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Comparing MMPI-2 *F-K* Index Normative Data among Male and Female Psychiatric and Head-Injured Patients, Individuals Seeking Disability Benefits, Police and Priest Job Applicants, and Substance Abusers

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Used as a validity indicator with the MMPI-2, the *F-K* Index helps to identify people who may over- or under-report psychological issues. Prior research obtained normative data on this index for males and females sampled in a variety of settings, and eyeball examination[1] of resulting score distributions suggested: "The *F-K* score distributions appear to differ across the different samples of diagnostic and job applicant samples, as the clinical profiles of these groups would be expected to differ from one another. …Thus, no single set of cutoff scores should be used to judge the motivation or validity of clinical profiles of subjects from different clinical or normative populations" (p. 9). Exploratory novometric analysis[2-20] is used to predict *F-K* score as a function of gender and setting in order to establish the existence and assess the strength of the hypothesized inter-sample differences in *F-K* score distributions.

Data analyzed herein[1] are indicated in SAS™ code used to construct the data set for analysis by ODA (Appendix). Treating *F-K* score as an ordered class variable, and setting and gender as categorical attributes, novometric analysis found five structurally parallel one-attribute, two-strata models with strong normed predictive accuracy. These models had stable accuracy in leave-one-out jackknife analysis, and used the identical classification rule: if sample=psychiatric inpatients or disability benefit applicants, then predict *F-K* score≤(*optimal threshold* identified by ODA); otherwise if sample=Hathaway and Briggs, MMPI-2 standardization, substance dependent, traumatic brain injury, police academy applicant, or priest position applicant) then

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predict *F-K* score>(*optimal threshold*). The value of the optimal threshold, and the corresponding model ESS, sensitivity (for psychiatric inpatients and disability applicants *vs*. for the other samples), and D statistic[2,21] for each model are given in Table 1.

Table 1: Five Homogeneous Optimal Models

Model	Optimal *F-K* Score Threshold	Psychiatric, Disability Subjects	Other Subjects	ESS	D
1	≤ 10	92.36	88.18	80.54	0.483
2	≤ 15	96.11	86.26	82.37	0.428
3	≤ 18	97.01	85.39	82.41	0.427
4	≤ 19	97.60	85.24	82.84	0.414
5	≤ 17	97.30	85.68	82.97	0.411

Model 5 has the lowest D statistic and is thus the globally-optimal (GO) model here.[2,21] However, the models in Table 1 all have very homogeneous performance, and corresponding summary statistics all have overlapping exact discrete 95% confidence intervals.[3,23] In contrast to the conclusions reached on the basis of visual examination of the data, novometric statistical analysis revealed that: (a) neither gender or *F-K* score discriminates psychiatric inpatients from disability insurance applicants; (b) neither gender or *F-K* score discriminates subjects in the Hathaway and Briggs, MMPI-2 standardization, substance dependent, traumatic brain injury, police academy applicant, or priest position applicant samples; however (c) five different *F-K* thresholds strongly and reproducibly discriminate psychiatric inpatients and disability insurance applicants *vs*. subjects from other samples.

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Author Notes

This study analyzed publically available data. No conflict of interest was reported.

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Appendix

SAS™ Code used to Construct (Reproduce[1]) the Data File for Analysis by ODA Software[2,22]

Samples were dummy-coded as follows: Hathaway and Briggs sample=1; MMPI-2 standardization sample=2; psychiatric inpatients=3; substance dependent sample=4; traumatic brain injury sample=5; disability benefit applicants=6; police academy applicant sample=7; priest position applicant sample=8.

```
data real;
infile
datalines;
input group
row column;
cards;
1 1 1
;
Data example;
Do n=1 to 2;
put '1 1 -25';
end;
Do n=1 to 4;
put '1 1 -21';
end;
Do n=1 to 8;
put '1 1 -20';
end;
Do n=1 to 6;
put '1 1 -19';
end;
Do n=1 to 7;
put '1 1 -18';
end;
Do n=1 to 9;
put '1 1 -17';
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Do n=1 to 13;
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Do n=1 to 6;
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end;
Do n=1 to 11;
put '1 1 -2';
end;
Do n=1 to 7;
put '1 1 -1';
end;
Do n=1 to 8;
put '1 1 0';
end;
Do n=1 to 4;
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Do n=1 to 3;
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end;
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Do n=1 to 1;
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end;
Do n=1 to 1;
put '1 1 23';
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Do n=1 to 1;
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end;
Do n=1 to 1;
put '1 0 -22';
end;
Do n=1 to 4;
put '1 0 -21';
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Do n=1 to 7;
put '1 0 -20';
end;
Do n=1 to 10;
put '1 0 -19';
end;
Do n=1 to 8;
put '1 0 -18';
end;
Do n=1 to 10;
put '1 0 -17';
end;
Do n=1 to 13;
put '1 0 -16';
end;
Do n=1 to 10;
put '1 0 -15';
end;
Do n=1 to 12;
put '1 0 -14';
end;
Do n=1 to 18;
put '1 0 -13';
end;
Do n=1 to 23;
put '1 0 -12';
end;
Do n=1 to 28;
put '1 0 -11';
end;
Do n=1 to 8;
put '1 0 -10';
end;
Do n=1 to 23;
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Do n=1 to 10;
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Do n=1 to 20;
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Do n=1 to 25;
put '1 0 -5';
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Do n=1 to 15;
put '1 0 -4';
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Do n=1 to 3;
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Do n=1 to 7;
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Do n=1 to 13;
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Do n=1 to 1;
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end;
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Do n=1 to 1;
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Do n=1 to 3;
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Do n=1 to 4;
put '2 1 -24';
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Do n=1 to 14;
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Do n=1 to 15;
put '2 1 -22';
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Do n=1 to 27;
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Do n=1 to 43;
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Do n=1 to 38;
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Do n=1 to 19;
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end;
Do n=1 to 19;
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```
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Do n=1 to 6;
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Do n=1 to 2;
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Do n=1 to 7;
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Do n=1 to 3;
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Do n=1 to 5;
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Do n=1 to 1;
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Do n=1 to 2;
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Do n=1 to 3;
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Do n=1 to 5;
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Do n=1 to 1;
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Do n=1 to 6;
put '3 1 -12';
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Do n=1 to 5;
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Do n=1 to 6;
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end;
Do n=1 to 9;
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Do n=1 to 7;
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Do n=1 to 4;
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end;
Do n=1 to 3;
put '3 1 -1';
end;
Do n=1 to 7;
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Do n=1 to 5;
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Do n=1 to 8;
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Do n=1 to 8;
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Do n=1 to 10;
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Do n=1 to 9;
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end;
Do n=1 to 5;
put '3 1 7';
end;
Do n=1 to 5;
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end;
Do n=1 to 5;
put '3 1 9';
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Do n=1 to 1;
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Do n=1 to 2;
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Do n=1 to 3;
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Do n=1 to 5;
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Do n=1 to 7;
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Do n=1 to 5;
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Do n=1 to 6;
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Do n=1 to 2;
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Do n=1 to 4;
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Do n=1 to 2;
put '3 1 21';
end;
Do n=1 to 2;
put '3 1 22';
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Do n=1 to 2;
put '3 1 23';
end;
Do n=1 to 2;
put '3 1 24';
end;
Do n=1 to 2;
put '3 1 25';
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Do n=1 to 1;
put '3 1 26';
end;
Do n=1 to 2;
put '3 1 27';
end;
Do n=1 to 2;
put '3 1 32';
end;
Do n=1 to 1;
put '3 1 33';
end;
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Do n=1 to 1;
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put '3 0 -21';
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Do n=1 to 3;
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end;
Do n=1 to 3;
put '3 0 -19';
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Do n=1 to 2;
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end;
Do n=1 to 4;
put '3 0 -17';
end;
Do n=1 to 2;
put '3 0 -16';
end;
Do n=1 to 2;
put '3 0 -15';
end;
Do n=1 to 4;
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end;
Do n=1 to 2;
put '3 0 -13';
end;
Do n=1 to 3;
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```
put '3 0 -12';
end;
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put '3 0 -11';
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Do n=1 to 5;
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end;
Do n=1 to 4;
put '3 0 -9';
end;
Do n=1 to 7;
put '3 0 -8';
end;
Do n=1 to 5;
put '3 0 -7';
end;
Do n=1 to 4;
put '3 0 -6';
end;
Do n=1 to 6;
put '3 0 -5';
end;
Do n=1 to 10;
put '3 0 -4';
end;
Do n=1 to 8;
put '3 0 -3';
end;
Do n=1 to 13;
put '3 0 -2';
end;
Do n=1 to 13;
put '3 0 -1';
end;
Do n=1 to 8;
put '3 0 0';
end;
Do n=1 to 11;
put '3 0 1';
end;
Do n=1 to 10;
put '3 0 2';
end;
Do n=1 to 6;
put '3 0 3';
end;
Do n=1 to 8;
put '3 0 4';
end;
Do n=1 to 5;
put '3 0 5';
end;
Do n=1 to 15;
put '3 0 6';
end;
Do n=1 to 3;
put '3 0 7';
end;
Do n=1 to 10;
put '3 0 8';
end;
Do n=1 to 5;
put '3 0 9';
end;
Do n=1 to 5;
put '3 0 10';
end;
Do n=1 to 8;
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put '3 0 11';
end;
Do n=1 to 3;
put '3 0 12';
end;
Do n=1 to 6;
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end;
Do n=1 to 6;
put '3 0 14';
end;
Do n=1 to 4;
put '3 0 15';
end;
Do n=1 to 3;
put '3 0 16';
end;
Do n=1 to 2;
put '3 0 17';
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Do n=1 to 2;
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end;
Do n=1 to 2;
put '3 0 19';
end;
Do n=1 to 1;
put '3 0 20';
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Do n=1 to 2;
put '3 0 21';
end;
Do n=1 to 2;
put '3 0 22';
end;
Do n=1 to 2;
put '3 0 23';
end;
Do n=1 to 1;
put '3 0 24';
end;
Do n=1 to 1;
put '3 0 26';
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Do n=1 to 1;
put '3 0 27';
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Do n=1 to 1;
put '3 0 30';
end;
Do n=1 to 1;
put '4 1 -21';
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Do n=1 to 1;
put '4 1 -20';
end;
Do n=1 to 7;
put '4 1 -19';
end;
Do n=1 to 5;
put '4 1 -18';
end;
Do n=1 to 7;
put '4 1 -17';
end;
Do n=1 to 6;
put '4 1 -16';
end;
Do n=1 to 4;
```

```
put '4 1 -15';
end;
Do n=1 to 7;
put '4 1 -14';
end;
Do n=1 to 4;
put '4 1 -13';
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Do n=1 to 13;
put '4 1 -12';
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Do n=1 to 4;
put '4 1 -11';
end;
Do n=1 to 4;
put '4 1 -10';
end;
Do n=1 to 11;
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end;
Do n=1 to 10;
put '4 1 -8';
end;
Do n=1 to 9;
put '4 1 -7';
end;
Do n=1 to 7;
put '4 1 -6';
end;
Do n=1 to 9;
put '4 1 -5';
end;
Do n=1 to 5;
put '4 1 -4';
end;
Do n=1 to 8;
put '4 1 -3';
end;
Do n=1 to 4;
put '4 1 -2';
end;
Do n=1 to 5;
put '4 1 -1';
end;
Do n=1 to 5;
put '4 1 0';
end;
Do n=1 to 1;
put '4 1 1';
end;
Do n=1 to 3;
put '4 1 2';
end;
Do n=1 to 3;
put '4 1 3';
end;
Do n=1 to 4;
put '4 1 4';
end;
Do n=1 to 5;
put '4 1 5';
end;
Do n=1 to 2;
put '4 1 6';
end;
Do n=1 to 3;
put '4 1 7';
end;
Do n=1 to 2;
```

```
put '4 1 8';
end;
Do n=1 to 3;
put '4 1 9';
end;
Do n=1 to 2;
put '4 1 10';
end;
Do n=1 to 2;
put '4 1 11';
end;
Do n=1 to 1;
put '4 1 12';
end;
Do n=1 to 1;
put '4 1 13';
end;
Do n=1 to 2;
put '4 0 -22';
end;
Do n=1 to 2;
put '4 0 -20';
end;
Do n=1 to 1;
put '4 0 -19';
end;
Do n=1 to 3;
put '4 0 -18';
end;
Do n=1 to 4;
put '4 0 -17';
end;
Do n=1 to 2;
put '4 0 -16';
end;
Do n=1 to 3;
put '4 0 -15';
end;
Do n=1 to 3;
put '4 0 -14';
end;
Do n=1 to 2;
put '4 0 -13';
end;
Do n=1 to 3;
put '4 0 -12';
end;
Do n=1 to 1;
put '4 0 -11';
end;
Do n=1 to 7;
put '4 0 -10';
end;
Do n=1 to 1;
put '4 0 -9';
end;
Do n=1 to 3;
put '4 0 -8';
end;
Do n=1 to 7;
put '4 0 -7';
end;
Do n=1 to 3;
put '4 0 -6';
end;
Do n=1 to 3;
put '4 0 -5';
end;
Do n=1 to 3;
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put '4 0 -4';
end;
Do n=1 to 5;
put '4 0 -3';
end;
Do n=1 to 1;
put '4 0 -2';
end;
Do n=1 to 6;
put '4 0 -1';
end;
Do n=1 to 8;
put '4 0 0';
end;
Do n=1 to 1;
put '4 0 1';
end;
Do n=1 to 3;
put '4 0 2';
end;
Do n=1 to 3;
put '4 0 3';
end;
Do n=1 to 2;
put '4 0 4';
end;
Do n=1 to 4;
put '4 0 5';
end;
Do n=1 to 1;
put '4 0 6';
end;
Do n=1 to 3;
put '4 0 7';
end;
Do n=1 to 1;
put '4 0 8';
end;
Do n=1 to 1;
put '4 0 9';
end;
Do n=1 to 1;
put '4 0 10';
end;
Do n=1 to 1;
put '4 0 11';
end;
Do n=1 to 1;
put '4 0 12';
end;
Do n=1 to 1;
put '4 0 21';
end;
Do n=1 to 1;
put '5 1 -23';
end;
Do n=1 to 1;
put '5 1 -21';
end;
Do n=1 to 3;
put '5 1 -20';
end;
Do n=1 to 4;
put '5 1 -19';
end;
Do n=1 to 4;
put '5 1 -18';
end;
Do n=1 to 2;
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```
put '5 1 -16';
end;
Do n=1 to 2;
put '5 1 -15';
end;
Do n=1 to 1;
put '5 1 -14';
end;
Do n=1 to 1;
put '5 1 -13';
end;
Do n=1 to 1;
put '5 1 -12';
end;
Do n=1 to 1;
put '5 1 -10';
end;
Do n=1 to 5;
put '5 1 -9';
end;
Do n=1 to 1;
put '5 1 -8';
end;
Do n=1 to 2;
put '5 1 -7';
end;
Do n=1 to 1;
put '5 1 -6';
end;
Do n=1 to 3;
put '5 1 -4';
end;
Do n=1 to 1;
put '5 1 -3';
end;
Do n=1 to 5;
put '5 1 -2';
end;
Do n=1 to 3;
put '5 1 -1';
end;
Do n=1 to 2;
put '5 1 6';
end;
Do n=1 to 1;
put '5 1 10';
end;
Do n=1 to 1;
put '5 1 14';
end;
Do n=1 to 1;
put '5 1 15';
end;
Do n=1 to 1;
put '5 1 17';
end;
Do n=1 to 1;
put '5 1 19';
end;
Do n=1 to 1;
put '5 1 22';
end;
Do n=1 to 1;
put '5 0 -22';
end;
Do n=1 to 1;
put '5 0 -21';
end;
Do n=1 to 1;
```

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put '5 0 -20';
end;
Do n=1 to 2;
put '5 0 -19';
end;
Do n=1 to 2;
put '5 0 -18';
end;
Do n=1 to 2;
put '5 0 -13';
end;
Do n=1 to 1;
put '5 0 -11';
end;
Do n=1 to 1;
put '5 0 -10';
end;
Do n=1 to 1;
put '5 0 -9';
end;
Do n=1 to 3;
put '5 0 -8';
end;
Do n=1 to 1;
put '5 0 -7';
end;
Do n=1 to 3;
put '5 0 -6';
end;
Do n=1 to 2;
put '5 0 -5';
end;
Do n=1 to 1;
put '5 0 -4';
end;
Do n=1 to 1;
put '5 0 -3';
end;
Do n=1 to 4;
put '5 0 -1';
end;
Do n=1 to 1;
put '5 0 6';
end;
Do n=1 to 1;
put '6 1 -22';
end;
Do n=1 to 1;
put '6 1 -20';
end;
Do n=1 to 2;
put '6 1 -19';
end;
Do n=1 to 1;
put '6 1 -11';
end;
Do n=1 to 2;
put '6 1 -9';
end;
Do n=1 to 1;
put '6 1 -8';
end;
Do n=1 to 1;
put '6 1 -7';
end;
Do n=1 to 2;
put '6 1 -6';
end;
Do n=1 to 4;
```

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put '6 1 -5';
end;
Do n=1 to 3;
put '6 1 -4';
end;
Do n=1 to 3;
put '6 1 -3';
end;
Do n=1 to 2;
put '6 1 -2';
end;
Do n=1 to 1;
put '6 1 -1';
end;
Do n=1 to 5;
put '6 1 0';
end;
Do n=1 to 6;
put '6 1 1';
end;
Do n=1 to 5;
put '6 1 2';
end;
Do n=1 to 1;
put '6 1 3';
end;
Do n=1 to 11;
put '6 1 4';
end;
Do n=1 to 1;
put '6 1 5';
end;
Do n=1 to 3;
put '6 1 6';
end;
Do n=1 to 5;
put '6 1 7';
end;
Do n=1 to 11;
put '6 1 8';
end;
Do n=1 to 4;
put '6 1 9';
end;
Do n=1 to 5;
put '6 1 10';
end;
Do n=1 to 7;
put '6 1 11';
end;
Do n=1 to 7;
put '6 1 12';
end;
Do n=1 to 7;
put '6 1 13';
end;
Do n=1 to 5;
put '6 1 14';
end;
Do n=1 to 9;
put '6 1 15';
end;
Do n=1 to 6;
put '6 1 16';
end;
Do n=1 to 9;
put '6 1 17';
end;
Do n=1 to 5;
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put '6 1 18';
end;
Do n=1 to 3;
put '6 1 19';
end;
Do n=1 to 7;
put '6 1 20';
end;
Do n=1 to 7;
put '6 1 21';
end;
Do n=1 to 4;
put '6 1 22';
end;
Do n=1 to 5;
put '6 1 23';
end;
Do n=1 to 4;
put '6 1 24';
end;
Do n=1 to 6;
put '6 1 25';
end;
Do n=1 to 3;
put '6 1 26';
end;
Do n=1 to 4;
put '6 1 27';
end;
Do n=1 to 4;
put '6 1 28';
end;
Do n=1 to 3;
put '6 1 29';
end;
Do n=1 to 1;
put '6 1 30';
end;
Do n=1 to 4;
put '6 1 31';
end;
Do n=1 to 5;
put '6 1 32';
end;
Do n=1 to 6;
put '6 1 33';
end;
Do n=1 to 3;
put '6 1 34';
end;
Do n=1 to 3;
put '6 1 35';
end;
Do n=1 to 5;
put '6 1 36';
end;
Do n=1 to 2;
put '6 1 37';
end;
Do n=1 to 1;
put '6 1 38';
end;
Do n=1 to 1;
put '6 1 39';
end;
Do n=1 to 1;
put '6 0 -34';
end;
Do n=1 to 1;
```

```
put '6 0 -22';
end;
Do n=1 to 1;
put '6 0 -11';
end;
Do n=1 to 2;
put '6 0 -10';
end;
Do n=1 to 1;
put '6 0 -8';
end;
Do n=1 to 1;
put '6 0 -7';
end;
Do n=1 to 1;
put '6 0 -6';
end;
Do n=1 to 5;
put '6 0 -5';
end;
Do n=1 to 1;
put '6 0 -4';
end;
Do n=1 to 4;
put '6 0 -3';
end;
Do n=1 to 4;
put '6 0 -2';
end;
Do n=1 to 4;
put '6 0 -1';
end;
Do n=1 to 2;
put '6 0 0';
end;
Do n=1 to 4;
put '6 0 1';
end;
Do n=1 to 1;
put '6 0 2';
end;
Do n=1 to 2;
put '6 0 3';
end;
Do n=1 to 3;
put '6 0 4';
end;
Do n=1 to 1;
put '6 0 5';
end;
Do n=1 to 2;
put '6 0 6';
end;
Do n=1 to 2;
put '6 0 7';
end;
Do n=1 to 1;
put '6 0 8';
end;
Do n=1 to 1;
put '6 0 9';
end;
Do n=1 to 1;
put '6 0 10';
end;
Do n=1 to 3;
put '6 0 11';
end;
Do n=1 to 2;
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```
put '6 0 13';
end;
Do n=1 to 4;
put '6 0 14';
end;
Do n=1 to 3;
put '6 0 15';
end;
Do n=1 to 1;
put '6 0 16';
end;
Do n=1 to 1;
put '6 0 17';
end;
Do n=1 to 1;
put '6 0 18';
end;
Do n=1 to 1;
put '6 0 19';
end;
Do n=1 to 2;
put '6 0 20';
end;
Do n=1 to 2;
put '6 0 21';
end;
Do n=1 to 2;
put '6 0 22';
end;
Do n=1 to 1;
put '6 0 23';
end;
Do n=1 to 1;
put '6 0 24';
end;
Do n=1 to 2;
put '6 0 30';
end;
Do n=1 to 1;
put '6 0 34';
end;
Do n=1 to 1;
put '6 0 38';
end;
Do n=1 to 2;
put '7 1 -25';
end;
Do n=1 to 2;
put '7 1 -24';
end;
Do n=1 to 4;
put '7 1 -23';
end;
Do n=1 to 5;
put '7 1 -22';
end;
Do n=1 to 7;
put '7 1 -21';
end;
Do n=1 to 6;
put '7 1 -20';
end;
Do n=1 to 4;
put '7 1 -19';
end;
Do n=1 to 5;
put '7 1 -18';
end;
Do n=1 to 4;
put '7 1 -17';
end;
Do n=1 to 2;
put '7 1 -16';
end;
Do n=1 to 3;
put '7 1 -15';
end;
Do n=1 to 1;
put '7 1 -13';
end;
Do n=1 to 1;
put '7 1 -12';
end;
Do n=1 to 2;
put '7 1 -11';
end;
Do n=1 to 1;
put '7 1 -6';
end;
Do n=1 to 1;
put '7 0 -24';
end;
Do n=1 to 1;
put '7 0 -23';
end;
Do n=1 to 1;
put '7 0 -22';
end;
Do n=1 to 1;
put '7 0 -21';
end;
Do n=1 to 4;
put '7 0 -20';
end;
Do n=1 to 1;
put '7 0 -18';
end;
Do n=1 to 1;
put '7 0 -16';
end;
Do n=1 to 1;
put '7 0 -15';
end;
Do n=1 to 1;
put '7 0 -13';
end;
Do n=1 to 1;
put '8 1 -25';
end;
Do n=1 to 1;
put '8 1 -24';
end;
Do n=1 to 5;
put '8 1 -23';
end;
Do n=1 to 2;
put '8 1 -22';
end;
Do n=1 to 4;
put '8 1 -21';
end;
Do n=1 to 3;
put '8 1 -20';
end;
Do n=1 to 6;
put '8 1 -19';
end;
Do n=1 to 2;
put '8 1 -18';
end;
Do n=1 to 1;
put '8 1 -16';
end;
Do n=1 to 3;
put '8 1 -15';
end;
Do n=1 to 4;
put '8 1 -14';
end;
Do n=1 to 2;
put '8 1 -13';
end;
Do n=1 to 1;
put '8 1 -11';
end;
Do n=1 to 1;
put '8 1 -10';
end;
Do n=1 to 1;
put '8 1 -8';
end;
Do n=1 to 1;
put '8 1 -5';
end;
Do n=1 to 2;
put '8 0 -24';
end;
Do n=1 to 2;
put '8 0 -23';
end;
Do n=1 to 2;
put '8 0 -22';
end;
Do n=1 to 3;
put '8 0 -21';
end;
Do n=1 to 3;
put '8 0 -20';
end;
Do n=1 to 3;
put '8 0 -19';
end;
Do n=1 to 1;
put '8 0 -18';
end;
Do n=1 to 2;
put '8 0 -17';
end;
Do n=1 to 2;
put '8 0 -16';
end;
Do n=1 to 1;
put '8 0 -15';
end;
Do n=1 to 1;
put '8 0 -14';
end;
Do n=1 to 3;
put '8 0 -13';
end;
Do n=1 to 2;
put '8 0 -11';
end;
Do n=1 to 1;
put '8 0 -9';
end;
Do n=1 to 2;
put '8 0 -7';
end;
Output;
Run;
```