26

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26 is the only integer to be directly between a square (25) and a cube (27).

Contents

Membership in core sequences

Even numbers	..., 20, 22, 24, **26**, 28, 30, 32, ...	A005843(13)
Composite numbers	..., 22, 24, 25, **26**, 27, 28, 30, ...	A002808
Semiprimes	..., 21, 22, 25, **26**, 33, 34, 35, ...	A001358
Squarefree numbers	..., 21, 22, 23, **26**, 29, 30, 31, ...	A005117
Numbers that are the sum of two squares	..., 18, 20, 25, **26**, 29, 32, 34, ...	A001481
Young tableaux numbers	..., 2, 4, 10, **26**, 76, 232, 764, ...	A000085

In Pascal's triangle, 26 occurs twice.

Sequences pertaining to 26

Multiples of 26	0, 26, 52, 78, 104, 130, 156, 182, 208, 234, 260, ...	A252994
Decimal expansion of reciprocal of 26	0.03846153846153846153846153846153846153846...	A021030
26-gonal numbers	1, 26, 75, 148, 245, 366, 511, 680, 873, 1090, 1331, ...	A255185
$3x+1$ sequence beginning at 9	9, 28, 14, 7, 22, 11, 34, 17, 52, 26, 13, 40, 20, 10, ...	A033479
$5x+1$ sequence beginning at 5	5, 26, 13, 66, 33, 166, 83, 416, 208, 104, 52, 26, 13, ...	A259207

Partitions of 26

There are 2436 partitions of 26.

The Goldbach representations of 26 are 3 + 23 = 7 + 19 = 13 + 13.

Roots and powers of 26

In the table below, irrational numbers are given truncated to eight decimal places.

$\sqrt{26}$	5.09901951	A010481	26^2	676
$\sqrt[3]{26}$	2.96249606	A010598	26^3	17576
$\sqrt[4]{26}$	2.25810086	A011021	26^4	456976
$\sqrt[5]{26}$	1.91864519	A011111	26^5	11881376
$\sqrt[6]{26}$	1.72119030		26^6	308915776
$\sqrt[7]{26}$	1.59271859		26^7	8031810176
$\sqrt[8]{26}$	1.50269786		26^8	208827064576
$\sqrt[9]{26}$	1.43621434		26^9	5429503678976
$\sqrt[10]{26}$	1.38515168		26^{10}	141167095653376
				A009970

Logarithms and 26th powers

In the OEIS specifically and mathematics in general, $\log x$ refers to the natural logarithm of x, whereas all other bases are specified with a subscript.

As above, irrational numbers in the following table are truncated to eight decimal places.

$\log_{26} 2$	0.21274605		$\log_2 26$	4.70043971		2^{26}	67108864	
$\log_{26} e$	0.30692767		$\log 26$	3.25809653	A016649	e^{26}		
$\log_{26} 3$	0.33719451		$\log_3 26$	2.96564727	A152564	3^{26}	2541865828329	
$\log_{26} \pi$	0.35134928		$\log_\pi 26$	2.84617059		π^{26}		
$\log_{26} 4$	0.42549210		$\log_4 26$	2.35021985		4^{26}	4503599627370496	
$\log_{26} 5$	0.49398103		$\log_5 26$	2.02436919		5^{26}	1490116119384765625	
$\log_{26} 6$	0.54994057		$\log_6 26$	1.81837830		6^{26}	170581728179578208256	
$\log_{26} 7$	0.59725368		$\log_7 26$	1.67433041		7^{26}	9387480337647754305649	
$\log_{26} 8$	0.63823816		$\log_8 26$	1.56681323		8^{26}	302231454903657293676544	
$\log_{26} 9$	0.67438903		$\log_9 26$	1.48282363		9^{26}	6461081889226673298932241	
$\log_{26} 10$	0.70672709		$\log_{10} 26$	1.41497334		10^{26}	100000000000000000000000000	

See A089081 for the 26th powers of integers.

Values for number theoretic functions with 26 as an argument

$\mu(26)$	1	
$M(26)$	-3	
$\pi(26)$	9	
$\sigma_1(26)$	42	
$\sigma_0(26)$	4	
$\phi(26)$	12	
$\Omega(26)$	2	
$\omega(26)$	2	
$\lambda(26)$	12	This is the Carmichael lambda function.
$\lambda(26)$	1	This is the Liouville lambda function.
$\zeta(26)$	1.0000000149015548...	
26!	403291461126605635584000000	
$\Gamma(26)$	15511210043330985984000000	

Factorization of some small integers in a quadratic integer ring adjoining the square roots of -26, 26

The commutative quadratic integer ring with unity $\mathbb{Z}[\sqrt{26}]$, with units of the form $\pm(5+\sqrt{26})^n \ (n \in \mathbb{Z})$, is not a unique factorization domain, having class number 2. $\mathbb{Z}[\sqrt{-26}]$ is not a unique factorization domain either, though the lack of unique factorization could be said to be "much worse" with a class number of 6.

<table>
<tr><th>n</th><th>$\mathbb{Z}[\sqrt{-26}]$</th><th>$\mathbb{Z}[\sqrt{26}]$</th></tr>
<tr><td>2</td><td rowspan="2">Irreducible</td><td>Irreducible</td></tr>
<tr><td>3</td><td>Prime</td></tr>
<tr><td>4</td><td colspan="2">2^2</td></tr>
<tr><td>5</td><td colspan="2">Irreducible</td></tr>
<tr><td>6</td><td colspan="2">2 × 3</td></tr>
<tr><td>7</td><td>Irreducible</td><td>Prime</td></tr>
<tr><td>8</td><td colspan="2">2^3</td></tr>
<tr><td>9</td><td colspan="2">3^2</td></tr>
<tr><td>10</td><td>2 × 5</td><td>2 × 5 OR $(-1)(4-\sqrt{26})(4+\sqrt{26})$</td></tr>
<tr><td>11</td><td>Prime</td><td>Irreducible</td></tr>
<tr><td>12</td><td colspan="2">$2^2 \times 3$</td></tr>
<tr><td>13</td><td colspan="2">Irreducible</td></tr>
<tr><td>14</td><td colspan="2">2 × 7</td></tr>
<tr><td>15</td><td colspan="2">3 × 5</td></tr>
<tr><td>16</td><td colspan="2">2^4</td></tr>
<tr><td>17</td><td>Irreducible</td><td>$(11-2\sqrt{26})(11+2\sqrt{26})$</td></tr>
<tr><td>18</td><td colspan="2">2×3^2</td></tr>
<tr><td>19</td><td>Prime</td><td>Irreducible</td></tr>
<tr><td>20</td><td colspan="2">$2^2 \times 5$</td></tr>
<tr><td>21</td><td colspan="2">3 × 7</td></tr>
<tr><td>22</td><td>2 × 11</td><td>2 × 11 OR $(-1)(2-\sqrt{26})(2+\sqrt{26})$</td></tr>
<tr><td>23</td><td>Prime</td><td>$(-1)(9-2\sqrt{26})(9+2\sqrt{26})$</td></tr>
<tr><td>24</td><td colspan="2">$2^3 \times 3$</td></tr>
<tr><td>25</td><td>5^2</td><td>5^2 OR $(-1)(1-\sqrt{26})(1+\sqrt{26})$</td></tr>
<tr><td>26</td><td>2 × 13 OR $(-1)(\sqrt{-26})^2$</td><td>2 × 13 OR $(\sqrt{26})^2$</td></tr>
<tr><td>27</td><td>3^3 OR $(1-\sqrt{-26})(1+\sqrt{-26})$</td><td>$3^3$</td></tr>
<tr><td>28</td><td colspan="2">$2^2 \times 7$</td></tr>
<tr><td>29</td><td colspan="2">Prime</td></tr>
<tr><td>30</td><td>2 × 3 × 5 OR $(2-\sqrt{-26})(2+\sqrt{-26})$</td><td>2 × 3 × 5</td></tr>
</table>

To drive home the point that $\mathbb{Z}[\sqrt{-26}]$ has class number 6, we'll show a few more numbers which not only have more than one distinct factorization, but the distinct factorizations have a different number of irreducible factors.

n	$\mathbb{Z}[\sqrt{-26}]$
42	2 × 3 × 7 OR $(4-\sqrt{-26})(4+\sqrt{-26})$
75	3×5^2 OR $(7-\sqrt{-26})(7+\sqrt{-26})$
90	$2 \times 3^2 \times 5$ OR $(8-\sqrt{-26})(8+\sqrt{-26})$
105	3 × 5 × 7 OR $(2-\sqrt{-26})(2+\sqrt{-26})$
108	$2^2 \times 3^3$ OR $(2-2\sqrt{-26})(2+2\sqrt{-26})$
120	$2^3 \times 3 \times 5$ OR $(4-2\sqrt{-26})(4+2\sqrt{-26})$
126	$2^2 \times 5^2$ OR $(10-\sqrt{-26})(10+\sqrt{-26})$

Ideals really help us make sense of multiple distinct factorizations in these domains.

p	Factorization of $\langle p \rangle$	
	In $\mathbb{Z}[\sqrt{-26}]$	In $\mathbb{Z}[\sqrt{26}]$
2	$\langle 2, \sqrt{-26} \rangle^2$	$\langle 2, \sqrt{26} \rangle^2$
3	$\langle 3, 1 - \sqrt{-26} \rangle \langle 3, 1 + \sqrt{-26} \rangle$	Prime
5	$\langle 5, 2 - \sqrt{-26} \rangle \langle 5, 2 + \sqrt{-26} \rangle$	$\langle 5, 1 - \sqrt{26} \rangle \langle 5, 1 + \sqrt{26} \rangle$
7	$\langle 7, 3 - \sqrt{-26} \rangle \langle 7, 3 + \sqrt{-26} \rangle$	Prime
11	Prime	$\langle 11, 2 - \sqrt{26} \rangle \langle 11, 2 + \sqrt{26} \rangle$
13	$\langle 13, \sqrt{-26} \rangle^2$	$\langle 13, \sqrt{26} \rangle^2$
17	$\langle 17, 5 - \sqrt{-26} \rangle \langle 17, 5 + \sqrt{-26} \rangle$	$\langle 3 - \sqrt{26} \rangle \langle 3 + \sqrt{26} \rangle$
19	Prime	$\langle 19, 8 - \sqrt{26} \rangle \langle 19, 8 + \sqrt{26} \rangle$
23		$\langle 9 - 2\sqrt{26} \rangle \langle 9 + 2\sqrt{26} \rangle$
29	Prime	
31	$\langle 31, 6 - \sqrt{-26} \rangle \langle 31, 6 + \sqrt{-26} \rangle$	Prime
37	$\langle 37, 14 - \sqrt{-26} \rangle \langle 37, 14 + \sqrt{-26} \rangle$	$\langle 37, 10 - \sqrt{26} \rangle \langle 37, 10 + \sqrt{26} \rangle$
41	Prime	Prime
43	$\langle 43, 19 - \sqrt{-26} \rangle \langle 43, 19 + \sqrt{-26} \rangle$	
47	$\langle 47, 16 - \sqrt{-26} \rangle \langle 47, 16 + \sqrt{-26} \rangle$	

Factorization of 26 in some quadratic integer rings

As was mentioned above, 26 is the product of two primes in $\mathbb{Z}$. But it has different factorizations in some quadratic integer rings.

$\mathbb{Z}[i]$	$(1 - i)(1 + i)(3 - 2i)(3 + 2i)$		
$\mathbb{Z}[\sqrt{-2}]$	$(-1)(\sqrt{-2})^2 13$	$\mathbb{Z}[\sqrt{2}]$	$(\sqrt{2})^2 13$
$\mathbb{Z}[\omega]$	2 × 13	$\mathbb{Z}[\sqrt{3}]$	$(-1)(1 - \sqrt{3})(1 + \sqrt{3})(5 - 2\sqrt{3})(5 + 2\sqrt{3})$
$\mathbb{Z}[\sqrt{-5}]$		$\mathbb{Z}[\phi]$	2 × 13
$\mathbb{Z}[\sqrt{-6}]$		$\mathbb{Z}[\sqrt{6}]$	$(-1)(2 - \sqrt{6})(2 + \sqrt{6})13$
$\mathcal{O}_{\mathbb{Q}(\sqrt{-7})}$	$\left(\frac{1}{2} - \frac{\sqrt{-7}}{2}\right)\left(\frac{1}{2} + \frac{\sqrt{-7}}{2}\right) 13$	$\mathbb{Z}[\sqrt{7}]$	$(3 - \sqrt{7})(3 + \sqrt{7})13$
$\mathbb{Z}[\sqrt{-10}]$	2 × 13	$\mathbb{Z}[\sqrt{10}]$	2 × 13
$\mathcal{O}_{\mathbb{Q}(\sqrt{-11})}$		$\mathbb{Z}[\sqrt{11}]$	$(-1)(3 - \sqrt{11})(3 + \sqrt{11})13$
$\mathbb{Z}[\sqrt{-13}]$	$(-1)2(\sqrt{-13})^2$	$\mathcal{O}_{\mathbb{Q}(\sqrt{13})}$	$2(\sqrt{13})^2$
$\mathbb{Z}[\sqrt{-14}]$	2 × 13	$\mathbb{Z}[\sqrt{14}]$	$(-1)(4 - \sqrt{14})(4 + \sqrt{14})(1 - \sqrt{14})(1 + \sqrt{14})$
$\mathcal{O}_{\mathbb{Q}(\sqrt{-15})}$		$\mathbb{Z}[\sqrt{15}]$	2 × 13
$\mathbb{Z}[\sqrt{-17}]$		$\mathcal{O}_{\mathbb{Q}(\sqrt{17})}$	$\left(\frac{3}{2} - \frac{\sqrt{17}}{2}\right)\left(\frac{3}{2} + \frac{\sqrt{17}}{2}\right)(2 - \sqrt{17})(2 + \sqrt{17})$
$\mathcal{O}_{\mathbb{Q}(\sqrt{-19})}$		$\mathbb{Z}[\sqrt{19}]$	$(-1)(13 - 3\sqrt{19})(13 + 3\sqrt{19})13$

Surprisingly enough, $(\sqrt{26})^2$ is a distinct factorization of 26 in $\mathbb{Z}[\sqrt{26}]$, since this is not a UFD and we readily see that $\sqrt{26}$ is not divisible by either 2 or 13.

Representation of 26 in various bases

Base	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Representation	11010	222	122	101	42	35	32	28	26	24	22	20	1C	1B	1A	19	18	17	16

As you can see from the table, 26 is palindromic in bases 3, 5 and 12, and also base 25, and trivially base 27 and higher. Its square, 676, palindromic in bases 5, 10, 11, 12, 25. See A002778 for more numbers having a square that is palindromic in base 10.

See also

Some integers

									-1
0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
									1729