The one in-a-million I Q test

GAMES

By Scot Morris

Most intelligence (or I Q) tests are designed so that average people get average scores clustered around the midpoint I Q of 100 The tests are most powerful at their middle ranges where the difference between an I Q of 100 and 105 may be a matter of several questions on the test itself But at their upper ends the tests don t seem to discriminate nearly as well—the five-point difference between I Q scores of 145 and 150 say may translate into raw-score differences of only one or two test questions

In recent years there has been an interest in devising tests that make fine distinctions in the intellectual stratosphere The idea is to make a test so difficult that geniuses will get average scores and only supergeniuses will be able to achieve the highest scores

The *Omni I Q Quiz Contest*, published this month by McGraw-Hill is offering $10 000 in prizes for the highest scores on a test printed in the book Prizes include a $5 000 cash grand prize a one week trip to Barbados for two a Genesis telesystem from AT&T an Atari 800XL home computer and a Casio Data Bank watch

Contest and book author Marilyn Mach vos Savant (who as a child scored a 230 on a Stanford-Binet I Q fest and is listed in the most recent edition of the *Guinness Book of World Records* under Highest I Q) also writes about six high-I Q organizations that have been established in recent years

Mensa the most famous group, is open to one person in 50—that is people in the upper 2 percent of the population (I Q s above 133 or SAT or GRE scores above 1250) The Triple Nine Society has a 1-in-1 000 cutoff (the 99 9th percentile hence the name) And the Prometheus Society shoots for 1 in 30,000 But the most restrictive group is the Mega Society which is theoretically limited to one person in a million (the 99 9999th percentile) Mega is recognized by *Guinness* as the world s most exclusive I Q society At present it has only 26 members

The founder of Mega and author of one of its admissions tests is Ronald Hoeflin of New York Knowing how *Omni* readers like I Q tests Hoeflin split his original long form test into two parts of 48 questions each One part appears here, published for the first time anywhere the other part appears in the *Omni* I Q quiz book complete with answers

Hoeflin estimates that the test printed here has a floor of 122 (which means that if you get no questions right your I Q is somewhere below 122) and a ceiling of 184 The test s atmosphere is so rarefied that it has no validity whatsoever in testing people of "normal intelligence This test is the result of almost two years of collaboration between Hoeflin and *Omni* At our request the test was administered to more than 150 people—all members of the major high-I Q societies in order to show for example that Mega members score higher than members of Prometheus who score higher than members of Triple Nine and so on

Of the test's 48 questions 8 correct corresponds to an I Q of 134 the cutoff for membership in Mensa 22 right an I Q of 150 qualifies one for membership in the Triple Nine Society 33 or above corresponding to a 164 I Q qualifies one for membership in the Prometheus Society 42 right or an estimated I Q of 176, is the cutoff for joining the Mega Society

This test alone is suitable for admission to all of the above societies except Mensa

INSTRUCTIONS

1 ANSWER SHEET Print or type all of your answers on a single 8½- by 11-inch sheet of paper At the top give your name address age and sex plus—optionally—scores from any previous I Q or aptitude tests you might have taken

2 TIME LIMIT There is no enforceable time limit but it is suggested that you limit yourself to no more than one month

3 ASSISTANCE You are encouraged to use such reference aids as dictionaries thesauri, and pocket calculators A slide rule is discouraged since all numerical answers must be exact Any assistance from other persons is prohibited

4 GUESSING There is no penalty for wrong answers or guesses so it is to your advantage to guess whenever you are unsure of an answer

5 FEE For a basic $5 scoring fee you will receive a scoresheet listing the number of questions you answered correctly (broken down into raw scores within each of the subtests) your corresponding I Q score and its estimated percentile in the general population

For an additional $5 ($10 total), you will receive a ten page statistical report, "The Meaning of Mega Test Scores " which shows how scores on the Mega test relate to scores on other recognized high-I Q tests, the procedures for applying for membership in other high-I Q societies and their addresses

6 SCORESHEETS Send to Omni Mega Test, Box 7430 New York NY 10116 Allow eight weeks for processing

VERBAL ANALOGIES

For the first 24 problems, write the word or prefix that best completes each analogy For example in the analogy TASTE (is to) GUSTATORY (as) SMELL (is to) ? the best answer would be OLFACTORY In the analogy of HOT COLD PYRO- ?, the answer would be CRYO-

1 NIGHT DAY NOCTURNAL ?
2 HEEL ACHILLES BOX ?
3 SHOE COBBLER BARREL ?
4 UNCERTAINTY HEISENBERG UNDECIDABILITY ?
5 ½ SEMI 1½ ?
6 BILLION BILLIONTH GIGA- ?
7 TEETH HEN NEST ?
8 LENIN PSEUDONYMOUS LENINGRAD ?
9 PAIN RUE BREAD ?
10 FEEL PALPATE LISTEN ?
11 WATER AQUEOUS SNOW ?
12 SEA LITTORAL RIVER ?
13 THITHER HITHER TRANS- ?
14 WIDE NARROW BRACHY- ?
15 CIVIL PAPAL AMBASSADOR ?
16 BLACK YELLOW MELAN-CHOLIC ?
17 FOUR-SIDED POLYHEDRON TETRAHEDRON FOUR-DIMENSIONAL HYPERCUBE ?
18 WINTER HIBERNATE SUMMER ?

19 GOD THEOLOGY WHY IF GOD EXISTS THERE IS EVIL ?

20 100 PERCENTILE 9 ?

21 LOGIC SOPHISTICAL FEAST ?

22 RUTHLESS MYRMIDON IMITATIVE ?

23 IS OUGHT ONTOLOGY ?

24 60 59 NEO ?

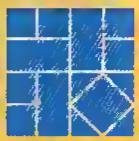
SPATIAL PROBLEMS

For each of the next two problems four of the five figures have some basic common feature that the fifth figure lacks Indicate with the appropriate letter the figure that does not belong with the rest

25 (A) (B) (C) (D) (E)

26 (A) (B) (C) (D) (E)

27 What is the minimum number of square sheets of paper sufficient to reproduce the pattern below if the sheets—unfolded uncut unmarked, and opaque—are placed flat on top of one another such that each line shown corresponds to the edge of some square insofar as it is not occluded by any overlapping square?



28 If three mutually intersecting rectangles are drawn on a flat surface what is the maximum number of bounded areas that can thereby be formed, considering only the sides of the rectangles as bounds and counting only areas that are not further subdivided?

29 In going from square A to square B in the figure below what is the maximum number of squares that a chess knight could touch including A and B if the knight makes only permissible moves does not touch any square more than once and does not go outside the 16 squares shown?

30 Draw the fourth figure in this series

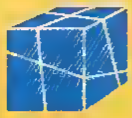
31 Several identical cubes are fused to form a solid object Given the following five views of such an object draw the sixth

32 If 27 identical cubical chunks of cheese are piled together to form a cubical stack as depicted below what is the maximum number of these cheese chunks through which a mouse of negligible size could munch before exiting the stack, assuming that the mouse always travels along the grid of 27 straight lines that pass through the centers of the chunks parallel or perpendicular to their sides always makes a 90° turn at the center of each chunk, and never enters any chunk more than once?

33 Five dots are arranged in space so that no more than three at a time can have a single flat surface pass through them If each group of three dots has a flat surface pass through it and extend an infinite distance in every direction what is the maximum number of different lines at which these surfaces may intersect one another?

34 Suppose that each side of a cube is painted a single uniform color—red blue or yellow—such that any two sides painted red are chromatically indistinguishable as are any two painted blue or any two painted yellow When all six sides are visualized simultaneously they constitute a color pattern for the cube Two color patterns are mutually indistinguishable whenever one can be made to coincide with the other by suitable rigid rotations For example there is only one distinguishable color pattern consisting of one blue side and five yellow sides How many distinguishable color patterns can a cube have, counting all six sides in each pattern and assuming that each side must be painted red blue or yellow?

35 A cube of butter is sliced five times by a butter knife Into how many pieces at most can the cube of butter thereby be divided if each knife stroke is perfectly straight (i e planar) and the pieces of butter are never rearranged? The figure below illustrates three slices, yielding eight pieces



36 What is the maximum number of completely bounded volumes that can be formed by three interpenetrating cubes, considering only the surfaces of the cubes as bounds and counting only volumes that are not further subdivided?

NUMERICAL PROBLEMS

37 A modified version of the dice game craps is played with two regular (i e , perfectly symmetrical) dodecahedrons Each die has its sides numbered from 1 to 12 so that any sum from 2 to 24 would

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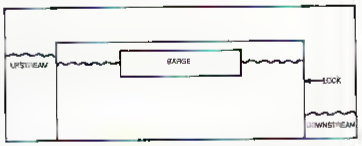
be showing on the top surfaces of the two dice after each throw. If a player gets the sum 13 or 23 on his first throw (a natural), he wins. If he gets the sum 2, 3, or 24 (craps), he loses. If he gets any other sum (his point), he must throw both dice again. On this or any subsequent throw, the player loses if he gets the sum 13 and wins if he gets his point but must throw both dice again if any other sum appears. The player continues until he either wins or loses. To the nearest percent, what is the probability at the start of any game that the dice thrower will win?

38. Illustrated below is a simple scale for weighing objects. The scale consists of a lever resting on a fulcrum with weighing pans at each end of the lever equidistant from the fulcrum. Suppose that the objects to be weighed may range in weight from 1 pound to 100 pounds at one-pound intervals: 1, 2, 3, . . . , 98, 99, 100. After placing one such object on either of the two weighing pans, one or more precalibrated weights is then placed in either or both pans until a balance is achieved, thus determining the weight of the object. If the relative positions of the lever, fulcrum, and pans may not be changed and if one may not add to the initial set of precalibrated weights, what is the minimum number of such precalibrated weights that would be sufficient to bring into balance any of these objects?

39. A crystal consists of 100,000,000 layers of atoms such that there is 1 atom in the first layer, 3 in the second, 6 in the third, 10 in the fourth, 15 in the fifth, and so forth, as illustrated below. Exactly how many atoms are there in the entire crystal?

40. To the nearest percent, the probability that any one person selected at random was born on Monday is 14 percent. What is the probability, to the nearest percent, that of any seven persons chosen at random, exactly one was born on Monday?

41. A certain lock for raising and lowering barges from one river level to another is a rectangular parallelepiped 200 meters long, 50 wide, and 20 deep. A barge is floating in the lock that is also a rectangular parallelepiped measuring 80 meters long, 25 wide, and 5 deep. The barge, containing 3,000 barrels of toxic chemicals, displaces 8,000 long tons of water. The water has a density of one long ton per cubic meter. Each barrel of chemicals is watertight, with a volume of one cubic meter, and a weight of two long tons. A group of terrorists render the lock inoperable and attach a time bomb to the side of the barge set to go off in three hours. The barge contains elevators for moving barrels quickly to the deck, but the crew is too shorthanded to roll the heavy barrels up an inclined plane in the time allotted. The deck is only ten centimeters below the top edge of the lock from which the barrels could be rolled to dry land. If no water is entering or leaving the lock, how many barrels, at a minimum, would need to be rolled into the water in the lock in order to raise the level of the barge so that its deck would be even with or slightly above the top edge of the lock so that the remaining barrels could be rolled to dry land?



42. As one can see from the diagram, below, the sum of the infinite series

$$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \ldots$$

is 1. What is the sum of the infinite series

$$\frac{1}{3} + \frac{1}{9} + \frac{1}{27} + \frac{1}{81} + \ldots ?$$

For each of the following number series, what number should come next? For example, in the series 1, 4, 9, 16, 25, 36, ? the best answer would be 49.

43. 15, 52, 99, 144, 175, 180, 147, ?
44. 3, 23, 229, 2869, 43531, ?
45. 0, 5, 8, 8, 2, 3, 5, 2, 9, 4, ?
46. 14, 21, 13, 2, 5, 18, 0, 19, 5, 18, 9, 5, ?
47. 6, 8, 5, 8, 4, 0, 7, 3, 4, 6, ?
48. 1, 3, 8, 22, 65, 209, 732, 2780, ?

This concludes the test.

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EARTH

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by the work of Allen Frey, a biophysicist and technical director of Randomline, Inc., a basic-research and-consulting firm in Huntington Valley, Pennsylvania. Frey has been studying sounds generated not by giant fireballs but by the relatively weak electromagnetic fields associated with radar, microwaves, and radio waves.

Applying his physiology background to the problem, Frey discovered that such fields, while too weak to cause vibration in the outside environment, somehow stimulate the inner ear itself. Although unsure of the *exact* mechanism involved, Frey suggests that these very weak fields might be affecting the chemical bath that surrounds the ear's acoustically sensitive membrane. Somehow that electrochemical reaction may be translated to sound.

While Keay's theory about vibration of the surrounding environment makes sense, Frey adds, giant fireballs are most probably stimulating the internal environment—the inner-ear membrane—as well as the external one. "You don't have an either/or situation," he notes. "The sources of the sound will vary depending upon the exact frequency of the electromagnetic wave."

Both Frey and Keay insist that better understanding of the phenomenon will have a sizable payoff. Learning exactly how electromagnetism reacts with the ear, says Frey, will give us greater insight into the human auditory system.

And understanding how fireballs generate sound, says Keay, could open new vistas for scientists studying geophysics, electromagnetism, and astronomy. And perhaps even more important, current work could conceivably help researchers perfect a promising new energy technology known as *magnetohydrodynamics*, in which hot plasma, like that created by the fireball, generates electromagnetic power.

In the past, Keay notes, a concerted study of the fireball hiss has been almost impossible. At any given site around the world, there are only three or four giant meteors a century. It's impossible to know when one of these projectiles will arrive, and there simply aren't enough of them to justify a long-term watch complete with recording equipment and a trained scientific staff.

But that issue, he adds, may now be academic. A new predictable kind of fireball—the space shuttle—produces as much plasma and noise as do fireballs dropping in from the cosmos.

"The space shuttle offers a golden opportunity for any young researcher with a tape recorder, an amplifier, and a bit of time," Keay contends. "Scientists who know when it will pass can simply lie in wait for its arrival. By getting the whooshes and hisses of the electromagnetic signal on tape, we can learn *exactly* how this kind of energy is converted to sound. We'd be solving a mystery that's haunted us for two hundred years."