{n2}{m2}\right]$

$\text{Dd91}[n3_ , 3, a3_] := -(-1 + a3)^3 + \text{Floor}\left[n3^{1/3}\right]^3 + 3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\frac{n3}{m3^2}\right] -$

$3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]^2 + 6 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]} \text{Floor}\left[\frac{n3}{m3 m3a}\right]$

$\text{Dd91}[n_ , k_ , a_] := \frac{1}{12} \left(-(-1 + a) (12 + a (-5 + 2 a (-1 + k) - k) k) + \right.$
 $\text{Floor}\left[n^{\frac{1}{k}}\right] \left((-4 + k) (-3 + k) + k \text{Floor}\left[n^{\frac{1}{k}}\right] \left(3 (-3 + k) + 2 (-1 + k) \text{Floor}\left[n^{\frac{1}{k}}\right] \right) \right) +$
 $k \text{Sum}\left[\text{Floor}\left[m^{1-k} n\right], \{m, a, \text{Floor}\left[n^{\wedge}(1/k)\right]\}\right] -$
 $(k (k - 1) / 2) \text{Sum}\left[\text{Floor}\left[\sqrt{m^{2-k} n}\right]^2, \{m, a, \text{Floor}\left[n^{\wedge}(1/k)\right]\}\right] +$
 $(k^2 - k)$
 $\text{Sum}\left[\text{Floor}\left[m2^{\wedge}(-1) m^{2-k} n\right], \{m, a, \text{Floor}\left[n^{\wedge}(1/k)\right]\}, \{m2, m + 1, \text{Floor}\left[\sqrt{m^{2-k} n}\right]\}\right] +$
 $\left(\frac{1}{24} (-2 + k) (-1 + k) k \left(-1 + a - \text{Floor}\left[n^{\frac{1}{k}}\right]\right) \left(a + \text{Floor}\left[n^{\frac{1}{k}}\right]\right)\right.$
 $\left. \left((-1 + a) a + \text{Floor}\left[n^{\frac{1}{k}}\right] + \text{Floor}\left[n^{\frac{1}{k}}\right]^2\right) + \right.$
 $\left(\frac{1}{6} (-2 + k) (-1 + k) k\right) \text{Sum}\left[\left(\text{Floor}\left[(n / (m^{\wedge}(k - 3)))^{1/3}\right]^3\right), \{m, a, \text{Floor}\left[n^{\wedge}(1/k)\right]\}\right] +$
 $\left(\frac{1}{2} (-2 + k) (-1 + k) k\right)$
 $\text{Sum}\left[\left(\sum_{m3=(m+1)}^{\text{Floor}\left[(n / (m^{\wedge}(k - 3)))^{1/3}\right]} \text{Floor}\left[\frac{(n / (m^{\wedge}(k - 3)))}{m3^2}\right]\right), \{m, a, \text{Floor}\left[n^{\wedge}(1/k)\right]\}\right] +$
 $-\left(\frac{1}{2} (-2 + k) (-1 + k) k\right) \text{Sum}\left[\left(\sum_{m3=(m+1)}^{\text{Floor}\left[(n / (m^{\wedge}(k - 3)))^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{(n / (m^{\wedge}(k - 3)))}{m3}}\right]^2\right), \right.$
 $\left.\{m, a, \text{Floor}\left[n^{\wedge}(1/k)\right]\}\right] +$
 $((-2 + k) (-1 + k) k) \text{Sum}\left[\left(\sum_{m3=(m+1)}^{\text{Floor}\left[(n / (m^{\wedge}(k - 3)))^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{(n / (m^{\wedge}(k - 3)))}{m3}}\right] \text{Floor}\left[\frac{(n / (m^{\wedge}(k - 3)))}{m3 m3a}\right]\right), \right.$
 $\left.\{m, a, \text{Floor}\left[n^{\wedge}(1/k)\right]\}\right] +$
 $\text{Sum}[\text{Binomial}[k, j] \text{Dd91}[n / (m^{\wedge}(k - j)), j, m + 1], \{m, a, n^{\wedge}(1/k)\}, \{j, 4, k - 1\}]$

$\text{Dd91}[10\,000, 5, 2]$

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$$\text{FullSimplify}\left[\left(\frac{1}{6}(-2+k)(-1+k)k\right)\text{Sum}\left[\left(-(-1+(m+1))^3\right), \{m, a, \text{Floor}[n^{(1/k)}]\}\right]\right]$$

$$\frac{1}{24}(-2+k)(-1+k)k\left(-1+a-\text{Floor}\left[n^{\frac{1}{k}}\right]\right)\left(a+\text{Floor}\left[n^{\frac{1}{k}}\right]\right)\left((-1+a)a+\text{Floor}\left[n^{\frac{1}{k}}\right]+\text{Floor}\left[n^{\frac{1}{k}}\right]^2\right)$$

$$\text{Dd9m}[n_, 0, a_] := 1$$

$$\text{Dd9m}[n_, 1, a_] := \text{Floor}[n] - a + 1$$

$$\text{Dd9m}[n2_, 2, a2_] := (-1+a2)^2 - \text{Floor}\left[\sqrt{n2}\right]^2 + 2 \sum_{m2=a2}^{\text{Floor}\left[\sqrt{n2}\right]} \text{Floor}\left[\frac{n2}{m2}\right]$$

$$\text{Dd9m}[n3_, 3, a3_] := -(-1+a3)^3 + \text{Floor}\left[n3^{1/3}\right]^3 + 3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\frac{n3}{m3^2}\right] -$$

$$3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]^2 + 6 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]} \text{Floor}\left[\frac{n3}{m3 m3a}\right]$$

$$\text{Dd9m}[n_, k_, a_] := \left(\frac{1}{24}\left(24+a(-24+(-1+a)k(a(-2+a(-2+k)-k)(-1+k)+2(5+k)))\right)+\right.$$

$$2(-4+k)(-3+k)\text{Floor}\left[n^{\frac{1}{k}}\right] - (-5+k)(-4+k)k\text{Floor}\left[n^{\frac{1}{k}}\right]^2 -$$

$$2(-4+k)(-1+k)k\text{Floor}\left[n^{\frac{1}{k}}\right]^3 - (-2+k)(-1+k)k\text{Floor}\left[n^{\frac{1}{k}}\right]^4\Bigg) +$$

$$k\text{Sum}\left[\text{Floor}\left[m^{1-k}n\right], \{m, a, \text{Floor}\left[n^{(1/k)}\right]\}\right] -$$

$$\frac{1}{2}(-1+k)k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \text{Floor}\left[\sqrt{m^{2-k}n}\right]^2 +$$

$$(-1+k)k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \sum_{m2=1+m}^{\text{Floor}\left[\sqrt{m^{2-k}n}\right]} \text{Floor}\left[\frac{m^{2-k}n}{m2}\right] +$$

$$\frac{1}{6}(-2+k)(-1+k)k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \text{Floor}\left[(m^{3-k}n)^{1/3}\right]^3 +$$

$$\frac{1}{2}(-2+k)(-1+k)k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{3-k}n)^{1/3}\right]} \text{Floor}\left[\frac{m^{3-k}n}{m3^2}\right]\right) +$$

$$-\frac{1}{2}(-2+k)(-1+k)k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{3-k}n)^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{m^{3-k}n}{m3}}\right]^2\right) +$$

$$(-2+k)(-1+k)k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{3-k}n)^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{m^{3-k}n}{m3}}\right]} \text{Floor}\left[\frac{m^{3-k}n}{m3 m3a}\right]\right) +$$

$$\text{Sum}[\text{Binomial}[k, j] \text{Dd9m}[n / (m^{(k-j)}), j, m+1], \{m, a, n^{(1/k)}\}, \{j, 4, k-1\}]$$

Dd9m[10 000, 5, 2]

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Dd9n[n_, 0, a_] := 1

Dd9n[n_, 1, a_] := Floor[n] - a + 1

Dd9n[n2_, 2, a2_] := $(-1 + a2)^2 - \text{Floor}\left[\sqrt{n2}\right]^2 + 2 \sum_{m2=a2}^{\text{Floor}\left[\sqrt{n2}\right]} \text{Floor}\left[\frac{n2}{m2}\right]$

Dd9n[n3_, 3, a3_] := $-(-1 + a3)^3 + \text{Floor}\left[n3^{1/3}\right]^3 + 3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\frac{n3}{m3^2}\right] -$

$3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]^2 + 6 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]} \text{Floor}\left[\frac{n3}{m3 m3a}\right]$

Dd9n[n_, 4, a_] := $\left(\frac{1}{24} \left(24 + a (-24 + (-1 + a) 4 (a (-2 + a (-2 + 4) - 4) (-1 + 4) + 2 (5 + 4))) +\right.\right.$

$2 (-4 + 4) (-3 + 4) \text{Floor}\left[n^{\frac{1}{4}}\right] - (-5 + 4) (-4 + 4) 4 \text{Floor}\left[n^{\frac{1}{4}}\right]^2 -$

$2 (-4 + 4) (-1 + 4) 4 \text{Floor}\left[n^{\frac{1}{4}}\right]^3 - (-2 + 4) (-1 + 4) 4 \text{Floor}\left[n^{\frac{1}{4}}\right]^4 \Big) +$

$4 \text{Sum}\left[\text{Floor}\left[m^{1-4} n\right], \{m, a, \text{Floor}\left[n^{\frac{1}{4}}\right]\}\right] -$

$\frac{1}{2} (-1 + 4) 4 \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{4}}\right]} \text{Floor}\left[\sqrt{m^{2-4} n}\right]^2 + (-1 + 4) 4 \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{4}}\right]} \sum_{m2=1+m}^{\text{Floor}\left[\sqrt{m^{2-4} n}\right]} \text{Floor}\left[\frac{m^{2-4} n}{m2}\right] +$

$\frac{1}{6} (-2 + 4) (-1 + 4) 4 \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{4}}\right]} \text{Floor}\left[(m^{3-4} n)^{1/3}\right]^3 +$

$\frac{1}{2} (-2 + 4) (-1 + 4) 4 \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{4}}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{3-4} n)^{1/3}\right]} \text{Floor}\left[\frac{m^{3-4} n}{m3^2}\right] \right) +$

$-\frac{1}{2} (-2 + 4) (-1 + 4) 4 \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{4}}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{3-4} n)^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{m^{3-4} n}{m3}}\right]^2 \right) +$

$(-2 + 4) (-1 + 4) 4 \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{4}}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{3-4} n)^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{m^{3-4} n}{m3}}\right]} \text{Floor}\left[\frac{m^{3-4} n}{m3 m3a}\right] \right)$

Dd9n[n_, k_, a_] :=

$\left(\frac{1}{24} \left(24 + a (-24 + (-1 + a) k (a (-2 + a (-2 + k) - k) (-1 + k) + 2 (5 + k))) + 2 (-4 + k)\right.\right.$

$(-3 + k) \text{Floor}\left[n^{\frac{1}{k}}\right] - (-5 + k) (-4 + k) k \text{Floor}\left[n^{\frac{1}{k}}\right]^2 -$

$2 (-4 + k) (-1 + k) k \text{Floor}\left[n^{\frac{1}{k}}\right]^3 - (-2 + k) (-1 + k) k \text{Floor}\left[n^{\frac{1}{k}}\right]^4 \Big) +$

$$\begin{aligned}
& k \text{Sum} \left[\text{Floor} \left[m^{1-k} n \right], \{m, a, \text{Floor} [n^{\wedge} (1 / k)]\} \right] - \\
& \frac{1}{2} (-1 + k) k \sum_{m=a}^{\text{Floor} \left[n^{\frac{1}{k}} \right]} \text{Floor} \left[\sqrt{m^{2-k} n} \right]^2 + (-1 + k) k \sum_{m=a}^{\text{Floor} \left[n^{\frac{1}{k}} \right]} \sum_{m2=1+m}^{\text{Floor} \left[\sqrt{m^{2-k} n} \right]} \text{Floor} \left[\frac{m^{2-k} n}{m2} \right] + \\
& \frac{1}{6} (-2 + k) (-1 + k) k \sum_{m=a}^{\text{Floor} \left[n^{\frac{1}{k}} \right]} \text{Floor} \left[(m^{3-k} n)^{1/3} \right]^3 + \\
& \frac{1}{2} (-2 + k) (-1 + k) k \sum_{m=a}^{\text{Floor} \left[n^{\frac{1}{k}} \right]} \left(\sum_{m3=1+m}^{\text{Floor} \left[(m^{3-k} n)^{1/3} \right]} \text{Floor} \left[\frac{m^{3-k} n}{m3^2} \right] \right) + \\
& -\frac{1}{2} (-2 + k) (-1 + k) k \sum_{m=a}^{\text{Floor} \left[n^{\frac{1}{k}} \right]} \left(\sum_{m3=1+m}^{\text{Floor} \left[(m^{3-k} n)^{1/3} \right]} \text{Floor} \left[\sqrt{\frac{m^{3-k} n}{m3}} \right]^2 \right) + \\
& (-2 + k) (-1 + k) k \sum_{m=a}^{\text{Floor} \left[n^{\frac{1}{k}} \right]} \left(\sum_{m3=1+m}^{\text{Floor} \left[(m^{3-k} n)^{1/3} \right]} \sum_{m3a=1+m3}^{\text{Floor} \left[\sqrt{\frac{m^{3-k} n}{m3}} \right]} \text{Floor} \left[\frac{m^{3-k} n}{m3 m3a} \right] \right) + \\
& \text{Sum} [\text{Binomial} [k, j] \text{Dd9n} [n / (m^{\wedge} (k - j)), j, m + 1], \{m, a, n^{\wedge} (1 / k)\}, \{j, 4, k - 1\}] \\
& \text{Dd9n} [10\,000, 5, 2] \\
& 635\,835 \\
& \text{Dd9o} [n_, 0, a_] := 1 \\
& \text{Dd9o} [n_, 1, a_] := \text{Floor} [n] - a + 1 \\
& \text{Dd9o} [n2_, 2, a2_] := (-1 + a2)^2 - \text{Floor} \left[\sqrt{n2} \right]^2 + 2 \sum_{m2=a2}^{\text{Floor} \left[\sqrt{n2} \right]} \text{Floor} \left[\frac{n2}{m2} \right] \\
& \text{Dd9o} [n3_, 3, a3_] := -(-1 + a3)^3 + \text{Floor} \left[n3^{1/3} \right]^3 + 3 \sum_{m3=a3}^{\text{Floor} \left[n3^{1/3} \right]} \text{Floor} \left[\frac{n3}{m3^2} \right] - \\
& 3 \sum_{m3=a3}^{\text{Floor} \left[n3^{1/3} \right]} \text{Floor} \left[\sqrt{\frac{n3}{m3}} \right]^2 + 6 \sum_{m3=a3}^{\text{Floor} \left[n3^{1/3} \right]} \sum_{m3a=1+m3}^{\text{Floor} \left[\sqrt{\frac{n3}{m3}} \right]} \text{Floor} \left[\frac{n3}{m3 m3a} \right] \\
& \text{Dd9o} [n_, 4, a_] := (-1 + a)^4 - \text{Floor} \left[n^{1/4} \right]^4 + \\
& 4 \text{Sum} \left[\text{Floor} \left[m^{-3} n \right], \{m, a, \text{Floor} [n^{\wedge} (1 / 4)]\} \right] - 6 \sum_{m=a}^{\text{Floor} \left[n^{\frac{1}{4}} \right]} \text{Floor} \left[\sqrt{m^{-2} n} \right]^2 + \\
& 12 \sum_{m=a}^{\text{Floor} \left[n^{\frac{1}{4}} \right]} \sum_{m2=1+m}^{\text{Floor} \left[\sqrt{m^{-2} n} \right]} \text{Floor} \left[\frac{m^{-2} n}{m2} \right] + 4 \sum_{m=a}^{\text{Floor} \left[n^{\frac{1}{4}} \right]} \text{Floor} \left[(m^{-1} n)^{1/3} \right]^3 +
\end{aligned}$$

$$\begin{aligned}
& 12 \sum_{m=a}^{\text{Floor}\left[\frac{1}{n^4}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{-1}n)^{1/3}\right]} \text{Floor}\left[\frac{m^{-1}n}{m3^2}\right] \right) + \\
& -12 \sum_{m=a}^{\text{Floor}\left[\frac{1}{n^4}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{-1}n)^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{m^{-1}n}{m3}}\right]^2 \right) + \\
& 24 \sum_{m=a}^{\text{Floor}\left[\frac{1}{n^4}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{-1}n)^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{m^{-1}n}{m3}}\right]} \text{Floor}\left[\frac{m^{-1}n}{m3 m3a}\right] \right)
\end{aligned}$$

Dd9o[n_, k_, a_] :=

$$\begin{aligned}
& \left(\frac{1}{24} \left(24 + a (-24 + (-1 + a) k (a (-2 + a (-2 + k) - k) (-1 + k) + 2 (5 + k))) + 2 (-4 + k) \right. \right. \\
& \quad (-3 + k) \text{Floor}\left[n^{\frac{1}{k}}\right] - (-5 + k) (-4 + k) k \text{Floor}\left[n^{\frac{1}{k}}\right]^2 - \\
& \quad \left. \left. 2 (-4 + k) (-1 + k) k \text{Floor}\left[n^{\frac{1}{k}}\right]^3 - (-2 + k) (-1 + k) k \text{Floor}\left[n^{\frac{1}{k}}\right]^4 \right) \right) + \\
& k \text{Sum}\left[\text{Floor}\left[m^{1-k}n\right], \{m, a, \text{Floor}\left[n^{\wedge}(1/k)\right]\}\right] - \\
& \frac{1}{2} (-1 + k) k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \text{Floor}\left[\sqrt{m^{2-k}n}\right]^2 + (-1 + k) k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \sum_{m2=1+m}^{\text{Floor}\left[\sqrt{m^{2-k}n}\right]} \text{Floor}\left[\frac{m^{2-k}n}{m2}\right] + \\
& \frac{1}{6} (-2 + k) (-1 + k) k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \text{Floor}\left[(m^{3-k}n)^{1/3}\right]^3 + \\
& \frac{1}{2} (-2 + k) (-1 + k) k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{3-k}n)^{1/3}\right]} \text{Floor}\left[\frac{m^{3-k}n}{m3^2}\right] \right) + \\
& -\frac{1}{2} (-2 + k) (-1 + k) k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{3-k}n)^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{m^{3-k}n}{m3}}\right]^2 \right) + \\
& (-2 + k) (-1 + k) k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{3-k}n)^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{m^{3-k}n}{m3}}\right]} \text{Floor}\left[\frac{m^{3-k}n}{m3 m3a}\right] \right) +
\end{aligned}$$

Sum[Binomial[k, j] Dd9o[n / (m^ (k - j)), j, m + 1], {m, a, n^ (1 / k)}, {j, 4, k - 1}]

Dd9o[10 000, 5, 2]

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Dd9p[n_, 0, a_] := 1

Dd9p[n_, 1, a_] := Floor[n] - a + 1

$$\text{Dd9p}[n2_ , 2, a2_] := (-1 + a2)^2 - \text{Floor}\left[\sqrt{n2}\right]^2 + 2 \sum_{m2=a2}^{\text{Floor}\left[\sqrt{n2}\right]} \text{Floor}\left[\frac{n2}{m2}\right]$$

$$\text{Dd9p}[n3_ , 3, a3_] := -(-1 + a3)^3 + \text{Floor}\left[n3^{1/3}\right]^3 + 3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\frac{n3}{m3^2}\right] -$$

$$3 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]^2 + 6 \sum_{m3=a3}^{\text{Floor}\left[n3^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{n3}{m3}}\right]} \text{Floor}\left[\frac{n3}{m3 m3a}\right]$$

$$\text{Dd9p}[n_ , 4, a_] := (-1 + a)^4 - \text{Floor}\left[n^{1/4}\right]^4 +$$

$$4 \sum_{m=a}^{\text{Floor}\left[n^{1/4}\right]} \text{Floor}\left[n m^3 - 3\right] +$$

$$- 6 \sum_{m=a}^{\text{Floor}\left[n^{1/4}\right]} \text{Floor}\left[\sqrt{m^{-2} n}\right]^2 +$$

$$12 \sum_{m=a}^{\text{Floor}\left[n^{1/4}\right]} \sum_{m2=1+m}^{\text{Floor}\left[\sqrt{m^{-2} n}\right]} \text{Floor}\left[m^{-2} n m2^3 - 1\right] +$$

$$4 \sum_{m=a}^{\text{Floor}\left[n^{1/4}\right]} \text{Floor}\left[(m^{-1} n)^{1/3}\right]^3 +$$

$$12 \sum_{m=a}^{\text{Floor}\left[n^{1/4}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{-1} n)^{1/3}\right]} \text{Floor}\left[m^{-1} n m3^3 - 2\right] \right) +$$

$$- 12 \sum_{m=a}^{\text{Floor}\left[n^{1/4}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{-1} n)^{1/3}\right]} \text{Floor}\left[\sqrt{m^{-1} n m3^3 - 1}\right]^2 \right) +$$

$$24 \sum_{m=a}^{\text{Floor}\left[n^{1/4}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[(m^{-1} n)^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{m^{-1} n m3^3 - 1}\right]} \text{Floor}\left[m^{-1} m3^3 - 1 m3a^3 - 1 n\right] \right)$$

$$\text{Dd9p}[n_ , k_ , a_] :=$$

$$\left(\frac{1}{24} \left(24 + a (-24 + (-1 + a) k (a (-2 + a (-2 + k) - k) (-1 + k) + 2 (5 + k))) + 2 (-4 + k) \right. \right.$$

$$(-3 + k) \text{Floor}\left[n^{\frac{1}{k}}\right] - (-5 + k) (-4 + k) k \text{Floor}\left[n^{\frac{1}{k}}\right]^2 -$$

$$2 (-4 + k) (-1 + k) k \text{Floor}\left[n^{\frac{1}{k}}\right]^3 - (-2 + k) (-1 + k) k \text{Floor}\left[n^{\frac{1}{k}}\right]^4 \left. \right) +$$

$$k \text{Sum}\left[\text{Floor}\left[m^{1-k} n\right], \{m, a, \text{Floor}\left[n^{\frac{1}{k}}\right]\}\right] -$$

$$\frac{1}{2} (-1 + k) k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \text{Floor}\left[\sqrt{m^{2-k} n}\right]^2 + (-1 + k) k \sum_{m=a}^{\text{Floor}\left[n^{\frac{1}{k}}\right]} \sum_{m2=1+m}^{\text{Floor}\left[\sqrt{m^{2-k} n}\right]} \text{Floor}\left[\frac{m^{2-k} n}{m2}\right] +$$

$$\begin{aligned}
& \frac{1}{6} (-2+k) (-1+k) k \sum_{m=a}^{\text{Floor}\left[\frac{1}{n^k}\right]} \text{Floor}\left[\left(m^{3-k} n\right)^{1/3}\right]^3 + \\
& \frac{1}{2} (-2+k) (-1+k) k \sum_{m=a}^{\text{Floor}\left[\frac{1}{n^k}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[\left(m^{3-k} n\right)^{1/3}\right]} \text{Floor}\left[\frac{m^{3-k} n}{m3^2}\right] \right) + \\
& -\frac{1}{2} (-2+k) (-1+k) k \sum_{m=a}^{\text{Floor}\left[\frac{1}{n^k}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[\left(m^{3-k} n\right)^{1/3}\right]} \text{Floor}\left[\sqrt{\frac{m^{3-k} n}{m3}}\right]^2 \right) + \\
& (-2+k) (-1+k) k \sum_{m=a}^{\text{Floor}\left[\frac{1}{n^k}\right]} \left(\sum_{m3=1+m}^{\text{Floor}\left[\left(m^{3-k} n\right)^{1/3}\right]} \sum_{m3a=1+m3}^{\text{Floor}\left[\sqrt{\frac{m^{3-k} n}{m3}}\right]} \text{Floor}\left[\frac{m^{3-k} n}{m3 m3a}\right] \right) + \\
& \text{Sum}[\text{Binomial}[k, j] \text{Dd9p}[n / (m^{(k-j)}), j, m+1], \{m, a, n^{(1/k)}\}, \{j, 4, k-1\}] \\
& \text{Dd9p}[10\,000, 5, 2] \\
& 635\,835
\end{aligned}$$