

Q1

# Series Part 1



## Agenda of the session

$$\frac{x^2 + x}{2}$$

Let  $x = 1, 2, 3, \dots, n$ .

2, 6, 12, 20, ?  $\rightarrow 5^2 + 5$   $\textcircled{30}$

$\frac{1^2}{1+1}, \frac{2^2}{2+2}, \frac{3^2}{3+3}, \frac{4^2}{4+4}$

$x = 5, 6, \dots$  ?  $\textcircled{90}$

30, 42, 56, 72, ?  $\rightarrow 9^2 + 9$

$\frac{5^2}{5+5}, \frac{6^2}{6+6}, \frac{7^2}{7+7}, \frac{8^2}{8+8}$

(59 & 60 & 61 & 62 & 63 & 64 & 65 & 66 & 67 & 68 & 69 & 70 & 71 & 72 & 73 & 74 & 75 & 76 & 77 & 78 & 79 & 80 & 81 & 82 & 83 & 84 & 85 & 86 & 87 & 88 & 89 & 90 & 91 & 92 & 93 & 94 & 95 & 96 & 97 & 98 & 99 & 100)

① Magical No

② Synchronization

30

$$25 + 5 = 5^2 + 5 = x^2 + x$$

$$27 + 3 = 3^3 + 3 = x^3 + x$$

$$36 - 6 = 6^2 - 6 = x^2 - x$$

$$32 - 2 = 2^5 - 2 = 2^5 - 2$$

2, 6, 12, 20, ?  $\textcircled{30}$

$\underbrace{2+4}_{4}, \underbrace{6+6}_{12}, \underbrace{12+8}_{20}, \underbrace{20+10}_{30}$  } Chain

$\underbrace{2+2}_{4}, \underbrace{4+4}_{8}, \underbrace{6+6}_{12}, \underbrace{8+8}_{16}, \underbrace{10+10}_{20}, \underbrace{12+12}_{24}, \underbrace{14+14}_{28}, \underbrace{16+16}_{32}, \underbrace{18+18}_{36}, \underbrace{20+20}_{40}$

$\underbrace{2+2}_{4}, \underbrace{4+4}_{8}, \underbrace{6+6}_{12}, \underbrace{8+8}_{16}, \underbrace{10+10}_{20}, \underbrace{12+12}_{24}, \underbrace{14+14}_{28}, \underbrace{16+16}_{32}, \underbrace{18+18}_{36}, \underbrace{20+20}_{40}$

$\underbrace{2+2}_{4}, \underbrace{4+4}_{8}, \underbrace{6+6}_{12}, \underbrace{8+8}_{16}, \underbrace{10+10}_{20}, \underbrace{12+12}_{24}, \underbrace{14+14}_{28}, \underbrace{16+16}_{32}, \underbrace{18+18}_{36}, \underbrace{20+20}_{40}$

Type 1- Addition / subtraction

2, 8, 18, 32, ? (50)

6 10 14 18

A. 48

B. 50

C. 64

D. 72

Handwritten work showing the pattern:

$$\begin{array}{l}
 \checkmark 1^2 + 1^2 = 2 \\
 2^2 + 2^2 = 8 \\
 3^2 + 3^2 = 18 \\
 4^2 + 4^2 = 32 \\
 ? \quad 5^2 + 5^2 = 50 \\
 1^2 \times 2 = 2 \\
 2^2 \times 2 = 8 \\
 3^2 \times 2 = 18 \\
 4^2 \times 2 = 32 \\
 5^2 \times 2 = 50
 \end{array}$$



1, 1, 1, 1, -  
1, 2, 3, - - -  
3, 2, 1, - - -

Type 2- Multiplication

~~$\times 3 \times 3$~~   
1, 3, 9, 31, 129, ?

A. 645  $\times 3 + 4$

B. 650

✓ C. 651

D. 655

Trick  
① If there are  
divert multiple at  
1 or 2 places, Avoid that.  
② Try start solving  
from 3rd term.

1, 3, 9, 31, 129, ? 651

$\times 1+2$   $\times 2+3$   $\times 3+4$   $\times 4+5$   $\times 5+6$

③

$129 \times 5$   
 $130 \times 5 = 650$   
 $1 \times 5 = \frac{5}{645}$

Trick  
we have 0 at  
1st or 2nd place.

$$0 = 1^3 - 1$$

$$1^2 - 1$$

$$1^3 - 1 \rightarrow 2^2 - 1$$

Type 3- Magical Number Based  
 $1^3 - 1$   $2^3 - 1$   $3^3 - 1$   $4^3 - 1$   $5^3 - 1 = 124$   
 0, 7, 26, 63, ?

- A. 132
- B. 141
- ☒ C. 124
- D. 150

$$\left\{ \begin{array}{l} 2^2 \\ 15^2 \end{array} \right. =$$

updated for SSC / Revision

Type 4- Half pattern Series

4, 2, 2, 3, 6, ? (15)  
 $\times 0.5$   $\times 1$   $\times 1.5$   $\times 2$   $\times 2.5$   
A. 8

B. 10

☒ C. 15

D. 18

Decimal  $\rightarrow$   
Trick  $\times 0.5$  and  $\times 1.5$   
 $\times 1$   
 $\frac{1}{2}$  (1)  $1\frac{1}{2}$



Trick  
All the terms  
are near by  
each other

Type 5- Merged / Alternate series

87, 90, 84, 88, 81, ?, ?

A. 85, 93

B. 86, 98

C. 86, 78

D. 86, 68

✓  
87, 90, 84, 88, 81, 78, 86  
-3 -3 -3  
-2 -2  
87, 90, 84, 88, 81, 78, 86  
+3 -6 +4 -7 +5 -8



$$213 \times 2 = \underline{426}$$

✓ Magical Add

X      HX  
          MX

**Q. Which number will replace the question mark (?) in the following number series?**

**5, 24, 61, 122, 213, ?**

**A. 343**

**B. 337**

**C. 346**

**D. 340**

$2^3-3$   
 $5, 24, 61, 122, 213, \frac{?}{340}$   
 $3^3-3$   
 $4^3-3$   
 $5^3-3$   
 $6^3-3$   
 $7^3-3$



Ans. D



Q. Which number will replace the question mark (?) in the following number series?

5, 17, 53, ?, 485

A. 163

B. 157

C. 159

☒ D. 161

Handwritten solution in red ink:

5, 17, 53, 161, 485

The sequence shows a pattern of multiplying by 3 and adding 2:

$$5 \times 3 + 2 = 17$$
$$17 \times 3 + 2 = 53$$
$$53 \times 3 + 2 = 161$$
$$161 \times 3 + 2 = 485$$







gradeup

Q. Select the number that will replace the question mark (?) in the following series.

8, 17, 36, 75, 154, ?

☒ A. 313

B. 300

C. 320

D. 308

Handwritten solution showing the pattern:

$$8, 17, 36, 75, 154, ?$$

Pattern:  $\times 2 + 1$ ,  $\times 2 + 2$ ,  $\times 2 + 3$ ,  $\times 2 + 4$ ,  $\times 2 + 5$

Calculation for the next term:

$$154 \times 2 + 5 = 308 + 5 = 313$$

The answer 313 is circled in red.





Q. Select the number that will correctly replace the question mark (?) in the series.

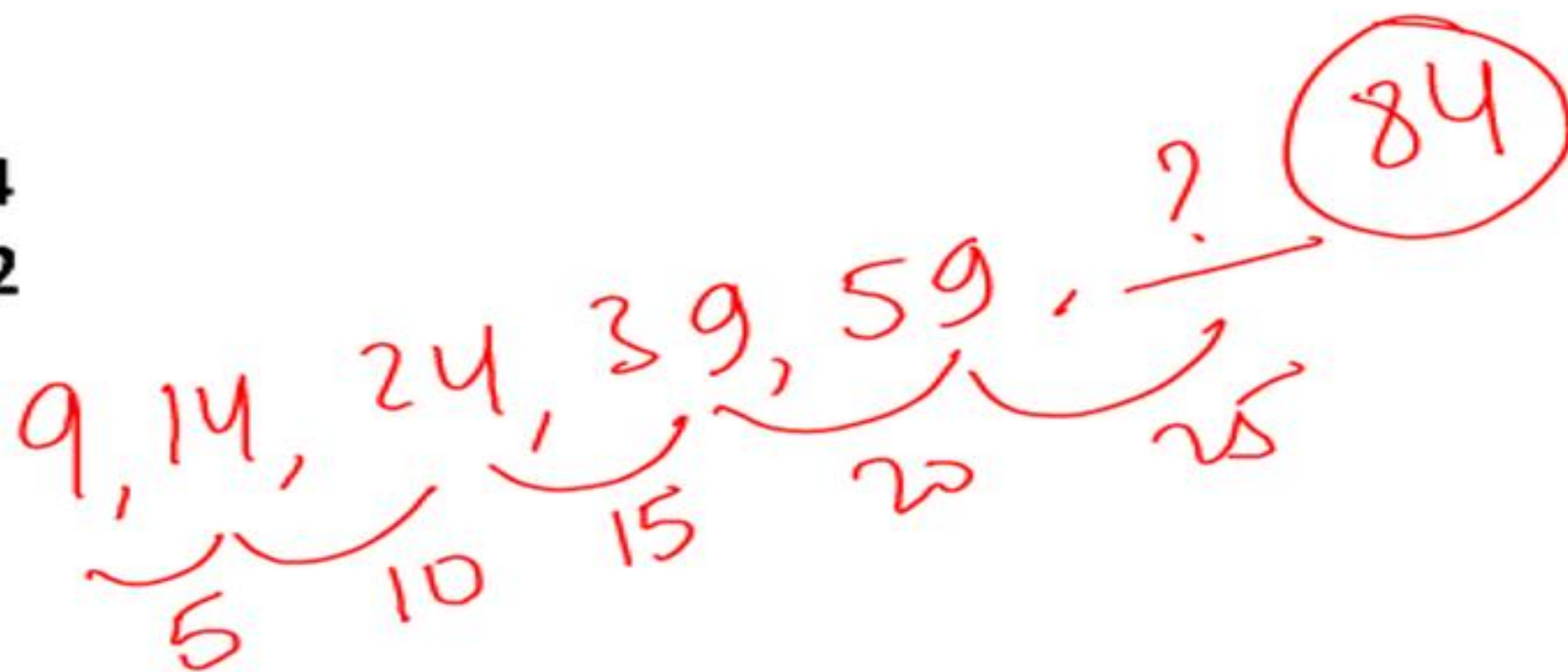
9, 14, 24, 39, 59, ?

A. 86

C. 90

☒ B. 84

D. 82







Ans. B



gradeup

Prime No.

3, 6, 9, 11, 15, 18

Q. Identify the number that does NOT belong to the following series.

17, 19, 23, 30, 47, 79

A. 79

B. 23

C. 30

D. 47

2 4 6/8/12

Handwritten analysis of the series: 17, 19, 23, 30, 47, 79. The numbers 17, 19, and 23 are grouped with a bracket and labeled '2'. The numbers 30, 47, and 79 are grouped with a bracket and labeled '3'. The number 30 is circled and labeled '31'. The number 47 is circled and labeled '16'. The number 79 is circled and labeled '16'. The number 17 is circled and labeled '8'. The number 23 is circled and labeled '4'. The number 30 is circled and labeled '31'.







gradeup

Q. Select the number that can replace question mark (?) In the following series

1440, 240, 48, 12, ?

A. 2

B. 3

C. 4

D. 6



4

$\times 5$   $\times 4$   $\times 3$





gradeup

Q. Select the number that can replace the question mark (?) in the following series.

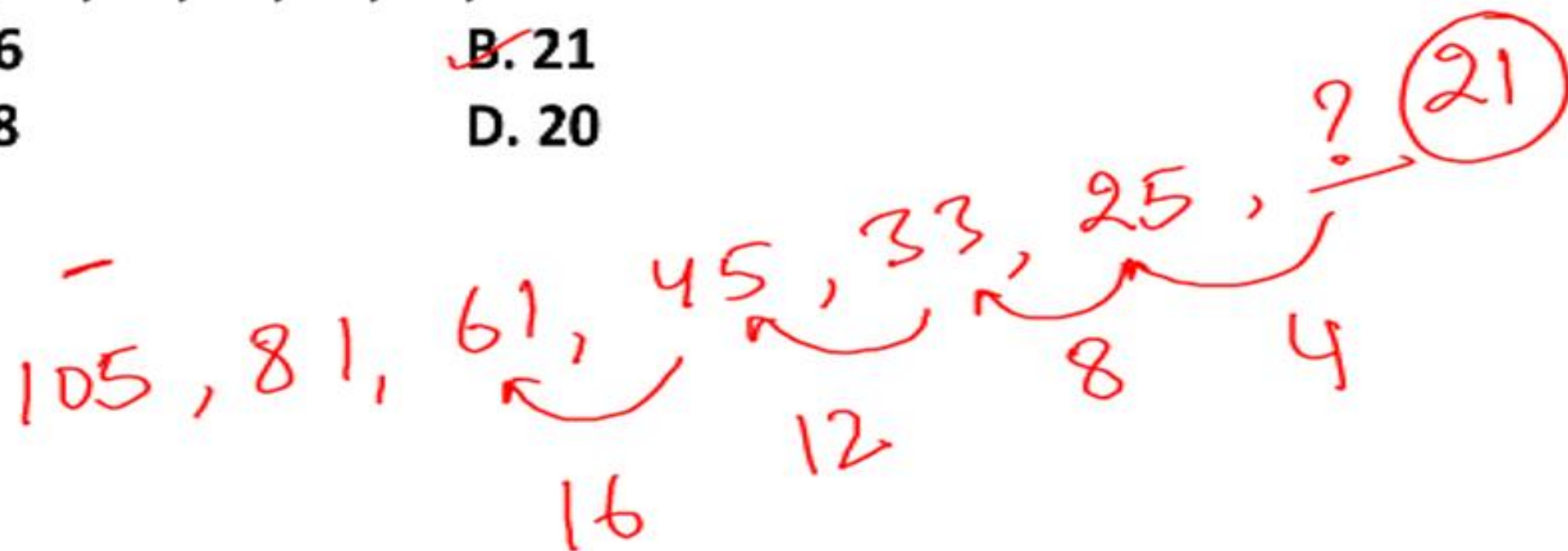
105, 81, 61, 45, 33, 25, ?

A. 16

☒ B. 21

C. 18

D. 20









V. Imp.

gradeup

Q. Select the number that can replace the question mark (?) in the following series.

0, 4, 18, 48, 100, 180, ?

A. 284

B. 194

C. 274

☒ D. 294

$$7^3 - 7^2 = 343 - 49 = 294$$

$$0 = 1^3 - 1^2$$

$$\begin{array}{ccccccc} 1^3 - 1^2 & 2^3 - 2^2 & 3^3 - 3^2 & 4^3 - 4^2 & 5^3 - 5^2 & 6^3 - 6^2 & 7^3 - 7^2 \\ 0 & 4 & 18 & 48 & 100 & 180 & 294 \\ 1^2 \times 0 & 2^2 \times 1 & 3^2 \times 2 & 4^2 \times 3 & 5^2 \times 4 & 6^2 \times 5 & 7^2 \times 4 \end{array}$$





gradeup

Q. Select the number that can replace the question mark (?) in the following series.

3, 14, 61, 310, 1865, ?

A. 12080

B. 11070

C. 10090

D. 13060

Handwritten solution showing the pattern:

$$3, 14, 61, 310, 1865, ?$$

Pattern:  $\times 3 + 5$ ,  $\times 4 + 5$ ,  $\times 5 + 5$ ,  $\times 6 + 5$ ,  $\times 7 + 5$







gradeup

Q. Which number will replace the question mark (?) in the following series?

15, 46, 139, 418, ?

A. 1325

B. 1255

C. 1126

D. 1025

1255

15, 46, 139, 418, ?  
 $\times 3 + 1$   $\times 3 + 1$   $\times 3 + 1$





gradeup

Q. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

41, 42, 21, <sup>22</sup>?, 11, 12

A. 10

~~$\times \frac{1}{2}$~~   $+ 1$   ~~$\times \frac{1}{2}$~~

C. 24

☒ B. 22

D. 16

41, 42, 21, <sup>(22)</sup>?, 11, 12  
 $+1 \times \frac{1}{2} + 1 \times \frac{1}{2} + 1$







gradeup

Q. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

15, 65, 100, ?, 170, 205

A. 155

B. 140

C. 132

D. 135

$$15 \times 3 + 20 = 65$$

$$20 \times 3 + 40 = 100$$

$$25 \times 3 + 60 = 125$$

$$30 \times 3 + 80 = 170$$

$$35 \times 3 + 100 = 205$$

$$15, 65, 100, ?, 170, 205$$

Handwritten analysis showing differences between terms:

- 65 - 15 = 50
- 100 - 65 = 35
- 170 - ? = 35
- 205 - 170 = 35

Key Take away

Magical no

please rate the session

Prime no

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97, 101, 103, 107, 109, 113, 127, 131, 137, 139, 149, 151, 157, 163, 167, 173, 179, 181, 187, 191, 193, 197, 199, 211, 223, 227, 229, 233, 239, 241, 251, 257, 263, 269, 271, 277, 281, 283, 293, 307, 311, 313, 317, 331, 337, 347, 349, 353, 359, 367, 373, 379, 383, 389, 397, 401, 409, 419, 421, 431, 433, 439, 443, 449, 457, 461, 463, 467, 479, 487, 491, 499, 503, 509, 521, 523, 527, 539, 541, 547, 557, 563, 569, 571, 577, 587, 593, 599, 601, 607, 613, 617, 619, 623, 629, 631, 637, 641, 643, 647, 653, 659, 661, 667, 671, 673, 677, 683, 687, 691, 697, 701, 709, 713, 719, 727, 731, 733, 737, 743, 749, 751, 757, 761, 769, 773, 779, 787, 791, 797, 809, 811, 817, 821, 823, 827, 829, 833, 837, 851, 853, 857, 859, 863, 869, 877, 881, 883, 887, 893, 897, 901, 907, 911, 913, 917, 919, 923, 929, 931, 937, 941, 943, 947, 953, 959, 967, 971, 973, 977, 983, 989, 991, 993, 997, 1009, 1013, 1017, 1019, 1021, 1023, 1027, 1031, 1033, 1037, 1039, 1043, 1047, 1049, 1051, 1057, 1059, 1063, 1067, 1069, 1073, 1077, 1081, 1087, 1091, 1093, 1097, 1103, 1107, 1109, 1113, 1117, 1121, 1123, 1127, 1129, 1133, 1137, 1141, 1147, 1151, 1153, 1157, 1163, 1167, 1171, 1177, 1181, 1183, 1187, 1193, 1197, 1201, 1207, 1211, 1213, 1217, 1223, 1229, 1231, 1237, 1241, 1243, 1247, 1253, 1259, 1261, 1267, 1271, 1273, 1277, 1283, 1287, 1291, 1297, 1301, 1303, 1307, 1311, 1313, 1317, 1321, 1327, 1329, 1333, 1337, 1341, 1343, 1347, 1351, 1357, 1359, 1363, 1367, 1371, 1373, 1377, 1381, 1387, 1391, 1397, 1403, 1407, 1409, 1411, 1413, 1417, 1421, 1423, 1427, 1429, 1433, 1437, 1439, 1443, 1447, 1451, 1453, 1457, 1463, 1467, 1471, 1477, 1481, 1483, 1487, 1493, 1497, 1501, 1507, 1511, 1513, 1517, 1523, 1529, 1531, 1537, 1541, 1543, 1547, 1553, 1559, 1561, 1567, 1571, 1573, 1577, 1583, 1587, 1591, 1597, 1601, 1603, 1607, 1609, 1613, 1617, 1621, 1627, 1631, 1633, 1637, 1641, 1643, 1647, 1651, 1657, 1659, 1663, 1667, 1671, 1673, 1677, 1681, 1687, 1691, 1697, 1701, 1703, 1707, 1709, 1711, 1713, 1717, 1721, 1723, 1727, 1729, 1733, 1737, 1741, 1743, 1747, 1753, 1759, 1761, 1767, 1771, 1773, 1777, 1783, 1787, 1791, 1797, 1801, 1803, 1807, 1811, 1813, 1817, 1821, 1823, 1827, 1829, 1833, 1837, 1841, 1843, 1847, 1851, 1853, 1857, 1863, 1867, 1871, 1873, 1877, 1883, 1887, 1891, 1897, 1901, 1903, 1907, 1909, 1913, 1917, 1921, 1923, 1927, 1929, 1933, 1937, 1941, 1943, 1947, 1953, 1959, 1961, 1967, 1971, 1973, 1977, 1983, 1987, 1991, 1993, 1997, 2003, 2009, 2011, 2013, 2017, 2021, 2023, 2027, 2029, 2033, 2037, 2041, 2043, 2047, 2053, 2059, 2061, 2067, 2071, 2073, 2077, 2083, 2087, 2091, 2097, 2101, 2103, 2107, 2111, 2113, 2117, 2121, 2123, 2127, 2129, 2133, 2137, 2141, 2143, 2147, 2153, 2159, 2161, 2167, 2171, 2173, 2177, 2183, 2187, 2191, 2197, 2201, 2203, 2207, 2209, 2213, 2217, 2221, 2223, 2227, 2229, 2233, 2237, 2241, 2243, 2247, 2253, 2259, 2261, 2267, 2271, 2273, 2277, 2283, 2287, 2291, 2297, 2301, 2303, 2307, 2311, 2313, 2317, 2321, 2323, 2327, 2329, 2333, 2337, 2341, 2343, 2347, 2353, 2359, 2361, 2367, 2371, 2373, 2377, 2383, 2387, 2391, 2397, 2401, 2403, 2407, 2411, 2413, 2417, 2421, 2423, 2427, 2429, 2433, 2437, 2441, 2443, 2447, 2453, 2459, 2461, 2467, 2471, 2473, 2477, 2483, 2487, 2491, 2497, 2501, 2503, 2507, 2511, 2513, 2517, 2521, 2523, 2527, 2529, 2533, 2537, 2541, 2543, 2547, 2553, 2559, 2561, 2567, 2571, 2573, 2577, 2583, 2587, 2591, 2597, 2601, 2603, 2607, 2611, 2613, 2617, 2621, 2623, 2627, 2629, 2633, 2637, 2641, 2643, 2647, 2653, 2659, 2661, 2667, 2671, 2673, 2677, 2683, 2687, 2691, 2697, 2701, 2703, 2707, 2711, 2713, 2717, 2721, 2723, 2727, 2729, 2733, 2737, 2741, 2743, 2747, 2753, 2759, 2761, 2767, 2771, 2773, 2777, 2783, 2787, 2791, 2797, 2801, 2803, 2807, 2811, 2813, 2817, 2821, 2823, 2827, 2829, 2833, 2837, 2841, 2843, 2847, 2853, 2859, 2861, 2867, 2871, 2873, 2877, 2883, 2887, 2891, 2897, 2901, 2903, 2907, 2911, 2913, 2917, 2921, 2923, 2927, 2929, 2933, 2937, 2941, 2943, 2947, 2953, 2959, 2961, 2967, 2971, 2973, 2977, 2983, 2987, 2991, 2993, 2997, 3001, 3003, 3007, 3011, 3013, 3017, 3021, 3023, 3027, 3029, 3033, 3037, 3041, 3043, 3047, 3053, 3059, 3061, 3067, 3071, 3073, 3077, 3083, 3087, 3091, 3097, 3101, 3103, 3107, 3111, 3113, 3117, 3121, 3123, 3127, 3129, 3133, 3137, 3141, 3143, 3147, 3153, 3159, 3161, 3167, 3171, 3173, 3177, 3183, 3187, 3191, 3197, 3201, 3203, 3207, 3211, 3213, 3217, 3221, 3223, 3227, 3229, 3233, 3237, 3241, 3243, 3247, 3253, 3259, 3261, 3267, 3271, 3273, 3277, 3283, 3287, 3291, 3297, 3301, 3303, 3307, 3311, 3313, 3317, 3321, 3323, 3327, 3329, 3333, 3337, 3341, 3343, 3347, 3353, 3359, 3361, 3367, 3371, 3373, 3377, 3383, 3387, 3391, 3397, 3401, 3403, 3407, 3411, 3413, 3417, 3421, 3423, 3427, 3429, 3433, 3437, 3441, 3443, 3447, 3453, 3459, 3461, 3467, 3471, 3473, 3477, 3483, 3487, 3491, 3497, 3501, 3503, 3507, 3511, 3513, 3517, 3521, 3523, 3527, 3529, 3533, 3537, 3541, 3543, 3547, 3553, 3559, 3561, 3567, 3571, 3573, 3577, 3583, 3587, 3591, 3597, 3601, 3603, 3607, 3611, 3613, 3617, 3621, 3623, 3627, 3629, 3633, 3637, 3641, 3643, 3647, 3653, 3659, 3661, 3667, 3671, 3673, 3677, 3683, 3687, 3691, 3697, 3701, 3703, 3707, 3711, 3713, 3717, 3721, 3723, 3727, 3729, 3733, 3737, 3741, 3743, 3747, 3753, 3759, 3761, 3767, 3771, 3773, 3777, 3783, 3787, 3791, 3797, 3801, 3803, 3807, 3811, 3813, 3817, 3821, 3823, 3827, 3829, 3833, 3837, 3841, 3843, 3847, 3853, 3859, 3861, 3867, 3871, 3873, 3877, 3883, 3887, 3891, 3897, 3901, 3903, 3907, 3911, 3913, 3917, 3921, 3923, 3927, 3929, 3933, 3937, 3941, 3943, 3947, 3953, 3959, 3961, 3967, 3971, 3973, 3977, 3983, 3987, 3991, 3993, 3997, 4001, 4003, 4007, 4011, 4013, 4017, 4021, 4023, 4027, 4029, 4033, 4037, 4041, 4043, 4047, 4053, 4059, 4061, 4067, 4071, 4073, 4077, 4083, 4087, 4091, 4097, 4101, 4103, 4107, 4111, 4113, 4117, 4121, 4123, 4127, 4129, 4133, 4137, 4141, 4143, 4147, 4153, 4159, 4161, 4167, 4171, 4173, 4177, 4183, 4187, 4191, 4197, 4201, 4203, 4207, 4211, 4213, 4217, 4221, 4223, 4227, 4229, 4233, 4237, 4241, 4243, 4247, 4253, 4259, 4261, 4267, 4271, 4273, 4277, 4283, 4287, 4291, 4297, 4301, 4303, 4307, 4311, 4313, 4317, 4321, 4323, 4327, 4329, 4333, 4337, 4341, 4343, 4347, 4353, 4359, 4361, 4367, 4371, 4373, 4377, 4383, 4387, 4391, 4397, 4401, 4403, 4407, 4411, 4413, 4417, 4421, 4423, 4427, 4429, 4433, 4437, 4441, 4443, 4447, 4453, 4459, 4461, 4467, 4471, 4473, 4477, 4483, 4487, 4491, 4497, 4501, 4503, 4507, 4511, 4513, 4517, 4521, 4523, 4527, 4529, 4533, 4537, 4541, 4543, 4547, 4553, 4559, 4561, 4567, 4571, 4573, 4577, 4583, 4587, 4591, 4597, 4601, 4603, 4607, 4611, 4613, 4617, 4621, 4623, 4627, 4629, 4633, 4637, 4641, 4643, 4647, 4653, 4659, 4661, 4667, 4671, 4673, 4677, 4683, 4687, 4691, 4697, 4701, 4703, 4707, 4711, 4713, 4717, 4721, 4723, 4727, 4729, 4733, 4737, 4741, 4743, 4747, 4753, 4759, 4761, 4767, 4771, 4773, 4777, 4783, 4787, 4791, 4797, 4801, 4803, 4807, 4811, 4813, 4817, 4821, 4823, 4827, 4829, 4833, 4837, 4841, 4843, 4847, 4853, 4859, 4861, 4867, 4871, 4873, 4877, 4883, 4887, 4891, 4897, 4901, 4903, 4907, 4911, 4913, 4917, 4921, 4923, 4927, 4929, 4933, 4937, 4941, 4943, 4947, 4953, 4959, 4961, 4967, 4971, 4973, 4977, 4983, 4987, 4991, 4993, 4997, 5001, 5003, 5007, 5011, 5013, 5017, 5021, 5023, 5027, 5029, 5033, 5037, 5041, 5043, 5047, 5053, 5059, 5061, 5067, 5071, 5073, 5077, 5083, 5087, 5091, 5097, 5101, 5103, 5107, 5111, 5113, 5117, 5121, 5123, 5127, 5129, 5133, 5137, 5141, 5143, 5147, 5153, 5159, 5161, 5167, 5171, 5173, 5177, 5183, 5187, 5191, 5197, 5201, 5203, 5207, 5211, 5213, 5217, 5221, 5223, 5227, 5229, 5233, 5237, 5241, 5243, 5247, 5253, 5259, 5261, 5267, 5271, 5273, 5277, 5283, 5287, 5291, 5297, 5301, 5303, 5307, 5311, 5313, 5317, 5321, 5323, 5327, 5329, 5333, 5337, 5341, 5343, 5347, 5353, 5359, 5361, 5367, 5371, 5373, 5377, 5383, 5387, 5391, 5397, 5401, 5403, 5407, 5411, 5413, 5417, 5421, 5423, 5427, 5429, 5433, 5437, 5441, 5443, 5447, 5453, 5459, 5461, 5467, 5471, 5473, 5477, 5483, 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