

Male students still better in science

● The air temperature on the ground is 31 degrees. On top of a nearby mountain, the temperature is -7 degrees. How many degrees difference is there between these two temperatures?

The correct answer is 38 degrees. The percentage of males and females who answered correctly were, respectively: age 13—46 percent and 30 percent; age 17—70 and 60; adults—73 and 60.

● If John drives at an average speed of 50 miles an hour, how many hours will it take him to drive 275 miles?

The correct answer is five and a half hours. The percentage of males and females who answered correctly were, respectively: age 13—48 percent and 40 percent; age 17—71 and 66; adults—74 and 64.

● Green plants are important to animals because the plants: (a) consume both food and oxygen; (b) consume food and give off oxygen; (c) consume food and give off carbon dioxide; (d) produce food and give off oxygen; (e) produce food and give off carbon dioxide.

This question was administered to 13-year-olds; only 45 percent of the females gave the right answer (d), compared to 57 percent of the males. □

To its gloomy reports about how science literacy is declining among students (SN: 3/29/75, p. 206) and how most adults cannot add well enough to balance their own checkbooks (SN: 8/2/75, p. 71), the National Assessment of Education Progress (NAEP) now adds a report that shows traditional domination of male students in such areas as science, mathematics and social studies has not been ameliorated either by changing curricula or by the supposed rising consciousness of equality.

In each of the studies in question, boys and girls demonstrate the same achievement levels at age 9, but by age 13, female students have begun to slip behind. The gap continues to widen through high school and on into adulthood. NAEP Director Roy H. Forbes says his organization is interested only in establishing "census-like" data, rather than in determining causes of educational decline, but he suggests there may be some "subtle, or not-so-subtle, forces—both within the education system and society in general—that affect female educational attainment."

In mathematics, NAEP describes the male advantage as "overwhelming." Though nine-year-old girls do about as well as their male counterparts in addition, subtraction, multiplication and division, the boys already do better at geometry and measurement. By age 17, males outper-

form females in all mathematical content areas assessed, and the overall difference increases to more than 10 percentage points by the adult level. Two particularly puzzling aspects of this male domination were exposed in the latest survey: Though females generally read better than males (as shown by another NAEP study) they do particularly badly on "story" problems; also, though women traditionally do more retail buying, men consistently outperform them on problems involving such household situations.

In science, the question of achievement seems to be linked to one of motivation; specifically, why do more boys choose to take elective science courses in high

school, especially physical science courses?

The greatest disparity between male and female performance in the social sciences occurs at the adult level, and is particularly evident in economics, political science, geography and history. NAEP suggests that the historically limited influence of women in government may have led girls to abandon these subjects.

Among the more appalling specific examples (see box): Less than half the 17-year-old girls tested, and only slightly more than half the boys know that presidential candidates are nominated by national party conventions. In the same age group, about a fifth of the boys and a third of the girls could not predict which way a weight would tilt a spring-loaded bar. □

Nobel Prizes: Round One

The first of this year's Nobel laureates have been named, with the Peace Prize going to dissident Soviet physicist Andrei Sakharov and the prize for economics being shared by Tjalling Koopmans of Yale and Leonid Kantorovich of the Soviet Academy of Sciences.

Sakharov, who helped develop the Russian hydrogen bomb, has been active in calling for control of nuclear weapons and greater civil liberties in the Soviet Union. As early as 1958 he began calling for a ban on nuclear tests; in 1961 he personally appealed to then Premier Nikita Khrushchev to halt Soviet nuclear blasts; and when he took part in a public vigil

in 1966, he was fired from his job as section chief in the Soviet nuclear program. The committee cited his special insight and responsibility as a scientist in being able to "speak out against the dangers inherent in the armaments race between states."

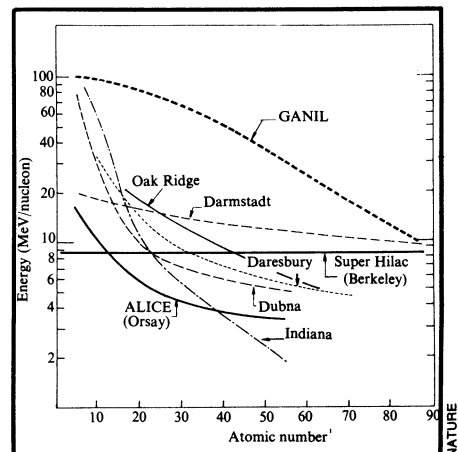
Koopmans and Kantorovich share the economics prize for their independent contributions to the theory of optimum allocation of resources, which have "renewed, generalized and developed methods for the analysis of the classical problem of economics," according to the award announcement by the Swedish Academy of Sciences. □

Two hours from Paris: New ion machine

The newest technique in nuclear physics is to accelerate atomic nuclei (heavy ions) and bang them against other nuclei, thus studying what happens when two large aggregations of nuclear matter collide. (Previous techniques used single particles as probes of nuclei.) Western European countries have been leaders in construction of accelerators for heavy ions, and among them, France has taken an especially large interest. The figures for the next French economic plan, covering the years 1976 to 1980 include funds (about \$50 million) for what will be the world's most energetic accelerator over the whole range of atomic nuclei.

The chosen location for the project, called GANIL, is Caen in Normandy. The selection will please those who complain that the French government tends to build everything in the environs of Paris, but it is something of a surprise because Normandy is not an established provincial center of physics. Political cynics, as NATURE remarks, may find it significant that the responsible minister, Michel d'Ornano is mayor of nearby Deauville and used to be president of the Regional Council of

Lower Normandy. Despite the proximity to the borders of Brittany, GANIL is not the name of some protean creature of Celtic legend; it is an acronym for *Grand Accélérateur National à Ions Lourds*. Its top energy will be 100 million electronvolts per nucleon for the lightest nuclei, declining gradually to 10 million electronvolts per nucleon for the heaviest. □



GANIL vs. other heavy ion accelerators.