PACKING THE CARDINALS

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Take the integers ONE through TEN, and pack them as compactly as possible in three formats: crossword, word-search, and king's move. The best answers appear to be

EIGHT ONEERHT EIGHTF ELEVENS SEVENOW
FOURW SEVENIN F X WO I FSOIE FIVEERH
XIS O EIGHTW O NINEOU G OITNV O G X NEINI
SEVEN FOURXIS SEVENR HWUXVEE UHEVLEW
THREE THREE THREEEN RTNEVEL

8 words 9 words 10 words 11 words 12 words
32 letters 36 letters 39 letters 45 letters 51 letters
25 cells 28 cells 30 cells 35 cells 40 cells
(1.28) (1.29) (1.30) (1.29) (1.28)

TWELVE The letters-per-cell ratio is remarkably constant, FNEXSL varying only from 1.28 to 1.30. But there is a joker FIVEE in the deck. ONE to TWELVE can be packed in 6x6 USGNVV for 1.42 letters per cell, as shown at the left. It RTHREE is one of maybe a few dozen solutions, but is difficult to find. It is too easy for the solver to let the earlier agreement lull him into accepting the 8x5 frame!