GIFT EXCHANGE
For
G4G12
March 2016

KATE JONES—A TRIBUTE

By Karen and Jeremiah Farrell

It would be a rare puzzlist who is not aware of Kate Jones, but perhaps her many accomplishments are not as well-known as they should be.

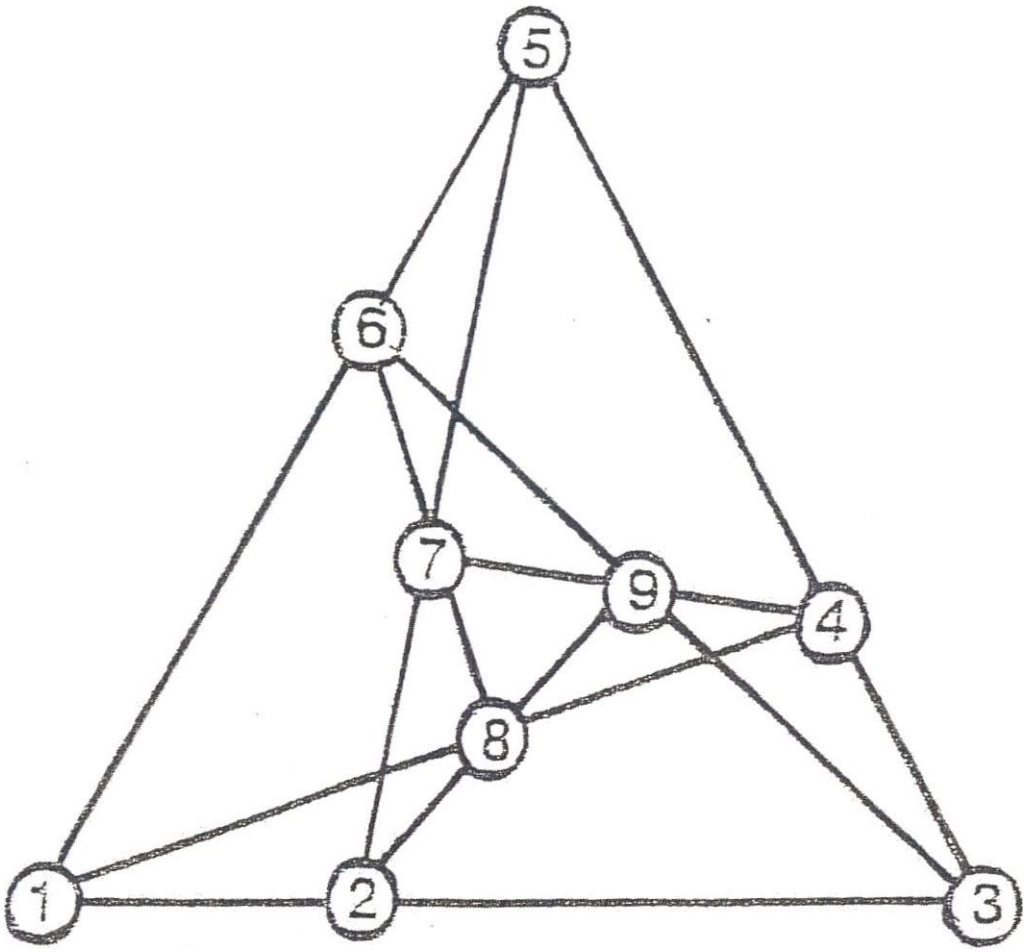
She has been active for over 35 years with puzzles; attending many, many International Puzzle Party events and Gatherings for Gardner. Representing her Kadon Enterprises' business, she has produced over 200 original puzzles and received 53 "Games 100" selections from *Games Magazine* (and lots of prize ribbons at art shows). Notable among her offerings at Kadon would have to be Martin Gardner's "The Game of Solomon" and Solomon Golomb's pentominoes puzzle. The late Tom Rodgers spoke highly of these two puzzle-games as well as all of Kate's other issues. Rodgers may well have had the largest private collection of her works.

Kate is also an accomplished recreational mathematician and poet. To try to match in a small way her creative ability, we offer three puzzle-games in her honor: O'BEIRNE's TRI-HEX, PAPPUS and "KATe JONES". These three are specific examples of (9,3) symmetric configurations. More generally an (n,r) configuration is a collection of n "points"and n "lines" subject to the following requirements:

Rl: Any two points belong to at most one line.
R2: Each line has r points, and each point belongs to r lines.

There are precisely three (9,3)s and our examples represent these. See (1) and (2) for more details.

(1) O'Beirne's Tri-Hex. T. H. O'Beirne (3) commercialized this game about 50 years ago and our puzzle version is played on the first diagram with the nine words listed. The words use the letters KATe JONES three times each (note that e and E are regarded as different). As a puzzle, place the nine words on the nodes so that each of the nine lines contains a common letter.

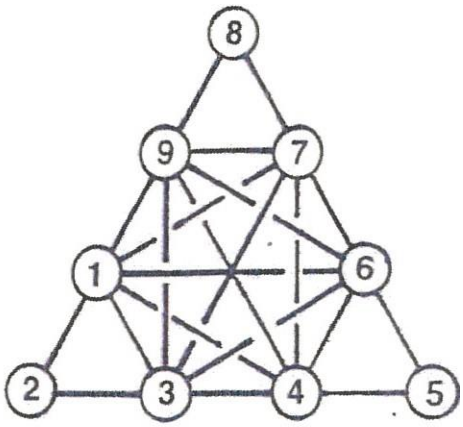


O'BEIRNE

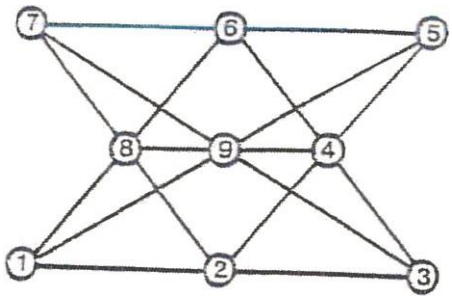
EKe	ENS	KAT
JAN	JET	JOe
OKS	SeA	TON

(2) PAPPUS. A new set of nine words from the letters of KATe JONES are to be placed on the second diagram so that the nine equilateral triangles contain a common letter at each of their nodes.

PAPPUS



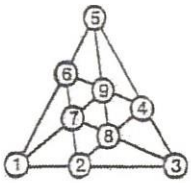
ATE	**EKe**	**JAK**
JeN	**JOT**	**OKS**
ONE	**SAN**	**SeT**

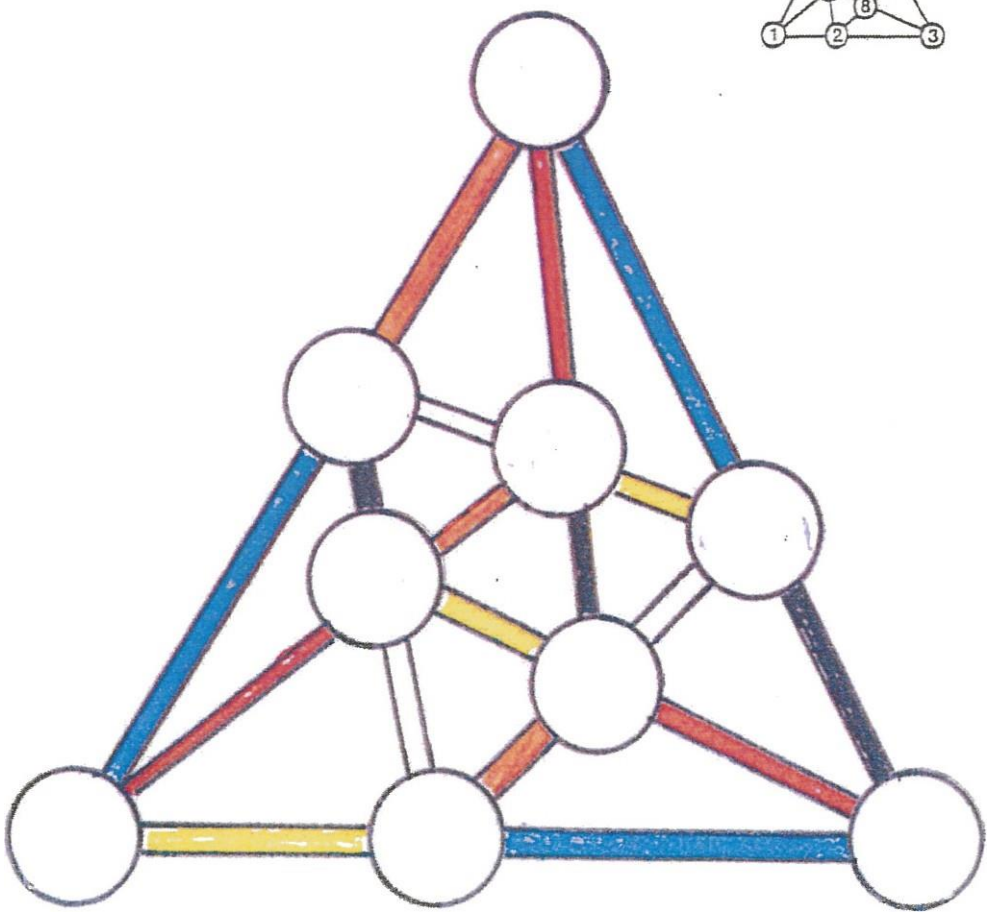


This puzzle is based on a theorem of Pappus (circa 300 A.D.) that describes a generalized hexagon on two lines that always results in three collinear points on its side intersections. Instead of triangles we could have used points and lines as per this diagram.

(3) KATe JONES. A final set of nine words are to be placed on the nodes of the third diagram so that each line contains a common letter.

KATe JONES





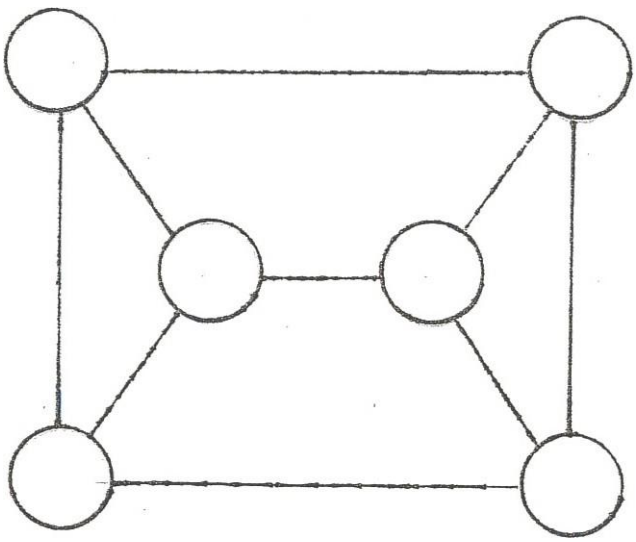
EKe	**JAK**	**JEN**
JOe	**OAT**	**OKS**
SAN	**SET**	**TeN**

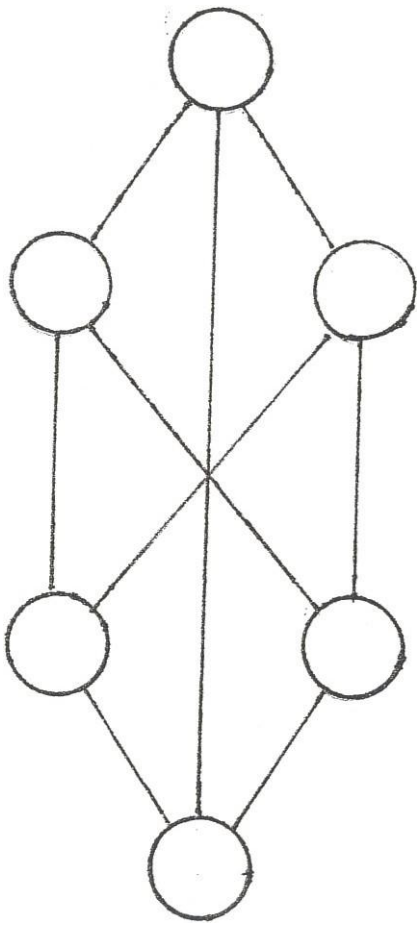
THE GAMES.

Each of three diagrams can be played as a "Tic-Tac-Toe" two-person game where each player has exactly four distinctive tokens. They alternately play a token on a node and the first to obtain a "line" wins. For fairness we rule that if First does not win in four moves then Second wins. There can be no ties.

Every (n,3) that we have studied save one is a first-person forced win. The only exception we have found is KATe JoNES where Second can instead force a win. Strategies will follow later. There are also three dual versions of the puzzles where the nine letters of KATe JONES can be written on tokens and placed on the nodes of a given puzzle so that each line anagrams into one of the possible nine words. Details are left to the reader.

Two additional puzzles. Place six three-letter words on the two following diagrams so that each of the letters in KATe JONES is used exactly two times.





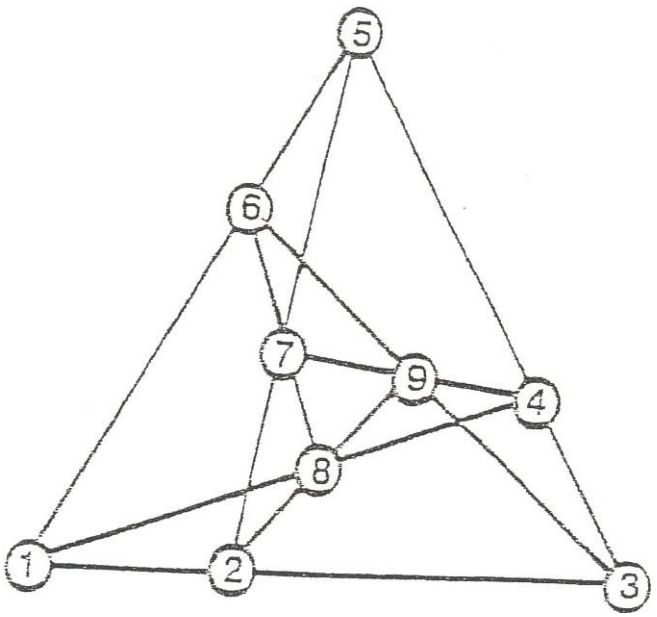
ANSWERS.

Definitions of the more unusual words follow.

JAK: An Asian tree of the bread fruit genus
KAT: Ancient Egyptian unit of weight (or perhaps from "Krazy Kat")
SAN: A member of a nomadic S. African tribe of huntsmen
ENS: Being or existence
JEN,JAN: Girls' names

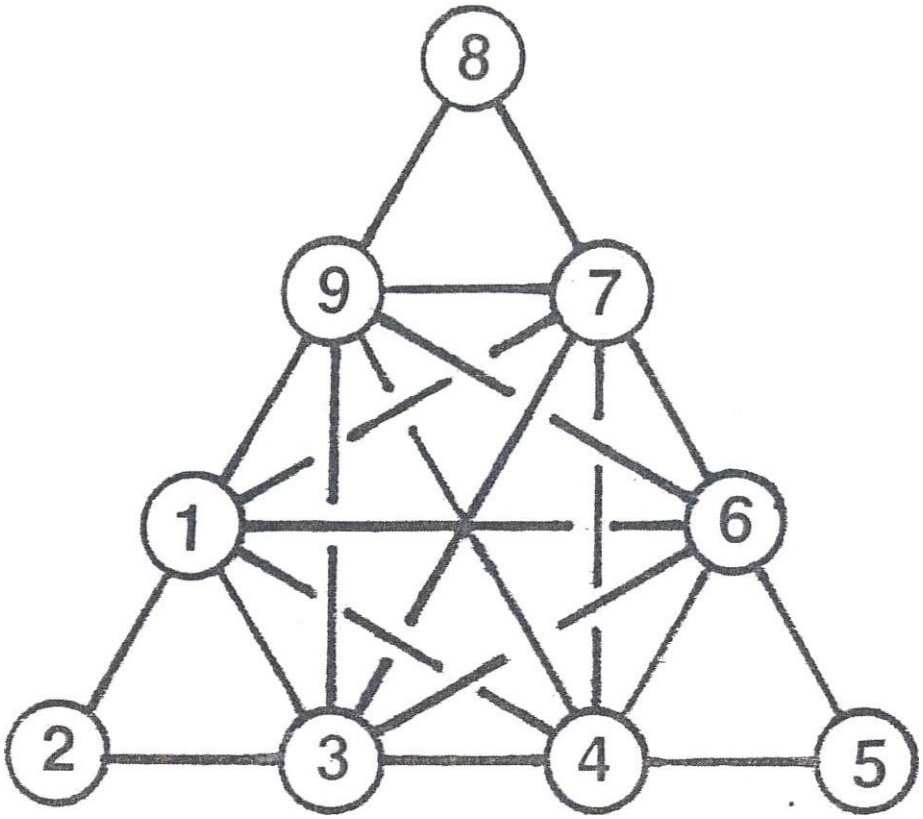
The answer sheet for KATe JONES supplies also an answer for the dual anagrammic puzzle. Also, if Second plays clockwise on the inner star-nonagon, Second can force First to lose in four moves. For example if First plays, say, OAT(7) then Second should play SAN(2) and thereafter play rationally.

For First to win at O'Beime's game, the player must start with oe of KAT, ENS, or JOe and play rationally afterwards. To win at the PAPPUS game, First can play on any color and if Second plays on that same color, First then plays on the third node of that color. If Second does not play on First's color then First plays to force Second to waste a move by playing a new color for which Second must block by playing a token on Second's original color.



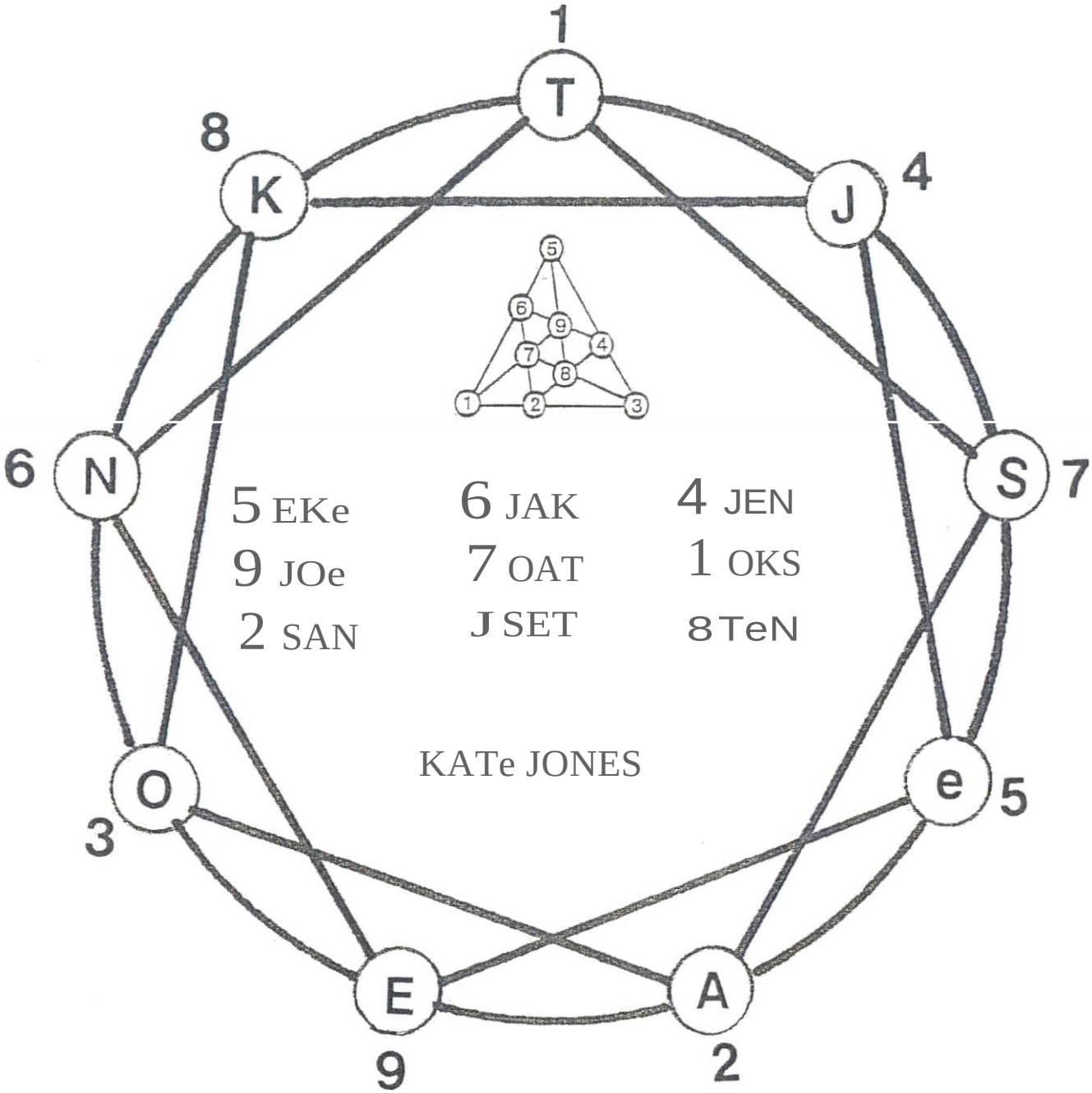
O'BEIR.i'l'E

1 EKe	4 ENS	2 KAT
7 JAN	8 JET	6 JOe
3 OKS	5 SeA	9 TOT



3 ATE	1 EKe	7 JAK
8 JeN	9 JOT	4 0KS
2 0NE	5 SAN	6 SeT

PAPPUS


1
T
8
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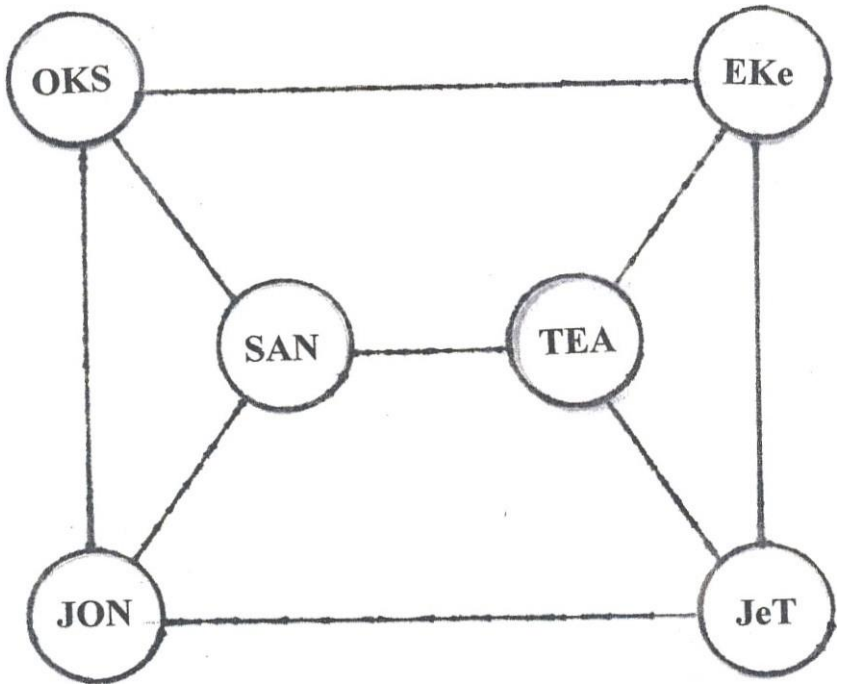
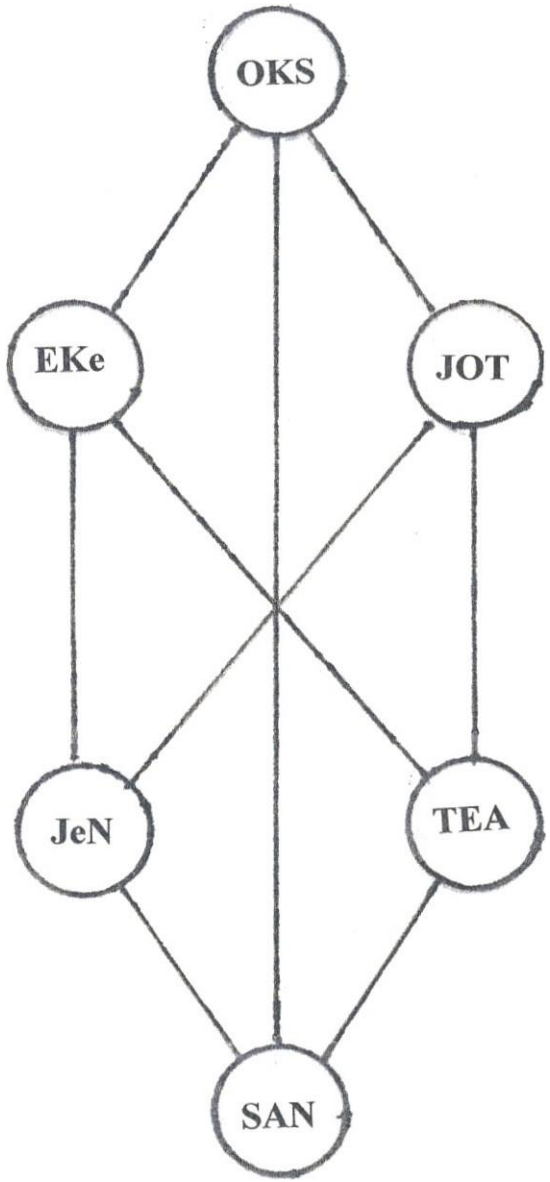
2
A
5 EKe
9 JOe
2 SAN
6 JAK
7 OAT
J SET
4 JEN
1 OKS
8 TeN
KATe JONES


OKS
EKe
SAN
TEA
JON
JeT


OKS
EKe
JOT
JeN
TEA
SAN

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(1) Jeremiah Farrell. Games on Word Configurations, *Word Ways: The Journal of Recreational Linguistics,* 27(40: 195-205, November 1994.
(2) Jeremiah Farrell, Martin Gardner and Thomas Rodgers. Configuration Games, *Tribute to A Mathemagician.* Ed. B. Cipra, E. Demaine, M. Demaine, and T. Rodgers. Wellesley, MA: AK Peters, 2005, pp. 93-99.
(3) T. H. O'Beime. *Puzzles and Paradoxes*. New York: Dover, 1984, p. 109.