



TENNESSEE MATHEMATICS TEACHERS ASSOCIATION

Fall 2019 Science and Math Conference

3D Learning: Full STEAM Ahead



Hosted by

Tennessee Science Teachers Association,
Tennessee Mathematics Teachers Association, and
Middle Tennessee Math Teachers

At Embassy Suites, Murfreesboro, Tennessee from
November 21-23, 2019.



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TENNESSEE MATHEMATICS TEACHERS ASSOCIATION

Executive Committee

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TENNESSEE MATHEMATICS TEACHERS ASSOCIATION

Affiliates

CAMTA

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Memphis Area Council of Teachers of Mathematics
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Sheila Horstman
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Smoky Mountain Mathematics Educators' Association

TAMTE

Tennessee Association of Mathematics Teacher Educators
Becky Darrough
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TATM

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Kaycie Hartwig
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Tennessee Mathematics Association for Two Year Colleges
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Jamie Price
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pricejh@mail.etsu.edu

Keynote Speaker

Dr. Scott Eddins
Scott.Eddins@tn.gov



Dr. Eddins serves as the Mathematics Coordinator for the TN Department of Education focused on ensuring high quality mathematics instruction. He has presented at several state/national level conferences and served in several STEM roles over the years such as President of the Association of State Supervisors of Mathematics, Instructional Coordinator at the TN Tech University Oakley STEM Center, TN State Board of Education staff. He spent more than a decade teaching math in middle and high schools.

TMTA MATH CONTEST 2019 TOP 10 MATHLETES

State Top Ten Lists

State Tennessee Top Ten - Algebra I

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	195	Yan, Alexander	Farragut Middle School	Knoxville	Randall Swartzentruber
1	195	Hu, George	Farragut Middle School	Knoxville	Scott Frieling
3	190	Polborn, Tigran K	J.T. Moore Middle School	Nashville	David Myers
4	180	Newman, Jackson	Memphis University School	Memphis	Heather Davis
4	180	Chaudhury, Rajveer	Sunset Middle School	Brentwood	Benjamin Hartley
4	180	Singhvi, Vivaan	Farragut Middle School	Knoxville	Randall Swartzentruber
7	175	Wu, Evan	Memphis University School	Memphis	Heather Davis
8	172	Chen, Iris	Farragut Middle School	Knoxville	Randall Swartzentruber
8	172	Kulubya, Matthew	Lausanne Collegiate School	Memphis	Aubrey Zimmerling
8	172	Chen, Gabriel	Memphis University School	Memphis	Heather Davis

State Tennessee Top Ten - Geometry

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	190	Deng, Lejun	MLK Magnet High School	Nashville	Daniel Agyemang
2	173	Wang, Alex	Montgomery Bell Academy	Nashville	Matt Golenor
3	172	Yan, Nicholas	Farragut Middle School	Knoxville	Rachel Brown
4	160	Pitt, Henry R	Montgomery Bell Academy	Nashville	Matt Golenor
5	152	Ding, Bryan	Memphis University School	Memphis	Leigh Packard
6	146	Du, Hongyang	Oakland High School	Murfreesboro	Kevin Carroll
7	145	Krishnamurthi, Varun	Memphis University School	Memphis	Leigh Packard
8	140	Chen, Henry	Maryville Junior High School	Maryville	Matt Fowler
9	136	Feiel, Michael	William Blount High School	Maryville	Kim Jordan
10	133	Xu, Peter	Montgomery Bell Academy	Nashville	Matt Golenor

State Tennessee Top Ten - Algebra II

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	200	Gosain, Raj	White Station High School	Memphis	Aboubacar Amadou-Ide
2	195	Tang, Alice	Farragut High School	Knoxville	Laura Austin
2	195	Li, Greta	University School of Nashville	Nashville	Justin Fitzpatrick
4	190	Jin, Raymond	Farragut High School	Knoxville	Laura Austin
4	190	Choi, Sally	Brentwood High School	Brentwood	Greg Shirley
6	181	Chen, Vivan	Maryville High School	Maryville	Nick Kessler
7	180	Ouyang, William	Montgomery Bell Academy	Nashville	John Lunier
8	179	Qi, Michael	Farragut High School	Knoxville	Laura Austin
9	178	Kanamoto, Shumpei	Ravenwood High School	Brentwood	Cheryl Morency
10	177	Jordan, Ryan T	Ravenwood High School	Brentwood	Cheryl Morency
10	177	Willis, Melissa	Lenoir City High School	Lenoir City	Christine Haire

TMTA MATH CONTEST 2019 TOP 10 MATHLETES

State Tennessee Top Ten - Statistics

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	195	Gilliland, Benjamin	Memphis University School	Memphis	Darin Clifft
2	191	Hudson, Anna	Collierville High School	Collierville	Matthew Holmes
2	191	Yang, Sean	Houston High School	Germantown	Sarita Bansal
2	191	Wang, Jiahua	The Webb School	Bell Buckle	Andrew Stimpson
5	190	Czajkowski, Whitman	Siegel High School	Murfreesboro	Amber Matuszewski
5	190	Sai, Baylor	Montgomery Bell Academy	Nashville	Phillip Jackson
5	190	Ahn, Elliot	Collierville High School	Collierville	Matthew Holmes
8	187	He, Yao	Collierville High School	Collierville	Matthew Holmes
9	186	Grummon, Nicholas	Franklin High School	Franklin	Suzanne Nuccio
9	186	Sprouse, Henry C	Hendersonville High School	Franklin	Angela Stiles
9	186	Cabezas, Natalie	St. Mary's Episcopal School	Memphis	Ashley Herr

State Tennessee Top Ten - Precalculus

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	196	Nayagadurai, Ashwath	Brentwood High School	Brentwood	Christie Feiler
1	196	Zhang, Franklin	Tullahoma High School	Tullahoma	Kim Carter
1	196	Sun, Emily	Collierville High School	Collierville	Timothy Setterlund
4	192	Zou, Byron	McCallie School	Chattanooga	Rob Lyons
5	191	Saye, Justin	Independence High School	Thompson's Station	Stephen Dorris
6	187	Astor, Theodore	Maryville High School	Maryville	Amanda Russell
6	187	Charles, Rhea	Webb School of Knoxville	Knoxville	Patrick Cahill
6	187	Kim, Sol	Farragut High School	Knoxville	Angela Buchman
9	186	Barnes, Luke	Science Hill High School	Johnson City	Guy Mauldin
10	184	Myers, Jacob	Franklin High School	Franklin	Lori LoCurto

State Tennessee Top Ten - Calculus and Advanced Topics

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	200	Luo, Kevin	White Station High School	Memphis	Yanli Cui
2	175	DeCoster, Sam	Montgomery Bell Academy	Nashville	Dustin Hedmark
3	174	Ajmal, Namrah	Brentwood High School	Brentwood	Jerry Stelmaszak
4	173	Novak, Connor	Brentwood High School	Brentwood	Jerry Stelmaszak
5	171	Black, Alan	Christian Brothers High School	Memphis	Dustin Perry
6	170	Joy, David	Oak Ridge High School	Oak Ridge	Deanna Pickel
6	170	Zhou, Zirui	Farragut High School	Knoxville	Brandi Finchum
6	170	Puri, Arjun	Memphis University School	Memphis	Steve Gadbois
9	168	Chen, Forest	Farragut High School	Knoxville	Angela Buckman
10	166	Gong, Brandon	Collierville High School	Collierville	Ivonne Bentley

Regional Top Ten Lists

East Tennessee Top Ten - Algebra I

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	195	Yan, Alexander	Farragut Middle School	Knoxville	Randall Swartzentruber
1	195	Hu, George	Farragut Middle School	Knoxville	Scott Frieling
3	180	Singhvi, Vivaan	Farragut Middle School	Knoxville	Randall Swartzentruber
4	172	Chen, Iris	Farragut Middle School	Knoxville	Randall Swartzentruber
5	168	Litchfield, Alex	Greeneville High School	Greeneville	Annette Watts
5	168	Duckworth, Alexandra	Greeneville High School	Greeneville	Annette Watts
7	166	Cross, Sophia	Science Hill High School	Johnson City	Christina Miller
8	165	Puchalski, Natalie	Athens City Middle School	Athens	
8	165	Madduri, Adithya	Maryville Junior High School	Maryville	Logan Goodin
10	162	Dallas, Benjamin	Jefferson Middle School	Oak Ridge	David Tracey

East Tennessee Top Ten - Geometry

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	172	Yan, Nicholas	Farragut Middle School	Knoxville	Rachel Brown
2	140	Chen, Henry	Maryville Junior High School	Maryville	Matt Fowler
3	136	Feiel, Michael	William Blount High School	Maryville	Kim Jordan
4	130	Soni, Rishi	Cleveland High School	Cleveland	Self
5	127	An, Karrie	Farragut Middle School	Knoxville	Rachel Brown
6	120	Singh, Ridhima	Farragut Middle School	Knoxville	Rachel Brown
7	118	Dapp, Logan	Signal Mountain Middle High School	Signal Mnt.	Jennifer Agan
8	117	Gao, Madeline	Farragut Middle School	Knoxville	Rachel Brown
9	116	Spann, Nathan	Cedar Springs Home School	Knoxville	David Sincerbox
9	116	Hutchinson, John	Providence Academy	Johnson City	Thomas Prior
9	116	Han, Grace	Jefferson Middle School	Oak Ridge	Rachel Haun

East Tennessee Top Ten - Algebra II

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	195	Tang, Alice	Farragut High School	Knoxville	Laura Austin
2	190	Jin, Raymond	Farragut High School	Knoxville	Laura Austin
3	181	Chen, Vivan	Maryville High School	Maryville	Nick Kessler
4	179	Qi, Michael	Farragut High School	Knoxville	Laura Austin
5	177	Willis, Melissa	Lenoir City High School	Lenoir City	Christin Haire
6	174	Scheffer, Katelyn	Lenoir City High School	Lenoir City	Christin Haire
7	173	Liu, Rena	Farragut High School	Knoxville	Laura Austin
8	168	Ha, Thu	Webb School of Knoxville	Knoxville	Melanie Davis
9	163	Nguyen, Ly Na	Science Hill High School	Johnson City	Joshua Berry
10	162	Khoretonenko, Alex	McCallie School	Chattanooga	Jim Carlone

TMTA MATH CONTEST 2019 TOP 10 MATHLETES

East Tennessee Top Ten - Statistics

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	182	Bullen, Luke	Webb School of Knoxville	Knoxville	Paul Klein
2	177	Vafaie-Partin, Sidney	Webb School of Knoxville	Knoxville	Paul Klein
3	176	Chow, Evan	Webb School of Knoxville	Knoxville	Paul Klein
4	173	Peruski, Ryan	Maryville High School	Maryville	Nelson Lee
4	173	Lowe, Kati	Heritage High School	Maryville	Robyn Crum
4	173	Gu, Bochao	McCallie School	Chattanooga	Peter Ohotnicky
4	173	Si, Jumyuan	McCallie School	Chattanooga	Peter Ohotnicky
8	171	Abdurahman, Iypan	Farragut High School	Knoxville	Angela Buckman
8	171	Wang, Kevin	Farragut High School	Knoxville	Angela Buckman
10	165	Simmons, Jeremy	Oak Ridge High School	Oak Ridge	Tom Froning

East Tennessee Top Ten - PreCalculus

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	191	Zou, Byron	McCallie School	Chattanooga	Rob Lyons
2	186	Astor, Theodore	Maryville High School	Maryville	Amanda Russell
2	186	Charles, Rhea	Webb School of Knoxville	Knoxville	Patrick Cahill
2	186	Kim, Sol	Farragut High School	Knoxville	Angela Buchman
5	185	Barnes, Luke	Science Hill High School	Johnson City	Guy Mauldin
6	179	Underwood, Megan	Maryville High School	Maryville	Ashley Porter
7	177	Qiu, Stephen	Maryville High School	Maryville	Ashley Porter
7	177	Bhat, Chandni	Dobyns Bennett	Kingsport	Cynthia Silvey
9	175	Higginbotham, Greta	Science Hill High School	Johnson City	Guy Mauldin
9	175	Hybarger, Adam	Greeneville High School	Greeneville	Stephanie Gaby

East Tennessee Top Ten – Calculus and Advanced Topics

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	170	Joy, David	Oak Ridge High School	Oak Ridge	Deanna Pickel
1	170	Zhou, Zirui	Farragut High School	Knoxville	Brandi Finchum
3	168	Chen, Forest	Farragut High School	Knoxville	Angela Buckman
4	165	Dey, Arnab	Dobyns Bennett High School	Kingsport	Lora Hopkins
5	164	Fang, Elliot	Farragut High School	Knoxville	Tony Crossland
6	163	Maddox, John	Daniel Boone High School	Gray	Curtis Dishner
7	161	Brady, Andrew	Oak Ridge High School	Oak Ridge	Jessica Williams
8	148	Ye, Meryl	Webb School of Knoxville	Knoxville	Melanie Davis
9	147	Bal, Aditya	Farragut High School	Knoxville	Wanda Lacy
9	147	Liu, Jimmy	Science Hill High School	Johnson City	Guy Maudlin

TMTA MATH CONTEST 2019 TOP 10 MATHLETES

Middle Tennessee Top Ten - Algebra I

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	190	Polborn, Tigran K	J.T. Moore Middle School	Nashville	David Myers
2	180	Chaudhury, Rajveer	Sunset Middle School	Brentwood	Benjamin Hartley
3	167	Hopf, Zane H	East Middle School	Tullahoma	Trent Stout
4	165	Uden, Whit W.	Montgomery Bell Academy	Nashville	Maggie Qian
5	164	Tadrous, Michael M	Sunset Middle School	Brentwood	Benjamin Hartley
6	161	Banks, Jackson C	East Middle School	Tullahoma	Trent Stout
7	160	Barker, Kevin W	East Middle School	Tullahoma	Trent Stout
7	160	Gorida, Maithreya	Montgomery Bell Academy	Nashville	Maggie Qian
9	152	Garvon, Kolton T	Merrol Hyde Magnet	Hendersonville	Rellie Kelly
10	151	Thomasson, Olivia	East Middle School	Tullahoma	Trent Stout

Middle Tennessee Top Ten - Geometry

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	190	Deng, Lejun	MLK Magnet High School	Nashville	Daniel Agyemang
2	173	Wang, Alex	Montgomery Bell Academy	Nashville	Matt Golenor
3	160	Pitt, Henry R	Montgomery Bell Academy	Nashville	Matt Golenor
4	146	Du, Hongyang	Oakland High School	Murfreesboro	Kevin Carroll
5	133	Xu, Peter	Montgomery Bell Academy	Nashville	Matt Golenor
6	132	Groomes, Reid	Montgomery Bell Academy	Nashville	Matt Golenor
7	130	Patel, Rudra	Hillwood High School	Nashville	Andrew Herrmann
8	123	Wei, Galen	Merrol Hyde Magnet School	Hendersonville	Bretta Gannon
9	122	Mueller, Matthew	Sunset Middle School	Brentwood	Mitchell Lancaster
10	116	Spencer, Kylie	Homeschooled	Dickson	Aaron Spencer

Middle Tennessee Top Ten - Algebra II

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	195	Li, Greta	University School of Nashville	Nashville	Justin Fitzpatrick
2	190	Choi, Sally	Brentwood High School	Brentwood	Greg Shirley
3	180	Ouyang, William	Montgomery Bell Academy	Nashville	John Lunier
4	178	Kanamoto, Shumpei	Ravenwood High School	Brentwood	Cheryl Morency
5	177	Jordan, Ryan T	Ravenwood High School	Brentwood	Cheryl Morency
6	175	Shiple, Matthew	Pope John Paul II	Hendersonville	Kim Childress
7	172	Wong, Adam	Montgomery Bell Academy	Nashville	Maggie Qian
8	171	Shuxteau, Carissa R	Brentwood High School	Brentwood	Betty Hood
9	169	Muthiah, Milind	Ravenwood High School	Brentwood	Mary Hawken
10	168	Cook, Sarah R	Harpeth Hall School	Nashville	Dora Biegl

TMTA MATH CONTEST 2019 TOP 10 MATHLETES

Middle Tennessee Top Ten - Statistics

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	191	Wang, Jiahua	The Webb School	Bell Buckle	Andrew Stimpson
2	190	Czajkowski, Whitman	Siegel High School	Murfreesboro	Amber Matuszewski
2	190	Sai, Baylor	Montgomery Bell Academy	Nashville	Phillip Jackson
4	186	Grummon, Nicholas	Franklin High School	Franklin	Suzanne Nuccio
4	186	Sprouse, Henry C	Hendersonville High School	Franklin	Angela Stiles
6	185	Broughton, Kylianne	Ensworth High School	Nashville	Sharon Glenn
6	185	Graham, Hugh	Montgomery Bell Academy	Nashville	Sean Jackson
6	185	McGuire, Daniel	Montgomery Bell Academy	Nashville	Phillip Jackson
6	185	Wallenfang, Lee	Brentwood High School	Brentwood	Jerry Stelmaszak
6	185	Yang, Heather	Brentwood High School	Brentwood	Jerry Stelmaszak

Middle Tennessee Top Ten - PreCalculus

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	196	Nayagadurai, Ashwath	Brentwood High School	Brentwood	Christie Feiler
1	196	Zhang, Franklin	Tulahoma High School	Tulahoma	Kim Carter
3	191	Saye, Justin	Independence High School	Thompson's Station	Stephen Dorris
4	184	Myers, Jacob	Franklin High School	Franklin	Lori LoCurto
5	181	Tang, Colin	Montgomery Bell Academy	Nashville	John Lanier
6	180	Friedman, Erica	University School of Nashville	Nashville	Cynthia Crenshaw
7	179	Qiu, Michelle	Brentwood High School	Brentwood	Christie Feiler
8	178	Lee, Julia	Brentwood High School	Brentwood	Christie Feiler
8	178	Yu, Sheeline	University School of Nashville	Nashville	Justin Fitzpatrick
10	176	Hawkins, Matthew	Montgomery Bell Academy	Nashville	Mike Davidson

Middle Tennessee Top Ten – Calculus and Advanced Topics

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	175	DeCoster, Sam	Montgomery Bell Academy	Nashville	Dustin Hedmark
2	174	Ajmal, Namrah	Brentwood High School	Brentwood	Jerry Stelmaszak
3	173	Novak, Connor	Brentwood High School	Brentwood	Jerry Stelmaszak
4	165	Deaton, Robert	Central Magnet School	Murfreesboro	Angelyn Pigg
5	162	Murray, Colin	Ensworth High School	Nashville	Karen Boles
6	160	Coburn, Ethan	Lipscomb Academy	Nashville	Amy Bowling
6	160	Habermann, Julian	Montgomery Bell Academy	Nashville	Dustin Hedmark
8	157	Kalams, Alex	Montgomery Bell Academy	Nashville	William Compton
9	148	Sanborn, Kate	Franklin High School	Franklin	Tracy Harmon
10	147	Dhar, Ankush	Ravenwood High School	Brentwood	Peter Lowen

TMTA MATH CONTEST 2019 TOP 10 MATHLETES

West Tennessee Top Ten - Algebra I

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	180	Newman, Jackson	Memphis University School	Memphis	Heather Davis
2	175	Wu, Evan	Memphis University School	Memphis	Heather Davis
3	172	Kulubya, Matthew	Lausanne Collegiate School	Memphis	Aubrey Zimmerling
3	172	Chen, Gabriel	Memphis University School	Memphis	Heather Davis
5	165	Mangin, Joseph	Christian Brothers High School	Memphis	Shawn Morgan
6	159	Han, Jennifer	St. Mary's Episcopal School	Memphis	Lynda Lyttle
7	156	Chen, Yiru	St. Mary's Episcopal School	Memphis	Lynda Lyttle
7	156	Tian, Annabella	Lausanne Collegiate School	Memphis	Aubrey Zimmerling
9	151	Hoffman, Holly	Dyersburg High School	Dyersburg	Labrenda Coleman
10	146	Narayanan, Aditya	Riverdale Middle School	Germantown	Michelle Dlabaj

West Tennessee Top Ten - Geometry

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	152	Ding, Bryan	Memphis University School	Memphis	Leigh Packard
2	145	Krishnamurthi, Varun	Memphis University School	Memphis	Leigh Packard
3	129	Xiao, Jerry	Memphis University School	Memphis	Leigh Packard
4	127	Keith, Ian	Brighton High School	Brighton	Bailey Rick
5	125	Chen, Michael	West Collierville Middle School	Collierville	Samuel Moody
6	122	Liu, Jeffrey	West Collierville Middle School	Collierville	Samuel Moody
7	122	Wang, Vic	Milan High School	Milan	Anthony Killian
8	122	Betapudi, Simeon	Memphis University School	Memphis	Leigh Packard
9	118	Nadeem, Alveena	Dyersburg High School	Dyersburg	Grady Andrews
10	115	Hirsch, Michael	Lausanne Collegiate School	Memphis	Aubrey Zimmerling

West Tennessee Top Ten - Algebra II

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	200	Gosain, Raj	White Station High School	Memphis	Aboubacar Amadou- Ide
2	173	Alluri, Priyanshu	Collierville High School	Collierville	Larissa McCoy
2	173	Rudd, Forest	Memphis University School	Memphis	Steve Gadbois
4	172	Reddivari, Minnathi	White Station High School	Memphis	Robyn Maxwell
5	171	Nwokeji, Jonathan	White Station High School	Memphis	Elizabeth Kirby
6	168	Zhao, Kerry	Memphis University School	Memphis	Steve Gadbois
7	167	Kotta, Bhavesh	Collierville High School	Collierville	Kiona Dilworth
8	166	Meng, Shawn	White Station High School	Memphis	Elizabeth Kirby
9	165	Sasipalli, Shiven	Collierville High School	Collierville	Kiona Dilworth
10	156	McClew, Hope	White Station High School	Memphis	Elizabeth Kirby

TMTA MATH CONTEST 2019 TOP 10 MATHLETES

West Tennessee Top Ten - Statistics

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	195	Gilliland, Benjamin	Memphis University School	Memphis	Darin Clifft
2	191	Hudson, Anna	Collierville High School	Collierville	Matthew Holmes
2	191	Yang, Sean	Houston High School	Germantown	Sarita Bansal
4	190	Ahn, Elliot	Collierville High School	Collierville	Matthew Holmes
5	187	He, Yao	Collierville High School	Collierville	Matthew Holmes
6	186	Cabezas, Natalie	St. Mary's Episcopal School	Memphis	Ashley Herr
7	180	McKee, Angus	White Station High School	Memphis	Susan Campbell
7	180	Ryu, Emily	Houston High School	Germantown	Sarita Bansal
9	176	An, Andrew	Houston High School	Germantown	Ashley Coates
10	175	Gunter, Trent	Collierville High School	Collierville	Matthew Holmes

West Tennessee Top Ten - PreCalculus

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	196	Sun, Emily	Collierville High School	Collierville	Timothy Setterlund
2	173	Yang, Ethan	White Station High School	Memphis	Ivonne Bentley
3	171	Paul, Samuel	Memphis University School	Memphis	Michael Gunn
3	171	Kimura, Yuka	Lausanne Collegiate School	Memphis	Janet Slesinski
5	170	Wang, Vilanna	Lausanne Collegiate School	Memphis	John Brewster
6	166	Kimura, Ayaka	Lausanne Collegiate School	Memphis	Janet Slesinski
7	165	Lee, Jacqueline	Lausanne Collegiate School	Memphis	John Brewster
8	164	Kovesdy, Agnes	Lausanne Collegiate School	Memphis	John Brewster
9	163	Dragatsis, Alexandros	White Station High School	Memphis	Yanli Cui
10	162	Zhu, Daniel	White Station High School	Memphis	Yanli Cui

West Tennessee Top Ten – Calculus and Advanced Topics

<u>Rank</u>	<u>Score</u>	<u>Name</u>	<u>School</u>	<u>City</u>	<u>Teacher</u>
1	200	Luo, Kevin	White Station High School	Memphis	Yanli Cui
2	171	Black, Alan	Christian Brothers High School	Memphis	Dustin Perry
3	170	Puri, Arjun	Memphis University School	Memphis	Steve Gadbois
4	166	Gong, Brandon	Collierville High School	Collierville	Ivonne Bentley
5	160	Gu, Anming	White Station High School	Memphis	Yanli Cui
6	155	Zhang, Johnathan	White Station High School	Memphis	Yanli Cui
7	153	Cao, Kevin	White Station High School	Memphis	Yanli Cui
8	148	Ding, Sarah	White Station High School	Memphis	Yanli Cui
9	147	Hawkins, Ethan	Collierville High School	Collierville	Ivonne Bentley
10	146	Jerit, Jack	Christian Brothers High School	Memphis	Dustin Perry

NCTM Illuminations Brain Teasers

Nine Digit Fractions by PatrickVennebush

Fill in each square with a digit 1-9, and fill in each circle with an operator +, -, ×, ÷. Use each digit and each operator exactly once. The resulting equation should be true. Use the standard order of operations (PEMDAS).

$$\frac{\square \circ \square \circ \square}{\square \circ \square \circ \square} = \square \square \square$$

What is the largest possible three-digit result that can be obtained on the right side of the equation?

Yes or No?



Ask a friend to pick a number from 1 through 1,000. After asking him ten questions that can be answered yes or no, you will be able to tell him the number.

What kind of Questions must you ask?

Puzzle provided by Kordemsky: The Moscow Puzzles (Dover)

Solution for Nine-Digit Fraction



Solution: 532.

Because we want the largest result possible, you should try to do two things: make the denominator of the fraction as small as possible, and make the numerator as large as possible.

To make the denominator as small as possible, you can use subtraction and division. The smallest possible denominator can be obtained with $1 - 8 \div 9$, which has a value of $1/9$, and dividing by $1/9$ is the same as multiplying by 9. That's a good start. Then, to make the numerator as large as possible, take the three greatest remaining digits 5, 6, and 7, and combine them with the remaining operations, + and \times . The largest expression that can be formed in the numerator using these digits and operations is $6 \times 7 + 5$. Luckily, the result with this numerator and denominator contains the remaining three digits, 2, 3, and 4:

$$\frac{6 \times 7 + 5}{1 - 8 \div 9} = 47 \times 9 = 423$$

This is a very good answer, and if this is the answer you obtained, you should be very proud!

However, there is a better answer. If you compromise just a little on the size of the denominator, you can increase the size of the numerator, which will yield a greater result. In the denominator, use $1 - 6 \div 7$, which has a value of $1/7$. Dividing by $1/7$ is the same as multiplying by 7, which isn't as good as multiplying by 9, but it's still pretty good. The benefit of doing this is that it leaves the largest digits, 8 and 9, to be used in the numerator. You can then make the expression $8 \times 9 + 4$ for the numerator, which will yield a final result on the right containing the digits 2, 3, and 5 that is greater than 423:

$$\frac{8 \times 9 + 4}{1 - 6 \div 7} = 76 \times 7 = 532$$

Solution to Yes or NO?



Solution:

The key to the solution is that 2 to the tenth power is 1,024 (that is, over 1,000). With each question you knock out half the remaining numbers, and after ten questions only the "thought" number is left.

Say the number is 860. The ten questions are:

1. "Is your number greater than 500?" "Yes." Add 250.
2. "Greater than 750?" "Yes." Add 125.
3. "Greater than 875?" "No." Subtract (not 62.5 but the nearest even number) 62.
4. "Greater than 813?" "Yes." Add 31.
5. "Greater than 844?" "Yes." Add (not 15.5 but) 16.
6. "Greater than 860?" "No." Subtract 8.
7. "Greater than 852?" "Yes." Add 4.
8. "Greater than 856?" "Yes." Add 2.
9. "Greater than 858?" "Yes." Add 1.
10. "Greater than 859?" "Yes."

The number is 860.