

WISCONSIN

Madison

Allen, Theodore John 17 James Madison Memorial H.S. 109 Island Dr. 53705
Generalizations of the Trigonometric Functions and Their Properties

HONORS GROUP

IN

THE *37th* ANNUAL

Science Talent Search[®]

for the

**Westinghouse Science Scholarships
and Awards**

1978



SCIENCE CLUBS OF AMERICA

Administered By Science Service

1719 N STREET N. W. WASHINGTON, D. C. 20036

The Meaning of Honors in the Science Talent Search

The achieving of Honors in the Science Talent Search is an evidence of ability and interest in science and engineering which can be taken into consideration by colleges and universities in admissions and granting of scholarships. For this reason this Honors List is distributed to all universities and colleges of the United States utilizing a list furnished by the American Council on Education.

All boys and girls awarded Honors in the Science Talent Search are considered so outstanding that any institution of higher learning will be justified in considering their abilities carefully.

In past years members of the Honors Group have made creditable records in the colleges and universities to which they have been admitted.

From the list of 300 Honors, 40 are being chosen as Winners of the Washington trip. Among these, \$67,500 in scholarships and awards will be distributed. The Winners are being announced subsequent to the distribution of this list and their names will be published in SCIENCE NEWS of February 4, 1978, and it will be sent upon request accompanied by a self-addressed stamped envelope.

Each of those winning honors is being furnished with multiple certifications intended to accompany applications for college admissions and scholarships, but a listing in this pamphlet should be accepted as an equivalent certification.

Judging in this competition was without regard to sex. Listed are 75 girls and 225 boys.

The Annual Science Talent Search

The Science Talent Search was the pioneering endeavor to discover at the high school senior year level those who have the potentialities to become the research scientist and engineers of the future. It has fulfilled this function far beyond the hopes entertained when this educational project was conceived. Many millions of dollars in scholarships in colleges and universities throughout the nation, supplementing the Westinghouse Science Scholarships, have been given to those who have thus been discovered to have high science talent.

This selection of students with research ability in science and engineering has become an institution and tradition due to approval from the academic community and the creditable records of winners in colleges, universities and professional positions.

In a real sense the annual Science Talent Search is more than a scholarship contest. It is a major step toward making scientific and engineering talent available for important tasks in our civilization.

The participation of a great industrial organization in the financing of the annual Science Talent Search is a notable contribution to the advancement of science in America. This activity can be considered a support of "pure research" of importance equal to the fundamental researches in the Westinghouse Research Laboratories. Science and education are grateful for the financial support of the thirty-seven Science Talent Searches by the Westinghouse Electric Corporation and the Westinghouse Educational Foundation.

Science Service, engaged in the interpretation and public understanding of science on a broad front, is proud of administering the annual Science Talent Search. From the newspapers, educators, scientists and engineers of America, there has been enthusiastic cooperation in this annual activity that means so much to high school seniors interested in science and engineering.

FOR RELEASE: WEDNESDAY AFTERNOON, JANUARY 25, 1978

Honors Group

in the Thirty-seventh Annual Science Talent Search[®]

HOME ADDRESS is underlined AGE of winner follows name
Title of project report submitted is on next line

ALABAMA

Huntsville Askins, Karen Janine 17 Virgil I. Grissom H.S. 11209 Woodcrest Dr. 35803
Effects of Simulated Acid Rain on Glycine max (L) Merrill

ALASKA

Anchorage Agosti, Jon Lawrence 17 West Anchorage H.S. 2324 Loussac Dr. 99503
Presence and Corrosive Effects of Sulfate Reducing Bacteria in the Gulf of Alaska

ARKANSAS

Fayetteville Shaddox, Jon Alan 17 Fayetteville H.S. 1216 James St. 72701
Effects of Sodium Nitrite on the Chromosome Structure of Hordeum vulgare Hannehen and Germination and Growth of Raphanus sativus

CALIFORNIA

Antioch Frediani, Michael David 17 Antioch Sr. H.S. 1500 Marie Ave. 94509
Alfalfa: Its Tolerance for Salt
Hall, Amy Jean 17 Antioch Sr. H.S. Rt. #1, Box 1090A 94509
Effect of Certain Microorganisms on Pulp and Paper Mill Effluent
Papalia, Rocco Dominic 17 Antioch Sr. H.S. 2317 Kendree St. 94509
Light and Crickets

Beverly Hills Jessum, Russell Paige 16 Beverly Hills H.S. 450 S. Rexford Dr. #7 90212
Effects of Altered Levels of Endogenous Growth Regulators on the Senescence Rate of the Bean Plant

Canoga Park Collins, William Harry 17 Canoga Park H.S. 6606 Moorcroft 91303
A Fourier Spectrum Analyzer of Seismic Waves and Structural Motion

Fremont Tebelskis, Joseph Michael 16 John F. Kennedy H.S. 4174 Ogden Dr. 94538
Computer Program for the Storage and Retrieval of Ideas and Thoughts Through the Mode of English Sentences and Questions

La Jolla Kosower, David Ariel 15 La Jolla H.S. 6489 Farley Dr., San Diego 92122
A New Fluorescent Label for Cells: Use on Slime Molds

Loomis Steinagel, Lane Orin 17 Del Oro H.S. 4708 Auburn Folsom Rd. 95650
Characteristics of Several Techniques for Detecting Viruses

Los Angeles Gardner, Susan Virginia 16 Marlborough School 11605 Terryhill Pl. 90049
Tropism and the Relative Effect of Plant Growth Regulating Substances

Ojai Hymen, Jason N. 17 Nordhoff H.S. 1802 McNell Rd. 93023
Photometric Study of BY Draconis

Ridgecrest McManis III, George Edward 17 S.E. Burroughs H.S. 1013 Sherri 93555
Effect of Various Staphylococcus Aureus Cell Wall Exotoxins on Human Leukocyte Levels

Sacramento Chang, Dean P. 17 Hiram W. Johnson Sr. H.S. 3072 Great Falls Way 95826
Antibiotics From Algae

San Diego Kroening, Mary Elizabeth 18 Clairemont H.S. 3632 Governor Dr. 92122
CHAOS: Clairemont High ALTAIR Operating System

San Jose Teague, Bradley Neill 17 Bellarmine College Preparatory School 5238 Bela Dr. 95129
Solar Radiation Concentrator

Woodside Feinstein, Jonathan Seth 17 Woodside H.S. 2398 Branner Dr., Menlo Park 94025
An Analysis of Hydrocarbon Catalysis on NOx and Oxidant Atmospheric Pollution

COLORADO

Boulder Hess, Carl Ernest 17 Boulder H.S. 4927 Idlywild Trail 80301
Computer Ecology
Fort Collins Sandborn, Peter Alan 18 Fort Collins H.S. 917 Cheyenne Dr. 80521
Mechanics of Rubber
Marble, Justin Allen 17 Poudre H.S. Box 10 Laporte 80535
A Universal Turing Machine
Julesburg McCormick, Anita Louise 17 Julesburg H.S. 608 Hwy. 59, Sedgwick 80749
Characteristics of the Cap Rock on Pawnee Buttes
Wheat Ridge Gibbons, Anne Marie 17 Wheat Ridge H.S. 12420 W. 35th Ave. 80033
Liesegang Rings and Agate Banding

CONNECTICUT

Bloomfield Katz, Robert Brian 17 Bloomfield H.S. 7 Beatrice Ave. 06002
Cybernetic Logic for the Simulation of Rudimentary Human Senses and
Reactions in Functional Locomotion
Darien Chedester, Richard Charles 18 Darien H.S. 72 DuBois St. 06820
Design, Construction and Operation of a Weather Satellite Station
Norwalk Kopp, Susan Elizabeth 17 Norwalk H.S. 16 Cobblers Ln. 06851
Effectiveness of Photosensory and Chemosensory Receptors in
Locating Prey by *Carcinus maenas*
Pawcatuck Lund, Craig 17 Stonington H.S. 34 Church St., Mystic 06355
Determining the Range of Laser Communication Systems
Southington Armandroff, Jr., Taft Emerson 17 Southington H.S. 54 Mooreland Dr. 06489
Detection of Solar Flares by Ionospheric Excitation
Stamford Eppinger, Jeffrey Lee 17 Rippowam H.S. 15 Very Merry Rd. 06903
Modifier

DISTRICT OF COLUMBIA

Washington Waldmann, Robert James 17 Georgetown Day H.S. 3910 Rickover Rd.,
Silver Spring, MD 20902 The Use of Mutants of Bacteriophage Lambda
and *E. coli* Bacteria to Study the Interactions of the Bacteriophage
with *E. coli* DNA

FLORIDA

Coral Gables Bradford, Norman Felix 17 Coral Gables Sr. H.S. 3884 N.W. 5 St., Miami
33126 Phosphodiesterases in 3T3-L2 Cells
Friedland, Jay Selig 17 Coral Gables Sr. H.S. 1010 Manati Ave. 33146
Hydrogen From Sunlight: An Interdisciplinary Approach to Biological
Solar Energy Conversion
Wellman, Avery Merling 17 Coral Gables Sr. H.S. 5045 S.W. 63 Ave.,
Miami 33155 Cardiovascular Nuclear Medicine: A Non-Invasive
Evaluation of Coronary Artery Disease
Fort Kreitzer, Stuart Sherman 18 Nova H.S. 5501 Pierce St., Hollywood 33021
Lauderdale Multichannel Audio Transmission Through Multiplexed Infrared-
Fiberoptic Links
Gainesville Christensen, Kenneth Jussi 17 P.K. Yonge Laboratory School 10826 NW
15 Pl. 32601 Particle Induced X-Ray Emissions Analysis as a
Method for Determining Wear Rates in Internal Combustion Engines
Jacksonville Bruce, Wesley Bernard 18 Terry Parker Sr. H.S. 8429 Starwan Rd. South
32211 Fluorescent Antibody Technique with Feline Infectious Peritonitis
Miller, John Williams 17 William M. Raines H.S. 5527 Vernon Rd. 32209
Determining Parapheromonal Activity of Lipid Classes by Correlating
Their Transduction in *Solenopsis invicta* as a Function of Olefin
Stereochemistry
Melbourne Boren, Randall Scott 16 Melbourne H.S. 4 Sinclair Cir., Indialantic 32963
Design and Wind Tunnel Testing of a High-Performance Two-Place
Twin-Engine Aircraft
Grandey, Andrea Jane 18 Melbourne H.S. 870 Floresta Dr., Palm Bay 32905
Identification and Control of Rheumatoid Arthritis
Walsh, Brian Patrick 17 Melbourne H.S. 574 N.E. Dixie Hwy., Palm Bay
32905 Development and Evaluation of Techniques to Control the Imported
Fire Ant
Merritt Island Denninghoff, Scott Elledge 17 Merritt Island H.S. 1665 Mars St. 32952
Utilization of Hydrocarbons by *Cladosporium resiniae*

McDonald, James Maurice 18 Merritt Island H.S. 434 Via Florence Ct. 32952
Laser Communication
Miami Kumjian, Dana Arshag 17 Southwest Miami Sr. H.S. 11235 S.W. 58 Terr.
33173 In vitro Study of the Oxidation of Hemoglobin by Spleen
Homogenates Through an Enzymatic Pathway
Wynne, Susan Kay 17 Southwest Miami Sr. H.S. 9240 S.W. 58th Terr. 33173
The Characterization of DNA Polymerase Alpha
Niceville Yarnall, David Patrick 17 Niceville H.S. Rt. #1, Box 476 32578
Effect of Hypersalinity on the Filtering Rate of *Mytilus edulis*
Plantation Gross, Fredric Jay 17 South Plantation H.S. 7360 S.W. 9 St. 33317
Computerized Chromosome Pattern Recognition
Riviera Beach McAllister, Linda Beth 17 Suncoast H.S. 348 Flagler Blvd., Lake Park 33403
Isolation of the Cyclic Nucleotide Mutants of *Phycomyces blakesleeana*
Satellite Beach Yorlo, Paul 17 Satellite H.S. 1123 Cheyenne Dr., Indian Harbor Beach 32937
Formation of Extracellular Amino Acids by Microorganisms
Tampa Haas, Robyn Laurie 17 H.B. Plant H.S. 5104 San Jose St. 33609
Examination of Protease Production in *Actinomyces viscosus*:
Possible Role in the Pathogenesis of Periodontal Disease

GEORGIA

Atlanta Downes, Pamela Beth 16 Briarcliff H.S. 1995 Azalea Cir., Decatur 30033
Hamiltonian Circuits on Two- and Three-Dimensional Lattice Networks
Chamblee Taylor, Linda Susan 17 Chamblee H.S. 3285 Pine Meadow Rd., N.W.,
Atlanta 30327 Deuterium Oxide Translocation in *Scandipus aureus*

HAWAII

Honolulu Bender, Judith Lee 17 Henry J. Kaiser H.S. 7268 Kauhako St. 96825
A Study of the Active Site of the Enzyme, Adenosine Triphosphatase
Using Specific Covalent Labelling
Waimea Horl, Allen Isami 17 Waimea H.S. P.O. Box 226 96796
Effect of Palytoxin From *Palythoa vestitus* on Lymphoma Cells

IDAHO

Boise Newell, Julie Renee 17 Borah H.S. 8008 Cummins Ave. 83705
Effects of Sodium Hypochlorite and Ammonium Hydroxide on Fresh
Water Hydra
Yurke, Otto Gary 18 Borah H.S. 8924 Franklin Rd. 83705
The Desargue Complete Sets of Orthogonal Latin Squares

ILLINOIS

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Heights The Nonvisual Identification of the Male Zebra Finch Vocalization by
the Female and the Subdivisions Important in Releasing Courtship
Behavior From the Paired Mate
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The U Geminorum Star EY Cygni and V839 Cygni, a Probable Eclipsing Star
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Dundee 60118 The Photo Reduction of Aromatic Nitro-Compounds
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Comparisons With Constructions
Lerner, Joshua 17 University of Chicago Laboratory H.S. 5834 Harper Ave.
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Block, Nancy Olisha 18 Von Steuben H.S. 5419 N. St. Louis 60625
Analysis of Two Ponds
Darien Trojnar, Christopher Joseph 18 Hinsdale South H.S. 16W361 94th Pl.,
Hinsdale 60521 Effect of Rainfall on Coliform Density, Dissolved
Oxygen and pH at Sassa Pond
Evanston Frohman, Marc Steven 17 Evanston Twp. H.S. 2845 Sheridan Pl. 60201
Differential Effects of Streptomycin on Phage RNA
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An Error Minimizing Solution of the Three Body Problem
Mack, Margaret Kingsley 17 Evanston Twp. H.S. 2233 Orrington Ave. 60201
The Interplanar Distance in a Cholesteric Liquid Crystal

- Glen Ellyn Shneider, Benjamin Leighton 17 Glenbard West H.S. 635 Carolyn Dr. 60137
Tumor Development
- Oak Park Hansen, Frank Charles 17 Oak Park and River Forest H.S. 329 N. Humphrey
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Lithium in Niobium
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Proposed Chemosynthesis of Bioprecursors in a Model Hydrothermal System
- Winnetka Milenkovic, Victor Joseph 17 New Trier Twp. H.S. East 3719 Peabody Dr.,
Birmingham, MI 48010 Sequences With a Dense Difference Set

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- Fort Wayne Lomont, Michael Edward 18 Bishop Dwenger H.S. 1429 Irene Ave. 46808
Electrophoresis-Convection Apparatus Redesign and Construction:
Preparative Applications to Immunoelectrophoresis
- Kendallville Patterson, Michael Joseph 18 East Noble H.S. 111 Gold St. 46755
Study of Analysis by Kirlian Electrophotographical Radiation Energy
Discharge
- Savage, Kevin Michael 17 East Noble H.S. 415 S. State St. 46755
Effectiveness of Foundry Slag as a Substitute for Sand in the Production
of Concrete
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PIRATE: Programmed Interpretation of Received Atmospheric
Conditions Transduced Electronically
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Electron Spin Resonance: A Triple Detection Technique
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Malignancy
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Photography
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Investigation of Butterhead Lettuce Bitter Taste: A Possible Human
Recessive Genetic Factor
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Construction and Uses of a Television Display, Telephone Computer Terminal
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Elevation of Earth's Temperature Due to CO₂ Pollution and to
Positive Feedback Cycles
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Fracture Mechanics of a Monofilament Whip Operated in a Rotary
Cutting Mode

KANSAS

- Shawnee Mission Brown, Robert Sherman 18 Shawnee Mission South H.S. 9726 Cedar, Overland
Park 66207 Biological Removal of Carbon Monoxide From the
Atmosphere

KENTUCKY

- Cynthiana Kearns, James Brian 17 Harrison County H.S. Rt. 4, Box 396 41031
Analysis, Structure, and Composition of a Relic Savannah Forest in
Harrison County, Kentucky

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A Method of Determining Alexander Polynomials of Infinite Classes of Knots
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70114 Stereology for Quantitation of Intestinal Surface Area and
Goblet Cells During Stress

MARYLAND

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Maximizing Solar Collecting Unit Efficiency by Use of Microprocessor
Control
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- Briggs, Michael Stephen 17 High Point Sr. H.S. 8504 Laverne Dr., Adelphi
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Ordering Genes in the Lon Region of Bacterial Chromosome
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Cyclic 3':5'-AMP Incorporation Into the Glycolysis Pathway of
Saccharomyces cerevisiae
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Upper Marlboro 20870 A Computer Model of Stellar Structure
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- Rockville Vader, David Theodore 18 Colonel Z. Magruder H.S. 19732 Meredith Dr.,
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Treatment Modalities
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Blue Dextran 2000
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Hills 20784 The Graceful Tree Problem

MASSACHUSETTS

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Boston 02109 Liquid Crystallization: Synthesis and Isometry of
Optically Isotropic Bodies
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Surface
- Framingham Mabrouk, Patricia Ann 17 South H.S. 9 Wildewood Terr. 01701
Browning Reaction of Flavor Enhancers-Nucleotides and Glutamate
- Harvard Shutt, Barbara Clare 17 The Bromfield School Whitney Rd. 01451
Null Testing for the Paraboloidal Telescope Mirror
- Lexington Burwen, Dale Robin 17 Lexington H.S. 12 Holmes Rd. 02173
Hormonal Inducement of Organogenesis in Calluses Derived From
Tomato Explants
- North Dartmouth Correia, Randall Bernard 16 Dartmouth H.S. 140 Milton St., South
Dartmouth 02748 Computer-Assisted Investigation of the Intrinsic
Geometry of Two-Dimensional Surfaces

MICHIGAN

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Inhibiting Effects of Freon on the Production of Ozone

Birmingham Ager, Joel Wheeler 17 Detroit Country Day School 145 Cambridge, Pleasant Ridge 48069 Oxymercuration of the C C Bond
 Klein, Samuel Aaron 17 Detroit Country Day School 3445 Winchester, West Bloomfield 48033 Interaction of Bile Salts and Guest Molecules
 Rochester Carroll, Russell William 17 Rochester H.S. 1197 Oakwood Ct. 48063 Photoelectric Photometry of the Tidally Distorted Eclipsing Binary Stars VW Cephei and EM Cephei
 Warren Ostrosky, John David 17 Fitzgerald H.S. 22339 Karam Ct. 48091 Quantitative Biochemical Analysis of Lachrymal Secretions

MINNESOTA

Albert Lea Cunningham, David Brian 18 Albert Lea Central H.S. Rt. #2, Twin Lakes 56089 Relative Response to Mechanical Stress of Greenhouse Plants vs. Outdoor Plants
 Bemidji Elwell, Jr., James Halsey 17 Bemidji H.S. R.R. #2 56601 Potential Environmental Effects of the Herbicide 2,4-D and Its Breakdown Product 2,4-Dichlorophenol
 Bloomington Ware, Kurt Matthew 17 Jefferson Sr. H.S. 3617 W. 102nd St. 55431 Surface Representation and the Accurate Display of Quantum Mechanical Wave Functions
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 Sleepy Eye Hauser, Alan Robert 18 Saint Mary's H.S. R.R. #1, New Ulm 56073 Comparative Hemolysis of the Blood From Three Selected Vertebrates

MISSISSIPPI

Jackson Sanders, Mary Shipp 17 Jackson Preparatory School 3845 Redbud Rd. 39211 Experimental Development of Streptomycin Resistant Mutants of *Staphylococcus aureus*

MISSOURI

Ballwin Crouse, Constance Patricia 18 Parkway West Sr. H.S. 595 Arblay Pl., Manchester 63011 Viscosity Activation Energy
 Columbia Fleming, Donald Frederick 17 Rock Bridge H.S. 211 Leslie Ln. 65201 A Computer Simulation of the Dalton Atom
 Ewing Kroeger, David William 17 Highland H.S. R.R.#2 63440 Use of Antioxidants as Antimutational Agents
 Independence Rainbolt, John David 17 William Chrisman H.S. 801 Mohawk 64056 *Heliconius cydno* Spermatophores: Chemical Composition and Rate of Absorption by the Female
 St. Joseph Saunders, Fredrick Ryan 17 Bishop LeBlond H.S. 1128 Safari Dr. 64506 Viscosity Changes of Oil With Use
 Duncan, Robert Vance 18 Central H.S. 3 Hundley Dr. 64506 An Investigation Concerning the Use of Half-Calcined Dolomite as an Absorber of Pollutant Hydrogen Sulfide Gas Liberated During Coal Gasification
 St. Louis Francis, Charles Virgil 17 Roosevelt H.S. 3941 Flad Ave. 63110 Use of Thermal Energy in Sound Reproduction

MONTANA

Helena Wolfe, Phillip Jon 17 Capital H.S. 4750 Valley Dr. 59601 Human Blood Group M and N Antigens, Their Occurrence on the Surface of Line-10 Hepatocarcinoma Cells as Detected by Indirect Membrane Immunofluorescence
 Miles City Bickle, Susan Grace 17 Custer County District H.S. Ismay 59336 The Construction and Practical Use of a Monochromator and Polarimeter

NEBRASKA

Columbus Kosch, Floyd Gerard 18 Scotus Central H.S. Box 55A, R.R. #2 68601 Axial Control by Electronic Comparison of Programmed and Transduced Signal Frequencies

Omaha Cutler, David Lawrence 17 Central H.S. 1321 N. 54th St. 68132 Effect of Varying Concentrations of Molindone Hydrochloride on the Heart rate of *Daphnia longispina*
 Stover, Dawn Renee 17 Central H.S. 5012 Izard St. 68132 Effect of Vasodilation in Humans as a Result of Increased Physical Activity on the Corona Discharge Recorded Using Kirlian Photography
 Earl, Denise Marie 17 Northwest H.S. 7809 Manderson 68134 A Determination of the Relation Between Musical Consonant and Dissonant Theories
 Smith, Raechelle Ann 18 Northwest H.S. 8533 Templeton Dr. 68134 Tempered Modes Produced by Recorders
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NEW JERSEY

Long Branch Karakashian, Gary Vincent 17 Long Branch H.S. 55 Columbia Ave. 07740 The Roles of I.Q. and Personality in the Piagetian Model of Learning
 Millburn Blumenfeld, Daniel Jack 17 Millburn H.S. 18 Oakdale Ave. 07041 Human Reaction Time to Monomodal and Multimodal Presentation of Visual and Auditory Stimuli
 Montclair Groisser, Daniel Stuart 17 Montclair Kimberley Academy Glen Ave., Llewellyn Park, West Orange 07052 A Study of Caffeine in Tea
 Rumson King, Philip George 18 Rumson-Fair Haven Reg. H.S. 5 Monmouth Ave. 07760 A Measurement of Burst-Error Correction Utilizing a Single-Error Correcting Hamming Block Code and Interleaving
 Scotch Plains Agran, Scott David 17 Scotch Plains-Fanwood H.S. 1996 Winding Brook Way 07076 Cumulative Mutagenic Effect of ⁶⁰Co Gamma Radiation on *Drosophila melanogaster*
 Winsor, Donald Charles 17 Scotch Plains-Fanwood H.S. 2 Birchwood Terr., Fanwood 07023 Effects of Violation of Assumptions Underlying the Analysis of Covariance

NEW MEXICO

Albuquerque Brugge, Douglas M. 17 Highland H.S. 3808 Smith S.E. 87108 Interaction of Atmospheric NO₂ and *Pisum sativa*, *Triticum sativum* and *Hordeum vulgare*
 Grants Gilmour, Steve Russell 18 Grants H.S. 1212 Estancia 87020 Effect of Chemical Admixtures on the Strength of Concrete
 Stevens, Jeffrey L. 17 Grants H.S. 1717 Encino 87020 Study of Selenium Values in the Grants Area
 Los Alamos Vogel, Herbert Steven 17 Los Alamos H.S. 323 Potrillo Dr. 87544 Supersonic Wind Tunnel Experimentation

NEW YORK

Ardasley Jicha, Douglas Louis 18 Ardley H.S. 12 Western Dr. 10502 A Method of Making Three-Dimensional Maps of the Ocean Floor
 Baldwin Bejsovec, Amy Maude 17 Baldwin Sr. H.S. 2028 Ambrose Pl. 11510 Territorial Behavior in *Pagurus longicarpus*
 Gittleman, Neal Dana 16 Baldwin Sr. H.S. 630 Rose Blvd. 11510 Synthesis of 3-Purin-6-ylhydantoin and Its Reactions With 4-Methylcyclohexyl Amine and n-Propanol
 Greenwald, David Alan 17 Baldwin Sr. H.S. 1514 Coolidge Ave. 11510 Mass Transfer of Ions Versus Diffusion in Marsh and Ocean Substrates
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- Spanton, Susan Beth 17 Baldwin Sr. H.S. 3204 Grand Ave. 11510
Individual Recognition in the Jewel Cichlid, *Hemichromis bimaculatus* Gill
- Spindell, Adam Kirk 17 Baldwin Sr. H.S. 752 Imperial Dr. 11510
Alkaline Pyrophosphatase Assay in Cotton Fibers During Development
- Stein, Daniel Paul 17 Baldwin Sr. H.S. 826 Bonnie Dr. 11510
4NQO Induced Damage in DNA of Human Lymphocytes
- Templeton, Kathleen 17 Baldwin Sr. H.S. 2656 Fox Rd. 11510
Separation of Pentacyclic Triterpenes by Reversed-Phase High-Performance Liquid Chromatography
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Protein Molecular Weight Determination Using High Pressure Gel Filtration Chromatography
- Weinstein, Janice Lynne 16 Baldwin Sr. H.S. 3423 Courtney Pl. 11510
Effects of Extreme Temperature Exposure on Embryological Development of *Nothobranchius guentheri*
- Bayside
Arlis, Harry Robert 17 Benjamin N. Cardozo H.S. 57-29 223 St. 11364
Effects of Reserpine on Circadian Locomotor Activity in the American Cockroach
- Benson, Jeannine Annette 16 Benjamin N. Cardozo H.S. 65-15B 224 St. 11364
Protective Effects of Flavin Mononucleotide Upon the Luminescence of Cultures of *Photobacterium fischeri* Irradiated With Ultraviolet Light
- Bergman, Lawrence Russell 16 Benjamin N. Cardozo H.S. 69-03 223 St. 11364
Effects of the Visual Stimulus of the Wing Vibrations of Male Flies on the Courtship Success of *Drosophila melanogaster* Males
- Cohen, Jill Ann 17 Benjamin N. Cardozo H.S. 57-26 225 St. 11364
Effects of Cytochalasin-B on the Contractile Microfilament Systems of *Physarum polycephalum*
- Scheinin, Scott Alan 16 Benjamin N. Cardozo H.S. 73-31 244 St., Little Neck 11362
Effect of Ultraviolet Radiation Upon the Citric Acid Production in *Aspergillus niger*
- Schroff, Renee 15 Benjamin N. Cardozo H.S. 74-56 220 St. 11364
Distribution Theorems as Applied to Number Generating Functions
- Schwartz, Barbara Madeline 16 Benjamin N. Cardozo H.S. 240-48 65 Ave., Douglaston 11362
Bridging the Gap: A Combinatorial Analysis of a Problem About Selections
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Peterson, Ronald Joseph 17 Brooklyn Technical H.S. 95-40 116 St., Richmond Hill 11419
An Introduction to the Theory of Arbitrary Order Differentiation and Integration
- Thoresen, Steven Scott 16 John Dewey H.S. 2074-20th Ln. Apt. 4G 11214
Development of Coastal Zone Management Model
- Gordon, Jesse Mannes 16 Midwood H.S. 211 Ocean Pkwy. 11218
Permutable Primes
- Cohen, Susan Lea 17 South Shore H.S. 1459 E. 69 St. 11234
Production of Ultraviolet and Gamma Ray Products in Human Lymphocytes by Sunlight Irradiation
- Newman, Scott Elliot 17 South Shore H.S. 2244 E. 59 Pl. 11234
Quasiperfect Conjugates
- Champlain
Merchant, Daniel Gerard 17 Northeastern Clinton Central School 19 Montgomery St., Rouses Point 12979
Factors Affecting Longshore Currents and Beach Gradient on Second and Third Beaches in Middletown, Rhode Island
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Snider, Robert C. 17 Cold Spring Harbor H.S. 57 Hawhurst Rd. Huntington 11743
Design of a Microprocessor Based Graphics Terminal
- Commack
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Effects of Antibiotics on Mitosis in the Allium Root Tip
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Perry, John Simon 17 Maine-Endwell Sr. H.S. 310 Harding Ave. 13760
Field Observations of Algae Attached on an Artificial Substrate
- Flushing
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Acclimation of *Tetrahymena* to Ethyl Alcohol
- Pillitteri, John 17 Francis Lewis H.S. 50-27 175 Pl. 11365
Effect of Various Salt Solutions on the Cell Membrane Potential of *Paramecium caudatum*
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Effect of Ultraviolet Light on a Colpidium-Produced Growth Factor
- Steckel, Joph 17 Francis Lewis H.S. 64-21 214 St., Bayside 11364
An Investigative Approach to Farey Sequences
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Lewine, Jeffrey David 16 Forest Hills H.S. 62-60 99 St., Rego Park 11374
Primitive Notions of Plane Euclidean Geometry
- Lung, Therese 16 Forest Hills H.S. 37-43 88 St., Jackson Heights 11372
A Power Inequality
- Stallman, Jay Bennett 16 Forest Hills H.S. 69-10 Yellowstone Blvd. 11375
Replication and Infectivity of Citrus Exocortis Viroid and Potato Spindle Tuber Viroid in Callus Culture of *Lycopersicon esculentum* cv. Rutgers
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Himelstein, Andrew Louis 17 Garden City Sr. H.S. 37 Maxwell Rd. 11530
Relationship Between Conductivity and Charge Capacity of Various Solutions
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Bash, Stephan Robert 17 Great Neck South Sr. H.S. 254-32 Walden Pl. 11020
Electronic Schematic Diagrams of a Twelve Channel Audio Mixer
- Huntington
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Uranian Ring Model
- Erler, Brian Scott 17 Holy Family H.S. 18 Twin Oaks Dr., Kings Park 11754
Relationship Between Increased Calcium Content and Increased Erythrocyte Membrane Permeability in Hereditary Spherocytosis
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A Spectrophotometric Analysis of the Photosynthetic Pigments in the Resting Cell Formation of *Amphora coffaeiformis*
- Klerer, Robert Jason 17 Irvington H.S. 30 Victor Dr. 10533
A Cross-Compiler From Hewlett Packard BASIC to Intel 8080A Machine Code
- Jamaica
Baptista, Jose Maria 19 Jamaica H.S. 71-56 Kissena Blvd., Flushing 11367
Basic Interpreter
- Fertig, Herbert Abraham 16 Jamaica H.S. 76-30 169 St., Flushing 11366
A Computer Simulation of a Static Solar Corona
- Loeb, Anita 17 Jamaica H.S. 72-02 162 St., Flushing 11366
Effects of a Nutritional Shift-Up on the Rates of Cell Division of *Escherichia coli*
- Schwartz, Daniel Lewis 17 Jamaica H.S. 82-61 165 St. 11432
DATA: Discrete Analysis of Taxi Allocation
- Jasper
Davis, Teresa Lynn 17 Jasper Central H.S. R.D. #2, Woodhull 14898
Effect of Salinity, Temperature, and pH on the Photosynthesis of *Enteromorpha intestinalis* and *Chondrus crispus*
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Bazarian, Richard Alan 17 Manhasset H.S. 31 Blenheim Dr. 11030
Building a Solar Water Heater
- New York
Choi, Inwhan 17 Bronx H.S. of Science 37-07 30 Ave., Long Island City 11103
On Some Generalizations of an Interesting Diophantine Equation
- Conte, Michael Salvatore 16 Bronx H.S. of Science 2517 Eastchester Rd., Bronx 10469
Some Properties of Perfect Numbers
- Cooper, Gregory Scott 17 Bronx H.S. of Science 138-20 31 Rd., Flushing 11354
Studies on the Mechanisms of Movement in *Mimosa pudica* L.
- Donahue, Bernadine Rose 17 Bronx H.S. of Science 3240 Henry Hudson Pkwy., Bronx 10463
Effect of Cyclic AMP on the Circadian Rhythm of Conidiation in a Mutant Strain of *Neurospora crassa*
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An Examination of Waring's Conjecture
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Anti-Juvenile Hormones: Insecticides of the Future
- Garay, Giora Joshua 17 Bronx H.S. of Science 71-26 167 St., Flushing 11365
Food Competition Among the Cellular Slime Molds
- Gelernt, Mark David 17 Bronx H.S. of Science 140-28 Elgar Pl., Bronx 10475
Effects of Zinc Gluconate on the Maze-Learning Ability of *Drosophila melanogaster*
- Kandel, Andrew Irwin 17 Bronx H.S. of Science 110 Riverside Dr. 10024
Effect of an Anti-Juvenile Hormone in *Ageratum houstonianum* on Meal Worms
- Lewine, Lewis Arnold 17 Bronx H.S. of Science 100-3 Aldrich St., Bronx 10475
Ecological Model of Interacting Populations
- Reuben, Grace 17 Bronx H.S. of Science 2428 Matthews Ave. 10467
Properties and Characteristics of Folate Binding Proteins Found in the Folate Dependent Bacteria
- Reichel, Elias 17 Bronx H.S. of Science 160 E. 88 St. 10028
Negative Feedback Regulation of Hydra Stem Cell Populations
- Schaaf, Richard Walter 17 Bronx H.S. of Science 2883 Coddington Ave. 10461
Can Reversed Development be Stimulated by Lack of Food in *Drosophila* and *Tenebrio molitor*

Slutsky, Harold Paul 17 Bronx H.S. of Science 120-2 Benchley Pl., Bronx 10475 Effect of Banana or Amyl Acetate on the Sex Pheromones and/or Sound Wave Production by Wing Beat of *Drosophila melanogaster*

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Yee, Raymond 17 Bronx H.S. of Science 3801 Cannon Pl., Bronx 10463 Methodologic Aspects of Radioisotopic Assays for Folate

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Ovryn, Benjie 17 Hillcrest H.S. 158-05 65 Ave., Flushing 11365 Measurement of Spin-Lattice Relaxation Time for Plant Tumors Using Nuclear Magnetic Resonance Spectroscopy

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Mattis, Michael Perelman 17 Scarsdale H.S. 26 Olmsted Rd. 10583 Toward an Accurate Method of Numerical Differentiation

Staten Island Barracato, Angelina Anna 17 St. Joseph Hill Academy 107 Wallace Ave. 10305 Effects of Gamma Rays on the Rate of Reaction of Bacterial Amylase

Rokhsar, Daniel Soleyman 17 Susan E. Wagner H.S. 351 Lightner Ave. 10314 Behavior of Liquid Drops on a Heated Surface

West Seneca Fisher, Ronald Anthony 17 West Seneca East Sr. H.S. 55 Louise Dr. Cheektowaga 14227 Dynamic Analysis of Wind Turbine/Generator Set

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NORTH DAKOTA

Killdeer Wetsch, John Robert 18 Killdeer H.S. P.O. Box 277 58640 Light Curve Comparison of Long Period Variables S, T Ursae Majoris

Minot LeDuc, Andrew Michael 17 Bishop Ryan H.S. 611 3rd St. S.E. 58701 Remote Sensing and the R.S.B.I. (Remote Sensory Balloon)

OHIO

Akron Jenkin, Alan Brenton 18 John R. Buchtel H.S. 382 Dorchester Rd. 44320 Electronic Synthesis of Voiced Plosive Consonants

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Cleveland Anderson, Emile R. 17 John Marshall H.S. 4295 Brookside Blvd. 44135 Effect of Altering pH, Salinity and Temperature on Complex Coacervation

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Massillon Berry, Shawn Curtis 17 Jackson H.S. 6905 Elaine N.W., North Canton 44720 Increasing the Efficiency of the Excision Repair Process in UV-Irradiated *Escherichia coli*

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OREGON

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- Carlisle Hammann, Mark David 17 Carlisle Sr. H.S. 928 Forbes Rd. 17013
Feasibility of Defining $1/\sigma$
- Connellsville Wasil, David Gerard 17 Geibel H.S. 98 State St., Mt. Pleasant 15666
Improving Solar Heating Efficiency
- Ebensburg Furlong, Patricia 17 Bishop Carroll H.S. R.D. #1, Box 73 Loretto 15940
Plant Zonation and Microtopography of a Salt Marsh at One Hundred
Acre Cove in Barrington, Rhode Island
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Ancient American Mathematics
- Laureldale McCarthy, James Kevin 17 Muhlenberg Twp. H.S. 3026 Maple Ave., Reading
19605 Design and Construction of an Astronomical Monochromator for
the Detection of Structural Detail in the Jovian Atmosphere
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Effect of DCPA on Dividing Cells
- Plymouth Meeting Klinecicz, Karen Marie 17 Plymouth Whitmarsh Sr. H.S. 906 Fayette St.,
Conshohocken 19428 Production of Mutagenic Substances From Bile
Salts by Intestinal Bacteria and Its Correlation With Dietary Fiber and
Colon Cancer
- Pottsville Wachter, John Gerard 17 Nativity B.V.M. H.S. 1942 W. Norwegian St. 17901
Use of Super Heated Steam in Situ Oil Shale Reforting
- Selinsgrove Stauffer, Titus Eby 19 Selinsgrove Area H.S. 200 S. Front St. 17870
Effects of pH on the Mercuric Chloride Methylating Ability of
Bacillus megaterium
- Wyncote Fleisher, Lee Alan 17 Cheltenham Twp. Sr. H.S. 311 Highland Rd. 19012
Effects of pH and Lipid Concentration on an *in vitro* Antibody-Antigen
Interaction
- Karlhoff, Howard Jeffrey 16 Cheltenham Twp. Sr. H.S. 1600 Church Rd.,
B310, 19095 Calculating the Products of Radioactive Series Disintegrations
as Functions of Time
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An Experiment in Computer Systems Design
- SOUTH CAROLINA
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Biochemical Variation in Feral Pigs
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Producing a Cold-Sensitive Mutant From OX174 Through Chemical Mutagenesis
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Effects of Photodissociated CCl_2F_2 in the Catalytic Destruction of
Atmospheric Ozone
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Effects of Microwaves on the Germination and Growth of Selected Plant Seeds
- Houston, David Itay 17 Waverly Central H.S. 108 Dylark Dr. 37185
Construction and Testing of Two Solar Steam Generators
- TEXAS
- Dallas Gorman, Christine Carrie 18 W.T. White H.S. 12511 Cedar Bend Dr. 75234
Observed Chemotaxis in *Vibrio cholerae*
- Kalow, Nancy Hene 17 The Hockaday School 4715 Heatherbrook Dr. 75234
Genetic Analysis of Twelve Lethal Mutants of *Drosophila melanogaster*:
Search for a Dosage Compensation Mutant
- Houston Richardson, Susan Margaret 18 Stratford Sr. H.S. 522 Winter Oaks Dr. 77079
Effects of CCl_2 on the Sensitization of *B. megaterium* Spores to
X-Irradiation
- Lubbock Hobgood, Kim Kirby 17 Coronado Sr. H.S. 4601-15th 79416
Biological Activity of Sesquiterpene Lactones
- Ozona Dudley, William Herschel 17 Ozona H.S. P.O. Box N 76943
Spectral Photography of Selected Nebulae
- Richardson Carter, Ted Allen 17 J.J. Pearce H.S. 902 Pinecrest 75080
Investigation of Motorcycle In-Flight Torque
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A Qualitative Comparative Analysis of Mordanting Agents and Methods
Used to Bond a Fugitive Dye to Protein Fibers
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Alternate Fuels From Wood
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Activation Energy for the Free Radical Chlorination of 2,4-Dimethylpentane
- Turner, William Adolph 18 T.C. Williams H.S. 2721 Hemlock Ave. 22305
Determination of the Energy of Activation for 1,1,1-Trichloro-3-nitropene
and Methanol With the N.M.R.
- Burke Schafer, Valerie Elaine 17 Lake Braddock Sec. School 9112 Andromeda Dr. 22015
Detoxification of Asbestos Wastes
- Falmouth Berry III, Waldo Osborne 17 Stafford Sr. H.S. Rt. #7, Box 414, Fredericksburg
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Electrical Energy Through the Atmosphere
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A Synthesis and (Laser) Photodecomposition of 1,1-dimethyl-2, 2
difluorocyclopropane
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A Chromatographic Investigation of Cell Mutations
- Brummett, Gregory Paul 18 West Springfield H.S. 6801 Brisbane St. 22152
A Chromatographic Study of the Protease Activity of *Trichophyton rubrum*
- Freathy, Anthony Scott 17 West Springfield H.S. 6192 La Palma Pkwy., Las
Vegas, NV 89118 A Model for Sister Chromatid Exchange Formation
- Michael, Karen Marie 17 West Springfield H.S. 6809 Vienna Ct. 22152
Mutation of *Drosophila melanogaster* Through Controlled Magnetic Radiation
- Reidy III, Richard Francis 17 West Springfield H.S. 6421 Brentford Dr. 22152
Mercury in Arctic Ocean Sediment
- WASHINGTON
- Des Moines Steigers, Chad Frank 17 Mt. Rainier H.S. 1005 S. 234 Pl., Seattle 98188
Carcinogenic Effects of Sodium Nitrate
- Wood, Steve Myles 18 Mt. Rainier H.S. 310 S.W. 203rd, Seattle 98166
Earthquakes and Different Prediction Methods
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Relationships of Rainbow Positions and Indexes of Refraction
- Tacoma Harvison, John Andrew 17 Bellarmine Preparatory School 4613 Burkhardt Dr.
98408 A Feasibility Study of Anionic Membranes for Hemodialfiltration
- WEST VIRGINIA
- Glen Dale Coffield, James Edward 17 John Marshall H.S. 212 Blaney Ave., Moundsville
26041 Investigation and Construction of a Solar Cell
- Weirton Rasieci, Gina M. 17 Weir Sr. H.S. 131 Heights St. 26062
Wood Effects on Piano Soundboards

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Allen, Theodore John 17 James Madison Memorial H.S. 109 Island Dr. 53705
Generalizations of the Trigonometric Functions and Their Properties

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RHODE ISLAND

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TEXAS

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VIRGINIA

McLean Dougherty, Joseph Paul 17 McLean H.S. 1637 Morrill Ct., 22101



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HOME ADDRESS follows name of school

AGE of winner follows name

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San Diego Kroening, Mary Elizabeth 18 Clairemont H.S. 3632 Governor Dr., 92122

Woodside Feinstein, Jonathan Seth 17 Woodside H.S. 2398 Branner Dr., Menlo Park 94025

COLORADO

Fort Collins Sandborn, Peter Alan 18 Fort Collins H.S. 917 Cheyenne Dr., 80521

Wheat Ridge Gibbons, Anne Marie 17 Wheat Ridge H.S. 12420 W. 35th Ave., 80033

CONNECTICUT

Darien Chedester, Richard Charles 18 Darien H.S. 72 DuBois St., 06820

HAWAII

Honolulu Bender, Judith Lee 17 Henry J. Kaiser H.S. 7268 Kauhako St., 96825

ILLINOIS

Arlington Heights Terrell, Gregory Scott 17 Arlington H.S. 202 N. Harvard Ave., 60005

Bethalto Piening, Ann Theresa 18 Civic Memorial H.S. 237 Saint Marys St., 62010

Oak Park Hansen, Frank Charles 17 Oak Park and River Forest H.S. 329 N. Humphrey 60302

IOWA

Spirit Lake Johnson, Lance Gordon 18 Spirit Lake H.S. 611 20th St., 51360

MAINE

of the

Thirty-seventh Annual Science Talent Search

for the Westinghouse Science Scholarships and Awards

The forty Washington trip winners of the 37th Annual Science Talent Search, among whom \$67,500 of Westinghouse Science Scholarships and Awards will be distributed, represent about 4.1% of those who completed entries in this scientific and educational competition.

Designed to discover and develop scientific and engineering ability among high school seniors, the Science Talent Search is conducted annually for the Westinghouse Science Scholarships and Awards by Science Service, 1719 N Street, N.W., Washington, D.C. 20036.

Ten girls and 30 boys are being invited to Washington, D.C., for an all-expense paid trip March 2-6, 1978, to attend the Science Talent Institute. Here 10 winners will be selected by the board of judges to receive one of the following four-year Westinghouse Science Scholarships: One \$10,000 (\$2,500 per year), two \$8,000 (\$2,000 per year), three \$6,000 (\$1,500 per year), four \$4,000 (\$1,000 per year). The remaining 30 contestants will be given Westinghouse Science Awards of \$250 each.

The trip winners are 14 to 18 years of age and come from 34 cities in 17 states. They were picked by the judges from among 13,619 contestants of whom 967 completed their entries by writing a report on their science project, submitting personal data and teacher recommendations. Completed entries were received from 48 states and the District of Columbia.

MASSACHUSETTS

Cohasset Gurnis, Michael Christopher 18 Cohasset H.S. 50 Reservoir Rd., 02025

Harvard Shutt, Barbara Clare 17 The Bromfield School Whitney Rd., 01451

MICHIGAN

Rochester Carroll, Russell William 17 Rochester H.S. 1197 Oakwood Ct., 48063

MISSOURI

Independence Rainbolt, John David 17 William Chrisman H.S. 801 Mohawk 64056

St. Joseph Duncan, Robert Vance 18 Central H.S. 3 Hundley Dr., 64506

NEW JERSEY

Montclair Groisser, Daniel Stuart 17 Montclair Kimberley Academy Glen Ave., Llewellyn Park, West Orange 07052

Rumson King, Philip George 18 Rumson-Fair Haven Reg. H.S. 5 Monmouth Ave., 07760

NEW YORK

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Forest Hills Lung, Therese 16 Forest Hills H.S. 37-43 88 St., Jackson Heights 11372

Irvington Stallman, Jay Bennett 16 Forest Hills H.S. 69-10 Yellowstone Blvd., 11375

Hirano, Michio 17 Irvington H.S. 44 S. Ferris St., 10533

Klerer, Robert Jason 17 Irvington H.S. 30 Victor Dr., 10533

New York Reichel, Elias 17 Bronx H.S. of Science 160 E. 88 St., 10028

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Kaplan, Jonathan Todd 16 Stuyvesant H.S. 237 E. 20 St., 10003

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Weinberger, Samuel Aaron 14 Yeshiva University H.S. 59A Locust Ave., New Rochelle 10801

Queens Village Hamburger, Robert Owen 17 Martin Van Buren H.S. 269-11 79 Ave., New Hyde Park 11040

Searsdale Miller, Mitchell Bruce 17 Searsdale H.S. 26 Orange St., 10523