

INSIGHT

The Journal of the Titan Society

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Editorial

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Autobiographical sketches: This issue contains an autobiographical sketch from new member H. W. Corley. We have now had six such sketches. The others were from Eric Hart in issue #2, from Chris Cole in #4, from Ray Wise in #7, from Karl Wikman in #13, and from Cedric Stratton in #14.

Puzzles: Chris Cole offers solutions to two of his puzzles that appeared in issue #2, plus a new puzzle.

Trial Tests: I include copies of my Trial Tests "C" and "D" in this issue. The four members who tried Trial Test "B" have already been sent copies of "C", but other members might like to take a glance at it. I've received a total of 17 responses to "C" so far, and I plan to send out score reports as soon as I receive at least 3 more (or preferably 8 more) from all sources. I've completed about 50% of Trial Test "E" so far and will include the test in a future issue of this journal.

A news note: Dean Inada is now working for Chris Cole's computer software company, Peregrine Systems. Dean and Chris are both former students at the California Institute of Technology but never met before becoming members of the Titan Society.

The purpose of the Titan Society: Each member is entitled to derive any meaning or purpose from his association with the Titan Society that he deems appropriate. For Dean Inada and Chris Cole I hope that their collaboration, initiated through their membership in this group, will prove fruitful. For me the group provides a convenient supply of extremely gifted subjects for my tests. I hope that other members will also find rewarding benefits from associating with us. It is up to you to take some of the initiative, however.

Autobiographical Sketch

H. W. ("Bill") Corley
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I was born June 12, 1944, in Atlanta, Georgia, and grew up in a small town 30 miles from Atlanta. I was offered the chance to skip several grades in elementary school but chose not to do so. While I was always first in my class, I was also fortunate enough to be athletic while growing up. I played on a state championship basketball team in high school and was an all-state football player.

I received a bachelor's degree in electrical engineering from Georgia Tech, worked briefly for I.B.M., and then obtained a master's degree in Information and Computer Science from Georgia Tech. Thereafter I worked for McDonnell Douglas in the space program at Cape Kennedy for a year and then returned to school to get a Ph.D. in systems engineering from the University of Florida.

Since 1971 I have been an engineering professor at the University of Texas at Arlington, between Dallas and Fort Worth. I also completed a Ph.D. in mathematics in 1978 on a part-time basis to enhance my research capability.

I am married (more than once) and have four daughters ranging from 3 to 18 years old. One of my most rewarding experiences has been taking care of one of my daughters during her first two years till noon daily and at night while her mother finished her Ph.D. in engineering. Incidentally, all my daughters were reading by 18 months and very well by 2, and each is quite happy and well-adjusted, as they say.

I have been a runner for over 20 years, arising at 5:30 a.m. to run 3 miles and work out with Nautilus equipment at a local health club.

One of my current nontechnical interests is writing fiction. Good, bad, or indifferent, my first novel will be completed by next summer.

Puzzles

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(1) Sultan's Dowry:

A sultan has granted a commoner a chance to marry one of his hundred daughters. The commoner will be presented the daughters one at a time. After a daughter is presented, the commoner will be told the daughter's dowry. The commoner has only one chance to accept or reject each daughter; he cannot return to a previously rejected daughter. The Sultan's catch is that the commoner may only marry the daughter with the highest dowry. What is the commoner's best strategy assuming he knows nothing about the distribution of dowries?

(2) Newcomb's Paradox:

A being put one thousand dollars in box A and either zero or one million dollars in box B and presents you with two choices:

Choice 1: Open box B only.

Choice 2: Open both box A and B.

The being put money in box B only if it predicted you will choose option (1). The being put nothing in box B if it predicted you will do anything other than choose option (1), including choosing option (2), flipping a coin, etc. Assuming that you have never known the being to be wrong in predicting your actions, which option should you choose to maximize the amount of money you get?

(3) Switch?

Two black marbles and a red marble are in a bag. You choose one marble from the bag without looking at it. Another person chooses a marble from the bag and it is black. You are given a chance to keep the marble you have or switch it with the one in the bag. If you want to end up with the red marble, is there an advantage to switching? What if the other person looked at the marbles remaining in the bag and purposely selected a black one?

(Editor's note: Chris Cole's solutions to the first two puzzles are given on page 8.)

Trial Test "C"

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Instructions

Allow yourself a month or two. Try to do your best the first time, since revised answers may not be permitted. Use reference books of any kind and pocket calculators, if you wish, but not computers. The scoring fee is \$5.00 for members of the Titan and Triple Nine societies and \$6.00 for non-members, unless the latter have already paid \$25.00 for the entire series. (The fee will be waived for any Titan or Triple Nine member who considers it a hardship.)

Part One: Verbal Problems

For the first 12 problems, pick the letter of the word that does not belong with the others, as you did for the verbal problems in Trial Test "B". (If you have not yet taken Trial Test "A" or "B", they are still available.) Pick the "most intelligent" solution.

- (1) (A) Down, (B) Depressed, (C) Strange, (D) Charmed, (E) Bottom
- (2) (A) Gamma, (B) Lithium, (C) Radium, (D) The ratio of the cube of the semimajor axis to the square of the period is the same for all the planets, including the Earth, (E) Earth
- (3) (A) Switzerland, (B) Liechtenstein, (C) East Germany, (D) North Korea, (E) Vietnam
- (4) (A) Seminar, (B) Symposium, (C) Sophist, (D) Statesman, (E) Apology
- (5) (A) Benoni, (B) Gruenfeld, (C) Nimzovich, (D) Ruy Lopez, (E) Fokine
- (6) (A) Barbara, (B) Cesare, (C) Darapti, (D) Erasmus, (E) Perio
- (7) (A) Empedocles, (B) Epimenides, (C) Richard, (D) Russell, (E) Grelling
- (8) (A) Hammer, (B) Anvil, (C) Saddle, (D) Stirrup, (E) Drum
- (9) (A) Barium, (B) Copper, (C) Hydrogen, (D) Oxygen, (E) Yttrium
- (10) (A) Basque, (B) French, (C) German, (D) Italian, (E) Romansch
- (11) (A) Bose, (B) Dirac, (C) Einstein, (D) Fermi, (E) Planck
- (12) (A) Ceres, (B) Juno, (C) Pallas, (D) Orion, (E) Vesta

For the next 6 problems, pick the letter of the alphabet that comes next in each series. For example, in the series M T W T F S ? the next letter would be S, since these are the initials of the days of the week.

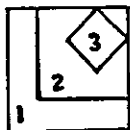
- (13) M T E M J S U N ?
- (14) O T F F F S S E N ?
- (15) C E E E N Q S ?
- (16) Q W E R T Y U I O ?
- (17) K G N B N K K B T P O ?
- (18) A T G C L V L S S C A ?

For the following 6 problems, determine which word best completes each phrase or sentence, a "best" solution being one that turns the phrase or sentence into a famous saying or quotation.

- (19) "_____ dawn." (A) Apple-cheeked, (B) Ruby-lipped,
(C) Sleepy-eyed, (D) Flaxen-haired, (E) Rosy-fingered.
- (20) "To travel hopefully is a better thing than to _____."
(A) arrive, (B) hesitate, (C) repine, (D) retire, (E) triumph
- (21) "death's _____ night" (A) dreamless, (B) dismal,
(C) endless, (D) timeless, (E) dateless
- (22) "_____ is the extreme form of censorship" (A) Assassination,
(B) Bigotry, (C) Ignorance, (D) Book burning, (E) Expurgation
- (23) "_____: unintelligible answers to insoluble problems."
(A) Casuistry, (B) Existentialism, (C) Philosophy, (D) Theology,
(E) Sophistry
- (24) "An artist may visit a museum, but only a _____ can live
there." (A) bore, (B) mouse, (C) pedant, (D) fool, (E) recluse

Part Two: Quantitative Problems

The figure at right can be formed by means of three overlapping squares, as indicated by the numberings. For each of the following figures, determine the minimum number of overlapping squares needed to form the pattern shown. If a pattern cannot be formed by means of overlapping squares, write "impossible."



25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36.

End of Test

Trial Test "D"

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This is the fourth test in this series of six trial tests. I had thought of shortening the series to five or even four tests, but I believe that better final tests will result if I extend the series to the full six tests that I originally projected to be needed.

The scoring fee for this test for members of the Triple Nine and Titan societies is \$5.00, but this fee will be waived for those members who consider it a hardship. Non-members of either of these two groups may attempt this test for \$6.00, or \$25.00 for the entire series.

Try to complete this test within a month or so. You may use reference aids of any sort but should not consult other people.

Verbal Problems: Find the best answer for each of the following analogies and write the first letter of the answer on your answer sheet. This will make it easier for you to guess if you are not sure of the correct answer.

1. Mouse : Cat :: Cobra : ?
2. A : Z :: Soup : ?
3. Mice : Men :: Cabbages : ?
4. Thou shalt not kill : Commandment :: Blessed are the meek : ?
5. Physics applied to astronomy : Astrophysics :: Economics, statistics, etc.. applied to history : ?
6. Leg : Ambulate :: Arm : ?
7. Spittoon : Cuspidor :: Cigar case : ?
8. Librarian : Melvil :: Philosopher : ?
9. Atlantic : Pacific :: Hurricane : ?
10. Vampire : Werewolf :: Wood : ?
11. 4 : Hand :: 9 : ?
12. Man of Steel : Superman :: Man of Iron : ?
13. Introvert : Ambivert :: Carnivore : ?
14. Moo : Bovine :: Coo : ?
15. Lizard : Saurian :: Frog or toad : ?
16. Mosquitoes : Malaria :: Canibalism : ?
17. Hear : See :: Temporal : ?
18. It is so : Indicative :: Would that it were so : ?
19. God : Theology :: Judgment Day : ?
20. Every employee tends to rise to the level of his incompetence : Peter :: If anything can go wrong, it will : ?
21. Sleeplessness : Insomnia :: Speaking in tongues : ?
22. Hardy : Laurel :: Gildenstern : ?
23. Gods : Twilight :: Morals : ?
24. Magic Mountain : Mann :: Magic bullets : ?

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Non-verbal Problems: Suppose each side of a polyhedron is painted either black or white. Determine how many distinguishable ways each of the following polyhedra can be painted if (1) two patterns are indistinguishable if one can be made equivalent to the other by rotation, and (2) all sides of the polyhedron are visualized simultaneously when considering whether two patterns are the same or not. Solve for the following five regular (i.e., perfectly symmetrical) polyhedra:

25. Tetrahedron. 26. Cube. 27. Octahedron. 28. Dodecahedron. and 29. Icosahedron.

30. What number comes next in this sequence:

1 6 7 14 15 24 41 44 55 64 ?

31. Suppose one slices a perfectly spherical onion with six straight, i.e., planar, knife strokes, never moving or rearranging the pieces formed. If the outer skin of the onion is infinitesimally thick, into how many pieces, at most, can this skin thus be divided?

Trial Test "C" had a few figures that were drawn incorrectly. Please try to determine the minimum number of overlapping squares necessary to produce each of the following patterns:

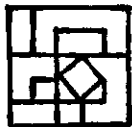
32.



33.



34.



35. Suppose there is a room with ten black boxes such that one cannot see into the boxes but one knows that each box contains ten marbles of identical size and texture, each of which is either black or white. One box has 10 white marbles and 0 black ones, one has 9 white and 1 black, one has 8 white and 2 black, and so on. Suppose one selects one of the boxes at random. Suppose one picks at random one marble at a time out of the box, examines its color, and then returns it to the box, mixing the marbles thoroughly before selecting another one for examination. If one examines ten marbles in this way and all are white, what is the probability to the nearest percent that the box one selected has 10 white and 0 black marbles.

36. Suppose there are tens of thousands of black boxes in a room and that each box contains ten marbles of identical size and texture, the color of each marble being determined beforehand by the flip of a coin--heads resulting in the placement of a white marble in the box and tails in the placement of a black one. If one box is selected at random and ten marbles from that box are inspected one by one as in the preceding problem, all turning out to be white, what is the probability to the nearest percent that all ten marbles in the box are white?

Puzzle Solutions

Chris Cole

(1) Sultan's Dowry Solution:

Since the commoner knows nothing about the distribution of the dowries, the best strategy is to wait until a certain number of daughters have been presented, then pick the highest dowry thereafter. The exact number to skip is determined by the condition that the odds that the highest dowry has already been seen is just greater than the odds that it remains to be seen and that if it is seen it will be picked. This amounts to finding the smallest x such that

$$x/n > x/n * (1/x + 1/(x + 1) + \dots + 1/(n - 1)).$$

Working out the math for $n = 100$ and calculating the probability gives the following result: The commoner should wait until he has seen 37 of the daughters, then pick the first daughter with a dowry that is greater than any preceding dowry. With this strategy his odds of selecting the daughter with the highest dowry are surprisingly high: about 37%. (CP. Fifty Challenging Problems in Probability, with Solutions, by Mosteller; Addison Wesley, 1965, #47.)

(2) Newcomb's Paradox Solution:

Since the being has already put the money in the boxes and you cannot change that no matter what you do, you obviously should take both boxes.

(Editor's comment: I suppose one might say that probability problems are like Congressional hearings: both ask the question "What do you know and when did you know it?")