Note: These are comparing the length of the words found by the algorithms. A length of -1 indicates that the algorithm failed to find such a word.

Test 1: $q = s/r$, $0 < q < 4$ and $2 \leq r \leq 10$

(3, 2): Closest_Naive: 3 Closest_Combined: 3
(5, 2): Closest_Naive: 5 Closest_Combined: 5
(7, 2): Closest_Naive: 13 Closest_Combined: 13
(2, 3): Closest_Naive: 3 Closest_Combined: 3
(4, 3): Closest_Naive: 3 Closest_Combined: 3
(5, 3): Closest_Naive: 5 Closest_Combined: 5
(7, 3): Closest_Naive: 7 Closest_Combined: 7
(8, 3): Closest_Naive: 5 Closest_Combined: 5
(10, 3): Closest_Naive: 13 Closest_Combined: 13
(11, 3): Closest_Naive: 23 Closest_Combined: 23
(3, 4): Closest_Naive: 3 Closest_Combined: 3
(5, 4): Closest_Naive: 3 Closest_Combined: 3
(7, 4): Closest_Naive: 5 Closest_Combined: 5
(9, 4): Closest_Naive: 5 Closest_Combined: 5
(11, 4): Closest_Naive: 7 Closest_Combined: 7
(13, 4): Closest_Naive: 7 Closest_Combined: 7
(15, 4): Closest_Naive: 43 Closest_Combined: 43
(2, 5): Closest_Naive: 3 Closest_Combined: 3
(3, 5): Closest_Naive: 3 Closest_Combined: 3
(4, 5): Closest_Naive: 3 Closest_Combined: 3
(6, 5): Closest_Naive: 3 Closest_Combined: 3
(7, 5): Closest_Naive: 7 Closest_Combined: 7
(8, 5): Closest_Naive: 5 Closest_Combined: 5
(9, 5): Closest_Naive: 7 Closest_Combined: 7
(11, 5): Closest_Naive: 11 Closest_Combined: 11
(12, 5): Closest_Naive: 7 Closest_Combined: 7
(13, 5): Closest_Naive: 5 Closest_Combined: 5
(14, 5): Closest_Naive: 7 Closest_Combined: 7
(16, 5): Closest_Naive: 9 Closest_Combined: 9
(17, 5): Closest_Naive: 19 Closest_Combined: 19
(18, 5): Closest_Naive: 19 Closest_Combined: 19
(19, 5): Closest_Naive: 37 Closest_Combined: 34
(5, 6): Closest_Naive: 3 Closest_Combined: 3
(7, 6): Closest_Naive: 3 Closest_Combined: 3
(11, 6): Closest_Naive: 5 Closest_Combined: 5
(13, 6): Closest_Naive: 5 Closest_Combined: 5
(17, 6): Closest_Naive: 9 Closest_Combined: 9
(19, 6): Closest_Naive: 27 Closest_Combined: 27
(23, 6): Closest_Naive: 107 Closest_Combined: 107
(2, 7): Closest_Naive: 3 Closest_Combined: 3
(3, 7): Closest_Naive: 3 Closest_Combined: 3
(4, 7): Closest_Naive: 3 Closest_Combined: 3
(5, 7): Closest_Naive: 5 Closest_Combined: 5
(6, 7): Closest_Naive: 3 Closest_Combined: 3

(8, 7): Closest_Naive: 3 Closest_Combined: 3
(9, 7): Closest_Naive: 7 Closest_Combined: 7
(10, 7): Closest_Naive: 5 Closest_Combined: 5
(11, 7): Closest_Naive: 11 Closest_Combined: 11
(12, 7): Closest_Naive: 7 Closest_Combined: 7
(13, 7): Closest_Naive: 15 Closest_Combined: 15
(15, 7): Closest_Naive: 9 Closest_Combined: 9
(16, 7): Closest_Naive: 5 Closest_Combined: 5
(17, 7): Closest_Naive: 17 Closest_Combined: 17
(18, 7): Closest_Naive: 7 Closest_Combined: 7
(19, 7): Closest_Naive: 7 Closest_Combined: 7
(20, 7): Closest_Naive: 121 Closest_Combined: 23
(22, 7): Closest_Naive: 11 Closest_Combined: 11
(23, 7): Closest_Naive: 45 Closest_Combined: 45
(24, 7): Closest_Naive: 15 Closest_Combined: 15
(25, 7): Closest_Naive: 95 Closest_Combined: 96
(26, 7): Closest_Naive: 359 Closest_Combined: 362
(27, 7): Closest_Naive: 223 Closest_Combined: 225
(3, 8): Closest_Naive: 3 Closest_Combined: 3
(5, 8): Closest_Naive: 3 Closest_Combined: 3
(7, 8): Closest_Naive: 3 Closest_Combined: 3
(9, 8): Closest_Naive: 3 Closest_Combined: 3
(11, 8): Closest_Naive: 5 Closest_Combined: 5
(13, 8): Closest_Naive: 7 Closest_Combined: 7
(15, 8): Closest_Naive: 5 Closest_Combined: 5
(17, 8): Closest_Naive: 5 Closest_Combined: 5
(19, 8): Closest_Naive: 9 Closest_Combined: 9
(21, 8): Closest_Naive: 5 Closest_Combined: 5
(23, 8): Closest_Naive: 9 Closest_Combined: 9
(25, 8): Closest_Naive: 9 Closest_Combined: 9
(27, 8): Closest_Naive: 43 Closest_Combined: 46
(29, 8): Closest_Naive: 23 Closest_Combined: 23
(31, 8): Closest_Naive: 451 Closest_Combined: 453
(2, 9): Closest_Naive: 3 Closest_Combined: 3
(4, 9): Closest_Naive: 3 Closest_Combined: 3
(5, 9): Closest_Naive: 3 Closest_Combined: 3
(7, 9): Closest_Naive: 5 Closest_Combined: 5
(8, 9): Closest_Naive: 3 Closest_Combined: 3
(10, 9): Closest_Naive: 3 Closest_Combined: 3
(11, 9): Closest_Naive: 7 Closest_Combined: 7
(13, 9): Closest_Naive: 5 Closest_Combined: 5
(14, 9): Closest_Naive: 5 Closest_Combined: 5
(16, 9): Closest_Naive: 5 Closest_Combined: 5
(17, 9): Closest_Naive: 9 Closest_Combined: 9
(19, 9): Closest_Naive: 19 Closest_Combined: 19
(20, 9): Closest_Naive: 7 Closest_Combined: 7
(22, 9): Closest_Naive: 13 Closest_Combined: 13
(23, 9): Closest_Naive: 13 Closest_Combined: 13
(25, 9): Closest_Naive: 11 Closest_Combined: 11

(26, 9): Closest_Naive: 9 Closest_Combined: 9
(28, 9): Closest_Naive: 41 Closest_Combined: 41
(29, 9): Closest_Naive: 15 Closest_Combined: 15
(31, 9): Closest_Naive: 35 Closest_Combined: 35
(32, 9): Closest_Naive: 21 Closest_Combined: 21
(34, 9): Closest_Naive: 49 Closest_Combined: 51
(35, 9): Closest_Naive: -1 Closest_Combined: -1
(3, 10): Closest_Naive: 3 Closest_Combined: 3
(7, 10): Closest_Naive: 5 Closest_Combined: 5
(9, 10): Closest_Naive: 3 Closest_Combined: 3
(11, 10): Closest_Naive: 3 Closest_Combined: 3
(13, 10): Closest_Naive: 13 Closest_Combined: 13
(17, 10): Closest_Naive: 7 Closest_Combined: 7
(19, 10): Closest_Naive: 5 Closest_Combined: 5
(21, 10): Closest_Naive: 5 Closest_Combined: 5
(23, 10): Closest_Naive: 11 Closest_Combined: 11
(27, 10): Closest_Naive: 11 Closest_Combined: 11
(29, 10): Closest_Naive: 17 Closest_Combined: 17
(31, 10): Closest_Naive: 13 Closest_Combined: 13
(33, 10): Closest_Naive: 15 Closest_Combined: 15
(37, 10): Closest_Naive: 151 Closest_Combined: 151
(39, 10): Closest_Naive: -1 Closest_Combined: -1

Test 2: $q = s/r$, $2 \leq s \leq 30$ and $2 \leq r \leq (10 \times s + 1)$

Note: Numbers where the word length of the Closest_Naive algorithm is 10 or less were filtered out.

(7, 2): Closest_Naive: 13 Closest_Combined: 13
(10, 3): Closest_Naive: 13 Closest_Combined: 13
(11, 3): Closest_Naive: 23 Closest_Combined: 23
(11, 5): Closest_Naive: 11 Closest_Combined: 11
(11, 7): Closest_Naive: 11 Closest_Combined: 11
(11, 13): Closest_Naive: 11 Closest_Combined: 11
(11, 17): Closest_Naive: 11 Closest_Combined: 11
(11, 19): Closest_Naive: 11 Closest_Combined: 11
(11, 29): Closest_Naive: 11 Closest_Combined: 11
(11, 31): Closest_Naive: 11 Closest_Combined: 11
(11, 37): Closest_Naive: 11 Closest_Combined: 11
(11, 41): Closest_Naive: 11 Closest_Combined: 11
(11, 47): Closest_Naive: 11 Closest_Combined: 11
(11, 53): Closest_Naive: 11 Closest_Combined: 11
(11, 59): Closest_Naive: 11 Closest_Combined: 11
(11, 61): Closest_Naive: 11 Closest_Combined: 11
(11, 71): Closest_Naive: 11 Closest_Combined: 11
(11, 73): Closest_Naive: 11 Closest_Combined: 11
(11, 79): Closest_Naive: 11 Closest_Combined: 11
(11, 83): Closest_Naive: 11 Closest_Combined: 11
(11, 97): Closest_Naive: 11 Closest_Combined: 11
(11, 101): Closest_Naive: 11 Closest_Combined: 11

(11, 103): Closest_Naive: 11 Closest_Combined: 11
(11, 107): Closest_Naive: 11 Closest_Combined: 11
(13, 7): Closest_Naive: 15 Closest_Combined: 15
(13, 10): Closest_Naive: 13 Closest_Combined: 13
(13, 11): Closest_Naive: 13 Closest_Combined: 13
(13, 19): Closest_Naive: 13 Closest_Combined: 13
(13, 37): Closest_Naive: 13 Closest_Combined: 14
(13, 41): Closest_Naive: 13 Closest_Combined: 13
(13, 59): Closest_Naive: 13 Closest_Combined: 13
(13, 67): Closest_Naive: 13 Closest_Combined: 14
(13, 71): Closest_Naive: 13 Closest_Combined: 13
(13, 89): Closest_Naive: 13 Closest_Combined: 13
(13, 94): Closest_Naive: 13 Closest_Combined: 13
(13, 97): Closest_Naive: 25 Closest_Combined: 25
(15, 4): Closest_Naive: 43 Closest_Combined: 43
(15, 17): Closest_Naive: 13 Closest_Combined: 13
(15, 53): Closest_Naive: 12 Closest_Combined: 12
(15, 73): Closest_Naive: 23 Closest_Combined: 23
(15, 137): Closest_Naive: 12 Closest_Combined: 12
(16, 11): Closest_Naive: 17 Closest_Combined: 18
(16, 59): Closest_Naive: 12 Closest_Combined: 12
(16, 107): Closest_Naive: 21 Closest_Combined: 21
(17, 5): Closest_Naive: 19 Closest_Combined: 19
(17, 7): Closest_Naive: 17 Closest_Combined: 17
(17, 11): Closest_Naive: 17 Closest_Combined: 18
(17, 20): Closest_Naive: 13 Closest_Combined: 13
(17, 23): Closest_Naive: 17 Closest_Combined: 17
(17, 29): Closest_Naive: 17 Closest_Combined: 17
(17, 31): Closest_Naive: 17 Closest_Combined: 17
(17, 37): Closest_Naive: 17 Closest_Combined: 17
(17, 39): Closest_Naive: 17 Closest_Combined: 17
(17, 41): Closest_Naive: 17 Closest_Combined: 17
(17, 46): Closest_Naive: 12 Closest_Combined: 12
(17, 53): Closest_Naive: 12 Closest_Combined: 12
(17, 57): Closest_Naive: 13 Closest_Combined: 11
(17, 61): Closest_Naive: 17 Closest_Combined: 17
(17, 71): Closest_Naive: 17 Closest_Combined: 17
(17, 73): Closest_Naive: 17 Closest_Combined: 17
(17, 79): Closest_Naive: 17 Closest_Combined: 17
(17, 95): Closest_Naive: 15 Closest_Combined: 8
(17, 97): Closest_Naive: 17 Closest_Combined: 17
(17, 107): Closest_Naive: 17 Closest_Combined: 17
(17, 109): Closest_Naive: 17 Closest_Combined: 20
(17, 113): Closest_Naive: 17 Closest_Combined: 17
(17, 116): Closest_Naive: 13 Closest_Combined: 13
(17, 131): Closest_Naive: 17 Closest_Combined: 17
(17, 139): Closest_Naive: 17 Closest_Combined: 17
(17, 141): Closest_Naive: 11 Closest_Combined: 11
(17, 143): Closest_Naive: 17 Closest_Combined: 18

(17, 155): Closest_Naive: 12 Closest_Combined: 12
(17, 158): Closest_Naive: 12 Closest_Combined: 12
(17, 159): Closest_Naive: 13 Closest_Combined: 13
(17, 163): Closest_Naive: 17 Closest_Combined: 17
(17, 167): Closest_Naive: 17 Closest_Combined: 17
(18, 5): Closest_Naive: 19 Closest_Combined: 19
(18, 11): Closest_Naive: 17 Closest_Combined: 17
(18, 13): Closest_Naive: 25 Closest_Combined: 25
(18, 151): Closest_Naive: 13 Closest_Combined: 13
(18, 167): Closest_Naive: 13 Closest_Combined: 13
(19, 5): Closest_Naive: 37 Closest_Combined: 34
(19, 6): Closest_Naive: 27 Closest_Combined: 27
(19, 9): Closest_Naive: 19 Closest_Combined: 19
(19, 13): Closest_Naive: 37 Closest_Combined: 38
(19, 14): Closest_Naive: 17 Closest_Combined: 17
(19, 17): Closest_Naive: 19 Closest_Combined: 21
(19, 22): Closest_Naive: 11 Closest_Combined: 11
(19, 23): Closest_Naive: 19 Closest_Combined: 19
(19, 25): Closest_Naive: 11 Closest_Combined: 12
(19, 26): Closest_Naive: 11 Closest_Combined: 11
(19, 29): Closest_Naive: 19 Closest_Combined: 20
(19, 33): Closest_Naive: 11 Closest_Combined: 11
(19, 41): Closest_Naive: 19 Closest_Combined: 19
(19, 43): Closest_Naive: 19 Closest_Combined: 21
(19, 47): Closest_Naive: 19 Closest_Combined: 19
(19, 51): Closest_Naive: 11 Closest_Combined: 11
(19, 53): Closest_Naive: 27 Closest_Combined: 21
(19, 59): Closest_Naive: 19 Closest_Combined: 19
(19, 61): Closest_Naive: 19 Closest_Combined: 20
(19, 62): Closest_Naive: 12 Closest_Combined: 12
(19, 67): Closest_Naive: 19 Closest_Combined: 19
(19, 69): Closest_Naive: 11 Closest_Combined: 11
(19, 71): Closest_Naive: 19 Closest_Combined: 19
(19, 73): Closest_Naive: 19 Closest_Combined: 19
(19, 79): Closest_Naive: 55 Closest_Combined: 41
(19, 86): Closest_Naive: 11 Closest_Combined: 11
(19, 89): Closest_Naive: 19 Closest_Combined: 19
(19, 97): Closest_Naive: 22 Closest_Combined: 22
(19, 101): Closest_Naive: 19 Closest_Combined: 20
(19, 109): Closest_Naive: 19 Closest_Combined: 20
(19, 127): Closest_Naive: 19 Closest_Combined: 19
(19, 131): Closest_Naive: 29 Closest_Combined: 31
(19, 137): Closest_Naive: 19 Closest_Combined: 19
(19, 139): Closest_Naive: 19 Closest_Combined: 19
(19, 142): Closest_Naive: 11 Closest_Combined: 11
(19, 143): Closest_Naive: 19 Closest_Combined: 19
(19, 147): Closest_Naive: 11 Closest_Combined: 11
(19, 149): Closest_Naive: 55 Closest_Combined: 21
(19, 157): Closest_Naive: 19 Closest_Combined: 21

(19, 166): Closest_Naive: 17 Closest_Combined: 17
(19, 167): Closest_Naive: 19 Closest_Combined: 19
(19, 169): Closest_Naive: 19 Closest_Combined: 19
(19, 173): Closest_Naive: 19 Closest_Combined: 19
(19, 177): Closest_Naive: 13 Closest_Combined: 13
(19, 178): Closest_Naive: 11 Closest_Combined: 11
(19, 181): Closest_Naive: 55 Closest_Combined: 58
(19, 183): Closest_Naive: 11 Closest_Combined: 11
(20, 7): Closest_Naive: 121 Closest_Combined: 23
(20, 13): Closest_Naive: 20 Closest_Combined: 20
(20, 37): Closest_Naive: 17 Closest_Combined: 17
(20, 43): Closest_Naive: 55 Closest_Combined: 55
(20, 53): Closest_Naive: 12 Closest_Combined: 12
(20, 67): Closest_Naive: 12 Closest_Combined: 12
(20, 91): Closest_Naive: 12 Closest_Combined: 12
(20, 113): Closest_Naive: 39 Closest_Combined: 39
(20, 143): Closest_Naive: 37 Closest_Combined: 13
(20, 157): Closest_Naive: 31 Closest_Combined: 36
(20, 163): Closest_Naive: 49 Closest_Combined: 81
(20, 173): Closest_Naive: 20 Closest_Combined: 20
(21, 11): Closest_Naive: 37 Closest_Combined: 37
(21, 19): Closest_Naive: 13 Closest_Combined: 13
(21, 23): Closest_Naive: 13 Closest_Combined: 13
(21, 31): Closest_Naive: 13 Closest_Combined: 13
(21, 53): Closest_Naive: 13 Closest_Combined: 13
(21, 61): Closest_Naive: 19 Closest_Combined: 19
(21, 73): Closest_Naive: 13 Closest_Combined: 13
(21, 103): Closest_Naive: 13 Closest_Combined: 13
(21, 107): Closest_Naive: 16 Closest_Combined: 16
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(21, 142): Closest_Naive: 13 Closest_Combined: 13
(21, 149): Closest_Naive: 13 Closest_Combined: 15
(21, 157): Closest_Naive: 13 Closest_Combined: 13
(21, 179): Closest_Naive: 13 Closest_Combined: 13
(21, 187): Closest_Naive: 16 Closest_Combined: 16
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(22, 7): Closest_Naive: 11 Closest_Combined: 11
(22, 9): Closest_Naive: 13 Closest_Combined: 13
(22, 13): Closest_Naive: 11 Closest_Combined: 11
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(22, 29): Closest_Naive: 11 Closest_Combined: 12
(22, 31): Closest_Naive: 11 Closest_Combined: 11
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(22, 47): Closest_Naive: 27 Closest_Combined: 27
(22, 53): Closest_Naive: 11 Closest_Combined: 11
(22, 59): Closest_Naive: 11 Closest_Combined: 12

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(22, 101): Closest_Naive: 11 Closest_Combined: 11
(22, 103): Closest_Naive: 11 Closest_Combined: 12
(22, 107): Closest_Naive: 11 Closest_Combined: 11
(22, 113): Closest_Naive: 11 Closest_Combined: 11
(22, 127): Closest_Naive: 21 Closest_Combined: 24
(22, 137): Closest_Naive: 14 Closest_Combined: 14
(22, 139): Closest_Naive: 11 Closest_Combined: 11
(22, 149): Closest_Naive: 11 Closest_Combined: 12
(22, 151): Closest_Naive: 11 Closest_Combined: 11
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(22, 163): Closest_Naive: 24 Closest_Combined: 25
(22, 167): Closest_Naive: 11 Closest_Combined: 13
(22, 169): Closest_Naive: 11 Closest_Combined: 11
(22, 173): Closest_Naive: 35 Closest_Combined: 35
(22, 179): Closest_Naive: 11 Closest_Combined: 11
(22, 181): Closest_Naive: 11 Closest_Combined: 11
(22, 191): Closest_Naive: 21 Closest_Combined: 22
(22, 193): Closest_Naive: 14 Closest_Combined: 15
(22, 205): Closest_Naive: 14 Closest_Combined: 14
(22, 211): Closest_Naive: 11 Closest_Combined: 11
(23, 6): Closest_Naive: 107 Closest_Combined: 107
(23, 7): Closest_Naive: 45 Closest_Combined: 45
(23, 9): Closest_Naive: 13 Closest_Combined: 13
(23, 10): Closest_Naive: 11 Closest_Combined: 11
(23, 11): Closest_Naive: 59 Closest_Combined: 25
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(23, 25): Closest_Naive: 13 Closest_Combined: 13
(23, 26): Closest_Naive: 19 Closest_Combined: 19
(23, 29): Closest_Naive: 23 Closest_Combined: 24
(23, 31): Closest_Naive: 23 Closest_Combined: 23
(23, 33): Closest_Naive: 11 Closest_Combined: 11
(23, 35): Closest_Naive: 15 Closest_Combined: 16
(23, 37): Closest_Naive: 23 Closest_Combined: 24
(23, 38): Closest_Naive: 11 Closest_Combined: 11
(23, 41): Closest_Naive: 26 Closest_Combined: 26
(23, 43): Closest_Naive: 23 Closest_Combined: 24
(23, 49): Closest_Naive: 25 Closest_Combined: 26
(23, 51): Closest_Naive: 11 Closest_Combined: 11

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(23, 59): Closest_Naive: 23 Closest_Combined: 24
(23, 61): Closest_Naive: 23 Closest_Combined: 24
(23, 67): Closest_Naive: 23 Closest_Combined: 24
(23, 71): Closest_Naive: 63 Closest_Combined: 63
(23, 73): Closest_Naive: 23 Closest_Combined: 24
(23, 77): Closest_Naive: 11 Closest_Combined: 11
(23, 79): Closest_Naive: 23 Closest_Combined: 23
(23, 82): Closest_Naive: 15 Closest_Combined: 15
(23, 83): Closest_Naive: 23 Closest_Combined: 25
(23, 87): Closest_Naive: 14 Closest_Combined: 14
(23, 89): Closest_Naive: 23 Closest_Combined: 23
(23, 95): Closest_Naive: 19 Closest_Combined: 19
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