Sharon Black-MacKinnon: Good evening from NB Canada
Lesly Brown: Good evening from Knoxville TN.
Leslie Texas: Hi from Louisville, KY
Jeanine Colwell: Hello from eastern North Carolina
BillyJean Smith: Hello from Lincoln DE
David Barnes: Hello from Lansdowne, VA
Tina Hill: Hello from northeast TN
Kelley Nelson: Hello from Kuwait. No sound.
Haley Rauch: Hi from NYC!
Konnie Guthrie: Hello from Las Vegas, NV
Patrick Montague: Hello from Weslaco, TX
Olivia Wissinger: Hello from Pennsylvania!
Chris Paulison: Hello from Westchester NY!
Mohamed Jamaludeen Thirapusa Mohaideen: Good evening! This is Mohamed from CT.
Dr. Brown: Hello from Jackson, MS
Fran Huntoon: Hello from VT
Esther Winikoff: Hello from Baltimore!
Rebeca Matthews Sousa: Hello from Bermuda
Barbara Manley: Hello from Jackson, TN.
Will Roberts: Hello from Little Canada, MN
Bruce Graham: Hello from Durham NC
Amy Tucker: Hi from Wayne, Maine
Will Johnston: Hi from DC
Rachel White: Hello from Southern Maine.
Joyce Meier: Hello from Crystal Lake, IL
Lisa Piandes: Hello from cloudy New Hampshire!
Dane Dwyer: Hello, from Wiscasset, Maine
dana dulzo: Hello from Novi MI
Stephanie Caragher: Hello from NH
Drew Brammell: Hello from Georgetown, KY
Prerana Sanghavi: Hello from Mumbai, India
Cindy Bryant: Greetings from Springfield, MO!
Michelle Webb: Hi from Nashville TN
Katherine Stanford: Hello from Farmington, New Mexico!
Teresa Barut: Hello from Massachusetts!! 😊
Jeff Shih: Hi from Las Vegas, NV
Michael Lanstrum: Welcome from Cleveland, Ohio
Wilson Chen: Hi good evening, from Boston, MA
Maria Dolores Estravez: Good evening, everyone.
Jacob Watford: Hello from Mobile, AL.
Phyllis Creech: Hello Phyllis from Savannah, GA
Chonda Long: Handout for Mike's session is at https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf
Claudia O'Keefe: Hello from Buffalo, NY!
Mary Johnson: Hi from Pensacola, FL
Ruth Glasgow: Hello from Sydney Australia
Alison Jo Frost: Hello from Beckley WV
James Sullivan: Greetings from Sacramento, CA
Richard Pieper: From Rexburg, ID
Tiffany Gallagher: Hello all from Northern New Jersey
Necole Atkins-Dowd: Hello from Las Vegas, NV
Pamela Goodwin: Hello from NJ
Laura Kaplan: Hello from Chicago!
sabrina reed: Hello from Nashville, TN
Joce Masasi: Hello from Omaha, NE
Diana Telders: Hello from Raymond, WA
Jolene Peterson: Hello from Kansas!
Nithya Soundararajan: Hello
Jason Wright: Hello from Howland, Maine
Emee Grace Suarnaba: hello everyone!
Michael Brown: Hi from Cumberland, Rhode Island
Charles Clark: Hi from Casa Grande, Arizona
Sharon Engle: Hello from the Pocono Mountains of Pennsylvania!
Christina Tully: Las Vegas, NV
DawnMarie Gaghan: Hello from Long Island!
Jonathan Abellera: Good evening from Pecos, TX
Tina Hill: A good mathematics problem contains critical thinking
Emily Zegura: Hello from Loreauville, LA!
David Barnes: Handout for Mike's session is at https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf
Reycel Pacaanas: Hello from Shiprock, NM
Konnie Guthrie: The answer is not immediately obvious.
Jenny Sagrillo: Hi from Milwaukee, WI
Kimberlee Margosian Ruelas: Hello from Monterey, California
Marwa Ali: Hello, from north Virginia
Modena Paulsen: Hello from Tempe, AZ
Rebecca Peiffer: Hello from Phoenix, AZ :)
Aric Barnes: Hello from Houston, TX!
Sharon Laahs: Hi from Scottsdale, AZ
Jorge Veloso: Hi from Dundo, Angola.
Veronica Kwok: Hello from NYC!
Joseph Bianchi: Milwaukee, WI
Tess Wilson: hello from Bardstown, KY
Lorie Huff: Hello from Fayetteville, Arkansas
Wayne Christmas: Hello from Hutto, TX
Marissa Bay: Hi from Chicago!
Gloria Flores: Hello from Texas
Mike Cooke: Hello all from Summerland, BC, Canada
Diane Thole: Diane from Bronxville, NY
Rita Kwong: Hello from Deming, NM.
Carmela Minckler: Hello from Norwich, NY
Bryan Bagala: Hi from Westchester, NY
Cathy Kim: :) Tacoma, WA
Helen Maurice: NJ
Erin Meade: Hello from Fort Leavenworth, KS
Marilu Deal: Hello from Ottawa, Ontario, Canada!
Stephanie Bell: Hello from St Louis MO

patricia maia: pat from providence ri

Janice Holland: Hello from Virginia

Veronica Ross: Hello from Woodville, MS.

Jenny Cheng: Hello - Jenny from Redwood City, CA!

Katie Bailey: Katie Bailey from Harnett County, NC

amy mcdowell: Howdy from Northern Virginia

Ariane Eicke: Ariane Eicke from Laramie, WY

Tara Maynard: Hello CRK

Alfredo Mujica: Hello From Texas

Michael Chrzan: What up doe?! Here from Detroit, MI.

Nicole Burgess: Hi Everyone from Nashville

Menchie Besa: Hello from Jacksonville, Florida

Deborah Chapdelaine: Howdy from Edmonds WA

Marilu Deal: Woohoo! Ottawa!

David Nelson: David Nelson from Bridgeport, Ohio

Jet Yeung: Hello everyone --Henderson NV.

Benjamin Sinwell: Hi from Anderson, SC!!!!

Michelle Yelaska: Hi from Chicago!

Jean Young: Aloha from Hawaii!

Tara Maynard: Hello from Grand Rapids, Michigan

Mary Shortino: Hi from Portland, Oregon

Abir Akil: Hello everyone, I'm Abir Akil from MI.

Chonda Long: Handout for Mike's session is at https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf
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Amy Tucker: I appreciate being able to attend; I would not be able to go to Chicago.

Maria Celeste Rellosa: Hello from from Bessemer City, NC

Beverly Krumpe: Hello from Paris, TX

Prerana Sanghavi: yes

Caitlin Maggi: Hi from NY

Pamela Goodwin: yes

Joanne Wilson: yes

Beverly Krumpe: Yes

Fran Huntoon: yes

Leslie Texas: yes

Kim Ellis: yes

Marilu Deal: Yes

Gloria Flores: Yes

Sharon Black-MacKinnon: yes

Noe Eugenio: yes

Ronald Austria: yes

Abir Akil: yes

Michael Brown: sounds good

Joanne Wilson: I can hear you

Myra Collins: Myra from Greentop, MO

Ashlee Treadway: yes
Bette Barkley:   yes!
Laura Beth Snoap:   hello from holland mi
Chonda Long:   Handout for Mike's session is at

Sharon Ling:   Hello from NJ!
Liz Means:   Hello from Kansas City, MO
Rachel Rupnow:   hello
Jeanetta Glass:   hi from Memphis, TN
Kelley Nelson:   Can't hear.
Julianna Messineo:   Hello from Austin TX!
Faith Peddie:   Please have this handout open for Mike’s session
Handout for Mike's session is at
David Barnes:   Handout for Mike's session is at
Lesa Turner:   Hello from Springfield, TN
Mary Dugas:   hi From Louisiana
Leslie Texas:   yes
Marilu Deal:   yes
Tiffany Gallagher:   yes
Cindy Bryant:   Yes
Fran Huntoon:   yes
Shannon Otey:   y
Meredith Arthur:   yes
Pamela Goodwin:   yes
Claudia O'Keefe:   yep
Faith Peddie:   Welcome everyone and enjoy tonight’s session!
Emily Volk:   yes
Richard Miles:   yep
Will Roberts:   yes
Gloria Flores:   Yes
Sharon Black-MacKinnon:   yes
Ronald Austria:   yes
Kathryn Prater:   yes
Deborah Chapdelaine:   yep
Jan Back:   Jan Back from Hampton, Tennessee
dana dulzo:   yes
Todd Craver:   yes
Joanne Wilson:   yes
Kim Ellis:   yes
Maria Dolores Estravez:   yes
Wayne Christmas:   yes
Liz Means:   Yes
Barbara Boschmans:   Yes
Jacques Ludman:  5 by 5
Javier Ruiz:   Yes
Amanda Mills:   yep
Wilson Chen:   yes
Emee Grace Suarnaba:   yes
00:49:59 Menchie Besa: yes
00:50:00 Vicki Roman: yes
00:50:00 Christine Tabor: Yes
00:50:00 Dr. Brown: Yes
00:50:01 Noe Eugenio: yes we can hear you
00:50:01 Catherine Anderson: yes
00:50:01 dana dulzo: yes
00:50:01 Dan Robinson: hello from Peekskill NY
00:50:02 Rachel White: yes
00:50:02 Phyllis Creech: yes
00:50:04 Dan Robinson: yes
00:50:05 Nithya Soundararajan: yes
00:50:08 Danife Palisoc: yes
00:50:10 Dave Hankin: Hello from Globe, Arizona
00:50:20 Lisa Hurst: Hello from Texarkana, TX
00:50:22 Jennifer Gailey: hello from Ashland, VA
00:50:22 Denise Quarles: Hello from Seattle
00:50:26 Denise Quarles: I mean Atlanta
00:50:43 Mary Anne Opila: Hello from Villanova, Pa
00:51:00 Benjamin Sinwell: It was working before!
00:51:01 Dave Hankin: Nova
00:51:08 Aya Zvaigzne: open ended questions
00:51:08 Caroline Mitchell: Shout out to all of my Utah people. How you doin?
00:51:16 patricia maia: real life
00:51:17 Tim Bobay: Multi-step
00:51:18 Will Roberts: Every student in the class has an entry point
00:51:19 Amy Tucker: Many entry points
00:51:21 Angela Tseng: low ceiling
00:51:22 W Tad Johnston: Multiple approaches possib
00:51:24 Casey McGrath: Multiple methods
00:51:25 Shannon Otey: Open ended questions
00:51:25 Tim Bobay: Real life based
00:51:26 BillyJean Smith: relate to life, challenging
00:51:27 Sharon Black-MacKinnon: high ceiling
00:51:28 Mark Phipps: You can make it visible on the side if you only share the application with the slide show in it
00:51:28 Danife Palisoc: real life
00:51:28 James Overbey: If it is relevant to them
00:51:29 Gloria Flores: Multi-Step Problem Solving
00:51:30 Charlie: Hi from Australia
00:51:31 Tim Bartlett: Low floor, high ceiling
00:51:31 Amy Tucker: High ceiling, low floor
00:51:32 Marilu Deal: Open ended
00:51:33 Ann Martin: Open ended questions
00:51:33 Marissa Bay: Questions with multiple strategies to solve and questions with multiple answers'
00:51:34 Amy Robinson: low floor, high ceiling
00:51:34 Catherine VanNetta: low floor high ceiling
00:51:34 Haley Rauch: related to the real world
Christine Tabor: Real life
Laura Cranmer: linked and relevant to their lives
Fran Huntoon: WE can’t see your screen
Mary Anne Opila: real life
Olivia Wissinger: when you are sharing your screen, at the bottom of your screen when you move your mouse, you can select chat box for it to pop up
Leslie Texas: Open ended and interesting
Lisa Piandes: scaffolding problems
Ma Cecilia Francisco: open ended
Michelle Yelaska: When the problem has more than one way to get to the solution
dana dulzo: multi facted problems
Kim Ellis: when people talk about amongst themselves and talk to others outside the classroom
Danife Palisoc: every living
Amy Tucker: Many ways to solve
David Barnes: low entry and high ceiling
Gloria Flores: Higher thinking problems
Denise Quarles: What do they say..high ceiling, low floor – entry points for all students.
Carmela Minckler: hands-on, open ended, real life
Mary Shortino: language is accessible. visual supports to understand
Charles Clark: Real world word problems
Diane Davis: multiple representations
Rachel White: Real world and open ended
Catherine VanNetta: can be represented in multiple ways
Jason Wright: Problems that have an application to something in the student’s lives.
Katherine Stanford: Something real life that has value and meaning for them,
Christina Tully: Questions posed as challenges
W Tad Johnston: it's clear when you have a solution so one can reflect
Ma Cecilia Francisco: real life
Emee Grace Suarnaba: practical examples
Todd Craver: Questions that students want to solve - have an interest in
Matthew James: hello from west of Boston
Aric Barnes: Problems that make them "notice" and/or "wonder"
Nithya Soundararajan: Anything related to their interests and that involves critical thinking with multiple strategies
Monica Roland: Good evening from Savannah, Ga
Denise Quarles: Something that they can connect with
Kelley Quarles: Questions that relate to their world.
daña dulzo: place based problems from the community
Julianna Messineo: When I understand what the problem is asking/can visualize it
Nicole Burgess: problems that have good entry level
00:52:12 Hong Pun: low floor high ceiling and open ended multiple
answers
00:52:13 Emily Zegura: something that they are interested in solving
00:52:14 Dr. Brown: Multistep real-world problems that are relevant;
one that require critical thinking
00:52:18 Dulce Davidson: relevant to students
00:52:19 Daniel Seif: Applications of the math based on "their" real world
00:52:22 Aya Zvaigzne: open ended
00:52:27 Jeanine King: Low floor high ceiling
00:52:36 Jocelyn Gabrinao: open-ended
00:53:05 Faith Peddie: Please have this handout open for the presentation
00:53:57 Lisa Piandes: Entry points for all
00:54:45 Chi-Man Ng: Sorry - stupid question - what does PTP stand for?
00:55:00 Jennifer Hagman: @Chi-Man Problems to Ponder
00:55:01 Diane Thole: Problems to ponder
00:55:01 Jeanine King: problems to ponder?
00:55:01 Erin Meade: problems to ponder?
00:55:06 Larelle Hendon: problems to ponder
00:55:21 Chi-Man Ng: Ah thanks! Brain fog for a second
00:55:57 Jennifer Woods: Discourse within cooperative groups would promote
superior differentiation.
00:56:22 Chi-Man Ng: Clara Peller... Wendy's
00:56:25 Jason Wright: Clara Peller!
00:56:28 NICOLE RIGELMAN: Ah, yes, Wendy's
00:57:09 Sara Lynn Cannady: Sara Lynn Cannady from Midway Elementary in
Samson County with 27 years experience
00:57:36 Olivia Wissinger: love those teaching practices!!
00:58:29 Faith Peddie: If you don’t already have the handout for Mike’s
presentation open, please see here:
00:59:16 Caroline Mitchell: Where is Sampson County?
01:00:15 Delia Kwon: thanks
01:00:40 Charlie: first ever webinar. very green :|
01:00:47 Mirasol Laberinto: Mirasol Laberinto from Phoenix Arizona
01:00:55 Beth Kobett: Welcome @charlie!
01:00:56 Sandhya Raman: Love that name
01:01:01 Faith Peddie: Welcome Charlie!!!
01:01:09 Mike Murphy: problems to ponder sounds like the calendar problems
from the magazine
01:01:26 Faith Valentine: What magazine?
01:01:39 Kristina Grannan: Hello, from Evansville, IN
01:01:40 peter zirnis: which magazine?
01:01:55 Faith Peddie: Fingers crossed for breakout rooms! Please be
patient with us!
01:03:06 Nithya Soundararajan: This is my first time here. Can someone tell
me how the breakout rooms work?
01:03:10 Faith Peddie:
01:03:33 Faith Peddie: You will be in a smaller group of participants in
breakout rooms, with the ability to chat with one another!
01:03:34  jeanine colwell: Nithya, I have no idea either
01:03:37  Dr. Brown: Nithya, you'll see an invitation to go into the room on your screen.
01:03:41  Cynthia Bell: @Nithya they're very simple you'll get an invite that will tell you to join and you click that
01:03:47  Ronald Austria: 9!
01:03:56  Nithya Soundararajan: Thank you
01:04:02  Cynthia Bell: it will take you to the breakout room where you will work with others and be able to chat with them for collaborative thinking
01:04:07  peter zirnis: 8 is my lucky number so I will say Min of 8
01:04:08  Jennifer Gailey: modeling
01:04:09  Cindy Vaquero: I don’t here anything
01:04:10  Emily Volk: I was thinking that too Ron
01:04:18  Katherine Stanford: Wouldn't it be 8!
01:04:32  Jacques Ludman: ordered or unordered?
01:04:43  Nora Chase: Is the 6 foot distance taken into consideration?
01:04:46  Olivia Wissinger: I haven't gotten an invitation to join breakout rooms yet
01:04:52  W Tad Johnston: nothing yet
01:04:55  Cindy Vaquero: hear*
01:04:56  Vicki Roman: no
01:05:00  Samantha Bustos: nope
01:05:03  Lisa Hurst: no
01:05:04  Dave Hankin: No
01:05:04  Emily Volk: I think they just can't sit next to each other
01:05:05  NICOLE RIGELMAN: No invitation yet
01:05:05  Laura Cranmer: no
01:05:05  Nora Chase: no
01:05:05  Erin Meade: that is correct
01:05:06  Cynthia Bell: I haven't received any invite
01:05:06  Angela Tseng: We're not in.
01:05:12  Katherine Rossignuolo: no assignment
01:05:12  Deborah Chapdelaine: I don't see any way to join
01:05:13  Mike Cooke: Not in a room yet
01:05:14  Marissa Bay: It says please wait to be assigned
01:05:14  Michelle Webb: no invite
01:05:18  Chi-Man Ng: no invitations to join a room
01:05:18  Kim Ellis: my internet connection is unstable
01:05:19  Jenny Cheng: No invite
01:05:19  Jennifer Hagman: Not working
01:05:20  Emily Volk: no invite
01:05:21  Deepak Sehgal: I think 20
01:05:21  Barbara Manley: Not in a room yet.
01:05:23  Dave Hankin: No invite
01:05:23  Richard Pieper: I have not been prompted to join a BreakOut room
01:05:23  Liz Swerling: You might need to unshared the screen
01:05:23  Jennifer Heldenbrand: Mike may need to stop sharing his screen
01:05:26  Ange Kendall: It says waiting to be assigned
01:05:26  Jocelyn Gabrinao: no invite
01:05:26 Ashlee Treadway: How do we join a room?
01:05:28 Steven Case: how do you go to a room
01:05:28 Dr. Brown: No invitation yet.
01:05:29 Shannon Otey: There wasn't an invite to join a breakout room.
01:05:33 Menchie Besa: no invite yet
01:05:36 Sara Lynn Cannady: no invite
01:05:37 Jet Yeung: no invite
01:05:37 peter zirnis: each seat is really a bench which are all 6 feet wide
01:05:39 Olga Kosheleva: around 30
01:05:40 W Tad Johnston: not getting the invite :-(
01:05:41 Benjamin Sinwell: Thanks for the effort!!!
01:05:46 Delia Kwon: we don't see any room on our side
01:05:57 W Tad Johnston: Hey Hank, good to see you!!
01:06:01 Caroline Mitchell: Breakout rooms did not work last night.
01:06:02 Javier Ruiz: 72
01:06:08 Elizabeth Ruiz: 82 different combinations (because it's really a permutation) 9 options for seats 1 and 10 and 8 options for each of the middle seats.
01:06:12 BillyJean Smith: Good try
01:06:17 Olivia Wissing: 72 options
01:06:19 Tanya Landry: I get 72 also
01:06:19 Shawn Middleton: 77
01:06:22 Will Roberts: I got 72
01:06:22 Kathryn Prater: 40
01:06:23 Pamela Woodbury: I got 72
01:06:23 Amy Tucker: 72
01:06:23 Dulce Davidson: I got 78
01:06:26 Laura Beth Snoap: 72 ways
01:06:27 Jeanine King: 72
01:06:28 Christina Tully: I drew a picture
01:06:29 Nithya Soundararajan: 72 was my solution too
01:06:30 Merrellyn Banks: 72
01:06:31 W Tad Johnston: I only got 72...
01:06:32 Emee Grace Suarnaba: 72
01:06:35 Linda Thommen: 72
01:06:35 Matthew James: 72
01:06:36 carla spyksma: I drew a picture too
01:06:36 Jennifer Woods: 82
01:06:37 Lisa Hurst: I modeled
01:06:38 Mary Shortino: Every other, then started at either end
01:06:38 Alison Jo Frost: I like to draw – that’s what my students would do
01:06:39 Stephanie Bell: I'd draw it out
01:06:39 Peter Omura: I drew a picture and got 72
01:06:39 Daniel Seif: I got 36
01:06:40 Samad Virani: I got 72
01:06:41 Meredith Arthur: 36
01:06:41 Pamela Woodbury: if a person sits on the end, then the second guy has 8 choices
Faith Valentine: I drew a picture.
Eric Schmidt: 72
Olivia Wissinger: drew a picture of 8 seats and counted the options
Marissa Bay: 72
Sharon Ling: 72
Beverly Krumpe: Drew a picture, got 72
Elizabeth Gentes: I drew it out
Cynthia Bell: I started by making a model in my head
Wilson Chen: 72
Ashlee Treadway: 10 less 1 choose 2
Tara Maynard: a picture is needed for sure!
Pamela Goodwin: I drew a picture
Caitlin Maggi: I drew it out
Christina Roe: I drew a line of 10 dots and looked at where player 2 would sit based off where player 1 was
Gloria Flores: Draw it out
Julianna Messineo: I tried to find the possibilities if there were 3 chairs, then 4 chairs, then 5 chairs to see if there was a pattern
Barbara Boschmans: Find a pattern with 1 seat in between, 2 seats in between, etc.
Helen Maurice: 72
Jorge Veloso: 72
Amy Robinson: 36- I cheered and used my figures
Jennifer Heldenbrand: Started with a drawing
Rachel White: I drew a picture
Katherine Raiguel: I drew a visual
Ashlee Treadway: combinatorics
Casey McGrath: I drew a picture of 10 seats and started on the left
Elizabeth Wertenberger: I always have to start with a picture
Christina Tully: I drew a picture
Menchie Besa: 72
Elizabeth Gentes: I found a pattern after 3 rows and went from there
Olivia Wissinger: sorry drew 10 seats and counted options
Mary Anne Opila: drew a picture
Rebeka Matthews Sousa: how far apart do the people have to sit
Veronica Kwok: I drew a diagram
Jill Perry: people can also hold up their responses:
Jeanine King: I drew lines to represent the seats
Meredith Arthur: draw a picture
Gabrielle Gentile: I drew 10 blanks to represent the 10 seats
Carole Castonguay: I thought about having them 1 seat apart, then 2 seats apart, then 3 seats apart
daña dulzo: draw a picture
Anne Feeney: I drew out 10 spots and started putting people in
Kim Adkins: I drew a picture
Pamela Woodbury: I made ten little lines
Joseph Bianchi: I drew out a diagram and counted
Dr. Brown: I initially drew a pic.
Michelle Yelaska: draw a picture with different numbers of seats in between
Mirasol Laberinto: picture is needed
Becky Zielinski: drew a picture
Noe Eugenio: Draw 10 circles and count
Fran Huntoon: Drew a diagram then ordered the seats
Tiffany Gallagher: As an original elementary teacher, I would draw a picture or model with manipulatives
Chi-Man Ng: I drew a picture with 10 boxes then I just used 1 arrow to designate 1st person
Dulce Davidson: Picture
Katherine Rossignuolo: picture
James Overbey: Combination. 8C2, since they can’t sit next to each other?
Bruce Graham: I drew a picture and counted spots while looking for a pattern in the numbers
W Tad Johnston: set an act it out - a list
Carmela Minckler: You can try to draw a picture.
Jenny Sagrillo: Made a table, sort of
Linda Thommen: First, determine how many ways there are is A sits in seat #1.
Teresa Barut: Drew a picture and found pattern
Daniel Seif: paired up with at least 1 seat apart
Michael Brown: 10 choose 3 times 2
Lisa Rogers: I drew a picture and made a chart
Nora Chase: Are they benches or stools?
Katherine Stanford: Okay, I just used a permutation.
Richard Miles: I thought about the two seats on the end, then the eight middle seats
Liz Swerling: I made a chart/drawing.
Caroline Mitchell: start with a visual
Benjamin Sinwell: Think about which combinations are not possible.
Denise Smith: picture, then chart, then pattern
Kristy Allen: draw a picture, assign each person a different color, came up with 72
Marilu Deal: does order matter?
Lisa Piandes: Draw the 10 seats and check off every other starting with the first and then every other. Then start at second seat and every other etc
Donald Wahlers: Does it matter who is in each seat. Meaning Person A in seat 10 and B in seat 8 versus vice versa?
Peter Omura: I drew a picture and looked for a pattern
Maryn Foote: From an 8th grader, I would wonder how long a counter is? and How far are the seats from each other?
Sharon Ling: 2*(choose(10,2)-9)
Renee Parsley: I looked at what would happen if the first customer chose seat 1, then 2, then 3, etc.
Alfredo Mujica: pic
Rachel Slezak: I figured out how many places the second person could sit depending on which of the 10 seats the first person sat in
01:07:11 Will Roberts: I visualized the situation
01:07:11 Mike Cooke: First seat has 8 options, second seat has 7 and so on. Double answer to account for order
01:07:12 Michael Chrzan: Drew pictures, tried to assume a kid who wouldn't already know the pattern. From the diagram, started to see the pattern
01:07:12 Ange Kendall: I started with seat one and went to seat ten. I was trying to picture in my head. Then looked at seat two and looked for different combinations.
01:07:13 Larelle Hendon: it depends on whether the first person sits on an end, but between 70 and 80 way?
01:07:13 Dave Hankin: 10 seat, can't have in one of the 10. That leaves 9x8 I believe.
01:07:13 Rebeka Matthews Sousa: what are the social distancing conditions
01:07:13 Laura Cranmer: Picture first! Then question of ordered or unordered
01:07:14 Melanie Doody: Started a diagram and found a pattern
01:07:15 Amy Kimball: does it matter the order of the people?
01:07:15 Hawley Agee: Picture and combinatorics
01:07:16 Ma Cecilia Francisco: 45
01:07:16 Merrellyn Banks: Picture in my head
01:07:16 Joce Masasi: drew a picture and looked for a pattern
01:07:17 Marilu Deal: Picture
01:07:19 Rita Kwong: Use permutation and identify the exception
01:07:20 Alison Jo Frost: If I were in class, I would get the kids out of their seats and try different ideas
01:07:21 Maria Dolores Estravez: did a picture, 36 ways
01:07:23 Mark Phipps: 8 options to not sit next to when first person is on the end. and 7 options when you are not sitting in an end seat.
01:07:23 Pamela Woodbury: marked the number of options above each line depending on where the first guy sat
01:07:25 Jet Yeung: I drew a picture
01:07:25 Ann Martin: draw a number line
01:07:27 Mike Murphy: Chart, table, picture
01:07:27 Richard Pieper: I kept 1 student in the first seat and that leaves 8 possible positions for the second student.
01:07:28 Brenda Carvalho: Place first person in seat one then the second has 8 choices. Then put first in 2nd chair second person has 7 choices. Cont then double for second person to get 72
01:07:29 Jennifer Hagman: Diagram .. thinking 2*8+8*3
01:07:30 Eric Schmidt: Pattern 1-3,4,5..... 2-4,5,6,... 3-1,5,6,7....
01:07:31 Erin Meade: I got 15 by starting with a person sat in the first seat then separated the second one by a seat. then moved it down. Then moved the first person over one and counted again. 8 +7 =15
01:07:31 Konnie Guthrie: I'm drawing a diagram and looking for a pattern.
01:07:32 Denise Quarles: I also used fingers and was frustrated that I didn’t have a more efficient strategy.
01:07:34 Enkelejda Limani: 36
01:07:34 Ashlee Treadway: Or 10 choose 3
01:07:35 Michael Chrzan: Also considered the min and max number of seats between them
Jean Young: picture, tables counting the # of spaces apart...first 1 apart, then 2 apart, then 3 apart...

W Tad Johnston: not sure permutation works since all spaces aren't filled

Veronica Kwok: I’m curious if one person sits in the first seat and the other sits in the third seat, is it the same as if they switched seats?

Jason Wright: Not a math major, but I would say that when the first customer sits there will be 8 other seats where the second could sit, this could happen at each of 10 seats giving 10x8 then there are 5 next to each other combinations subtracting those I get 75

Beth Kobett: diagram then developed a pattern

Ashlee Treadway: by drawing blanks

peter zirnis: stay at home and we will soon get to phase 2 of the re-entry plan and distancing won't matter --- EAT AT HOME

Rebecca Peiffer: I started with assuming the first person sits in the first seat; there are 8 possible spots for the second person. Then I moved them to the 2nd seat; there are 7 possible spots; I followed the pattern and got 8+7+6+5+4+3+2+1

Samantha Bustos: drew It out. I know there's a formula I probably could've used but I don't know it

Denise Quarles: I also assumed there might be a trick.

Melanie Doody: I really want to talk to people about this!

Javier Ruiz: I did it mentally :)

Jeanette Polanski: 8*7 + 2*8 = 72

Ronald Austria: 72

W Tad Johnston: Rebecca I did person A and Person B on left to get the set

Becky Zielinski: Will we be able to see this after the zoom meeting?

Veronica Kwok: I did!

Cynthia Bell: that's what I did

Nithya Soundararajan: Same method as Jeanette

Will Roberts: I did this

Anne Feeney: I did that exactly

Shannon Otey: y

Melanie Doody: yep!

Emily Volk: I do that in my class

Casey McGrath: I did that exactly as well

Rebecca Peiffer: Then I realized that the order makes a difference; so I multiplied by 2

Carmela Minckler: That is what I did

Samantha Bustos: yup.

Erin Meade: that is what I did

Fran Huntoon: yup did that

Bryan Bagala: I drew a picture and got 72

MARDONIO FIGUEROA: Good evening everyone, I am Mark Figueroa from New York

carla spyksma: Did that.

Jennifer Gailey: That is exactly how I started

Pamela Woodbury: I ended up with * options if the first guy
sits in the first chair, then 7 if the first guy sits in the second chair, etc
01:08:38 Bruce Graham: Hey, that's what I did!
01:08:38 W Tad Johnston: That was my 8 + 7 + 6 + 5 + 4 + 3
01:08:41 Mary Anne Opila: yes!
01:08:42 Jet Yeung: Yes I moved them over
01:08:50 Haley Rauch: Me too!
01:08:54 Pamela Woodbury: you end up with 8 + 7 + 7 + 7 ... + 8
01:08:59 Jennifer Woods: Yes I created the very same visual model before using permutations.
01:09:03 Jennifer Gailey: I started with one seat between, then 2 seats between
01:09:04 Erin Meade: but if we continue to do that, it it really different?
01:09:05 Maria Dolores Estravez: That’s exactly what I deduced from my work
01:09:05 Mark Phipps: THEN WE ARGUE ABOUT ORDER
01:09:07 Jill Perry: can we hold up our responses and see each other via gallery view?
01:09:10 Jean Young: 72
01:09:17 Samantha Bustos: 72 came from the ones who cared about who sat where hahah
01:09:24 Jacques Ludman: Are the 10 seats in a circle?
01:09:27 Jason Wright: Oh yeah there are more than 5 next to each others, Thera re 8
01:09:32 Elizabeth Gentes: Haha those of us those of who got 72 numbered the people.
01:09:51 Maria Dolores Estravez: The seats are in a row, not in circle.
01:10:02 Will Roberts: But what if they were?
01:10:03 Ronald Austria: 55 if 12 seats
01:10:04 W Tad Johnston: n(n-1)/2
01:10:45 Denise Quarles: Where could the next person who entered sit? How would we seat these people so that as people left so they would vacate seats in a predictable order.
01:10:55 Rebecca Peiffer: That was my first thought too W Tad. But then I wondered, would it actually be (n-2)(n-3)/2 since we start with 2 less (we started with 8 possibilities for 10 people)
01:11:01 jeanine colwell: love this problem
01:11:09 Faith Peddie: I love this problem too!
01:11:20 Michael Brown: how big can p be in relation to n?
01:11:20 Claudia O'Keefe: Denise Quarles - I love those questions!
01:11:23 Mary Anne Opila: makes for good discussion and logic
01:11:24 Fran Huntoon: I appreciate how the problem leads to deeper thinking
01:11:24 Maryn Foote: Reminds me of the handshake problem
01:11:25 Jennifer Hagman: Wondering how similar this is to having 10 seats and choosing 1 seat to be empty (between them)
01:11:26 W Tad Johnston: HI Rebecca, definitely needs to be started at a different point like you siad
01:11:27 Tiffany Gallagher: Great way to introduce a concept and have the kids come up with the definition or content knowledge
01:11:27 Maria Dolores Estravez: That would be a good extension, having the
seats in circle.
01:11:32 Roberta Ludwigsen-Hill: Great problem!!!
01:11:35 Kathryn Prater: What grade/standard is this
01:11:36 Teresa Barut: great problem
01:11:36 Beth Kobett: I like the new context :)
01:11:37 Sandhya Raman: Fantasitc
01:11:37 Erin Meade: yes, it is like the handshake problem!
01:11:39 Pamela Goodwin: Great problem! and extension questions
01:11:40 Michael Chrzan: Those follow up are key! Love drawing out curiosity
01:11:43 Jeanne colwell: love the extensions
01:11:45 Marilu Deal: Lots of different possibilities
01:11:56 Sandhya Raman: And we can find such problem......somewhere??
01:12:00 Veronica Kwok: How do you think ELLs would be able to handle this kind of problem?
01:12:01 BillyJean Smith: handshake is now an elbow bump
01:12:12 Erin Meade: lol or a head nod!
01:12:15 Laurie Boswell: One of my favorite problems as well!!
01:12:17 Konnie Guthrie: I got 296 if the placement of the 2 people matters.
01:12:27 Kathryn Prater: Grade/standard?
01:13:16 Michael Chrzan: Those follow up are key! Love drawing out curiosity
01:13:27 W Tad Johnston: Feels like coordinate geometry might help me and make it a unit square since I like to work with fractions
01:13:32 Rachel Slezak: re: EL students, a picture would help a lot to help understand the premise, and making sure they understand the vocabulary of “next to”
01:13:33 Todd Craver: Good one, David Barnes
01:13:42 Faith Valentine: 1+4=2+3
01:13:48 Denise Quarles: I know that the area of I and IV are equal to II and III
01:13:49 Olivia Wissinger: 3 triangles and one quadrilateral
01:13:51 Michael Brown: this looks like an IM problem where they divided the area a store serves... perpendicular bisectors
01:13:53 Sandhya Raman: 1 and 4 equal 2 and 3
01:13:53 Jacques Ludman: choose side lengths of 2, so that I can work with real #s
01:13:59 Michelle Yelaska: assign a value to the side lengths like the sides = 2
01:14:06 dana dulzo: area I and II are less than half the square
01:14:10 W Tad Johnston: I think find the triangles and subtract to get the rectangle :-)
01:14:11 Lisa Piandes: Redraw onto grid paper to help with calculating area of each area
01:14:16 Denise Quarles: What would happen if I created a point G in the midpoint of A and B
01:14:25 Maryn Foote: Well I can see the sum of I and IV are equivalent to the sum of II and III.
01:14:34 Mayra Aversa: maybe make up values for each of the lines
01:14:36 Catherine VanNetta: 1 and 3 are similar triangles with a 1:2 ratio
01:14:37 Veronica Ross: I started by looking at proportional relationships
of AE, ED to BC to approaching this problem.

01:14:40 Richard Miles: II + III = I + IV
01:14:47 W Tad Johnston: looks like a system to me:-)
01:14:50 Caryn Albrecht: 1 +2 = 1/4 of the total area
01:14:52 Mike Cooke: I & II are 1/4 of the area; III and IV are 3/4 of the area
01:15:04 Gabrielle Gentile: I used equations of lines to find a value for the point of intersection of segments EC and BD.
01:15:05 Peter Duong: III = 2 * II = 4 *I. Not knowing about IV yet (need more time)
01:15:08 Mike Cooke: I & IV are 1/2 of the area, as are the other two
01:15:10 Jolene Peterson: region 1 and 4 = region 2 and 3
01:15:11 Gabrielle Gentile: Used D as the origins
01:15:13 W Tad Johnston: The intersection point seems pretty important - I think it is the key
01:15:17 carla spyksma: I like the fact that there aren't numbers. I allows kids to really look at the problem instead of getting anxious about the numbers and the "right" answer.
01:15:20 Dave Hankin: 4 = 2 + 3
01:15:28 Will Roberts: 1 + 2 is 1/4 of the area of the square
01:15:29 Dave Hankin: 1+4 = 2+3
01:15:36 Wahyuni Mailili: II +III = I + IV
01:15:36 Will Roberts: Which means 3 + 4 is 3/4 of the area
01:15:38 [Moto G (5... (657)]0: 1:2:4:5
01:15:39 Vittorio Ciummo: I +II = 1/2(II +III)
01:15:43 Veronica Kwok: There are a few right triangles
01:15:45 Maryn Foote: I need some patty paper. . .LOL
01:15:46 Sandhya Raman: I love these problems!!!
01:15:49 Shannon Otey: The area of 1+2 is less then 3+4
01:15:50 Will Roberts: so (1+2)/(3+4) = 1/3
01:15:52 dana dulzo: I + IV = II + III
01:16:13 Will Roberts: I think?
01:16:16 Amy Tucker: 1:2:4:5?
01:16:18 Mike Cooke: BD has slope = 1 and E
01:16:24 Daniel Seif: 1:1.5:2.5:3
01:16:24 Olivia Wissinger: 3 triangles and 1 quadrilateral was first thought
01:16:25 Teresa Barut: III + IV = 75% of square
01:16:27 Maria Dolores Estravez: I'm thinking of the same thing: patty paper!
01:16:29 Mike Cooke: EC has slope =-1/2
01:16:31 W Tad Johnston: 1+ 2 = 1/4,
01:16:37 Julianna Messineo: I found the slope too!
01:16:46 Gabrielle Gentile: If we let each side be 2 then point F would be (2/3, 2/3)
01:16:53 Chris Paulison: II+ III = I + IV
01:16:58 Laura Perrier: 1+4 = 2+3
01:17:00 W Tad Johnston: x=y at the intersection with D at origin
01:17:04 Chris Paulison: III is twice I
01:17:08 Mike Cooke: Sorry for doing that!!
01:17:11 Jacob Watford: I & III have a ratio of 1:2
Mike Murphy: Anyone doing area formula 4 times?
Will Roberts: oh snap I see the 1:3 = 1/2
Sandhya Raman: III is thrice I
Jacques Ludman: I get 4 equations with 4 unknowns from these, so I can solve this in a few minutes.
Peter Duong: ABCD = 6 * II = 12 * I = 3 * III = (5/12) * IV
Gabrielle Gentile: I did it 3 times then subtracted
W Tad Johnston: like the similar triangles - I did not go there first
Delia Kwon: 4
Sandhya Raman: 3
Penina kamina: I+II is a fourth the whole
Chris Paulison: 4
Meredith Arthur: 3
Diane Davis: how do we know for sure that point E is halfway between A and D?
paloma carrera: 3
Caitlin Maggi: 4
Mohamed Jamaludeen Thirapusa Mohaideen: 3
Laurie Boswell: 4
Merrellyn Banks: 4
Jason Wright: 3
Angela Tseng: 4
Gabrielle Gentile: I would think 4
Veronica Ross: When I looked at the figure, I can see triangle BCD is 1/2 of the figure and triangle EDC has a direct relationship.
Jacob Watford: 4
Jennifer Woods: 3
Daniel Seif: 2.5
Ange Kendall: 4
Mary Anne Opila: 4
Mohamed Jamaludeen Thirapusa Mohaideen: BETWEEN 3 AND 4
Dave Hankin: 3
Vittorio Ciummo: TRIANGLE EDF IS SIMILAR TO TRIANGLE CBF
Pamela Goodwin: I + IV = II + III
Maria Dolores Estravez: That makes sense; angle end and angles BFD are vertical angles.
Penina kamina: i+iv is half the whole
Maria Dolores Estravez: EFD
Saul Gonzalez: (DB)(EF +FC)/2= .5(area of square)
W Tad Johnston: How do you know?
Gloria Flores: II and III are also half the whole
Laurie Boswell: 1:2:4:5
Steven Case: would it take 4 I's to make the area of one III?
Rachel White: hi
W Tad Johnston: I got equal altitudes by algebraic methods
Merrellyn Banks: 1:2:4:6
Sreevelmurugan Vamadevan: Hi everybody
Sandhya Raman: What’s a good place to find such problems? Very
interesting
01:20:10 Jennifer Hagman: @Steven Case - looks reasonable by estimation
01:20:15 Gabrielle Gentile: 1:2:4:5
01:20:21 Tim Bobay: Good evening everybody
01:20:30 Michael Chrzan: Yes Sandhya, where to find/tips on how to make these problems?
01:20:32 Amy Robinson: 1:2:4:5
01:20:51 Sandhya Raman: Thanks Michael...I think I should post it in Q & A...
01:20:51 jeanine colwell: great question Michael
01:21:17 Michael Chrzan: Stolen from Sandhya but yes I agree lol
01:21:20 Erin Meade: Oh I love the idea of cutting it out. That would work for middle school too as they still need concrete help
01:21:25 paloma carrera: The strategy used in this problem is awesome for critical thinking. Most students just want measurements to do numerical solutions.
01:21:49 Maria Dolores Estravez: That is so great! Would really be good using patty paper, too!
01:21:49 Rachel White: Lots of different ways to look at this problem
01:21:51 Sandhya Raman: I love this modeling...cutting it out...
01:21:57 Lisa Piandes: My students would ask for graph paper
01:22:05 Konnie Guthrie: Perhaps they could draw the shape on graph paper of varying side lengths for the square and observe whether it changed (or if it should change).
01:22:08 Pamela Goodwin: I would have cut out the piece as well
01:22:16 Jennifer Woods: Thank you!
01:22:16 Teresa Barut: Thanks!
01:22:17 Rachel White: Thank you
01:22:17 Merrellyn Banks: thank you
01:22:18 Leslie Texas: Great! Thanks
01:22:18 Jennifer Zane: Thank you
01:22:24 Sandhya Raman: You are GOD...thanks Mike
01:22:25 Kim Ellis: fantastic
01:22:25 Mary Dugas: awesome resource
01:22:27 Roberta Ludwigsen-Hill: Great!
01:22:28 Angela Tseng: w00t! Thank you for these resources!
01:22:30 Elena Olive: Thanks
01:22:31 paloma carrera: Thank you
01:22:31 Ashlee Treadway: Awesome!!!!
01:22:32 Sreeelmurugan Vamadevan: Awesome
01:22:33 Roberta Ludwigsen-Hill: Thank you!!!
01:22:34 Jenny Kim: Thank you!!!
01:22:35 Dave Hankin: Faulous!! Thanks!!
01:22:35 Laura Cranmer: Awesome!
01:22:36 Katherine Rossignuolo: Great!
01:22:37 Dulce Davidson: Awesome!!!!!!
01:22:37 Gloria Flores: AWESOME LOVE IT
01:22:38 Kristina Grannan: Thank you.
01:22:38 Laurie Boswell: I loved the problems you posted during your time as president
Catherine Anderson: Thank you so much!!!
Dr. Brown: Thank you!
Marilu Deal: haha! Thank you.
Joce Masasi: thank you!
Matthew James: yes
Jennifer Woods: Sensational!
Penina kamina: Thanks
Beth Kobett: The problems are so great! Slow... problem solving...
Like a slow twitter chat!
Caitlin Maggi: Thank you
Mike Cooke: I know what I will be working on this weekend - thank you!!
Jennifer Schilling: Thank you!
Konnie Guthrie: I am so glad to have access to that resource.
Lisa Piandes: Thank you I was trying to copy each problem
peter zirnis: I have a 7:45 dinner date!!!
amy mcdowell: thank you
Hanayo Hattori: Can anyone tell me how you can tell the triangles I and II has the same height?
Peter Duong: the picture requires to prove some points has to be linear.
Bette Barkley: do we assume that e is halfway along the line?
Susan Balcerski: Thanks!
Jennifer Gailey: yes, we were given that 3 is midpoint
Jennifer Gailey: that e is midpoint
Dave Hankin: He did say it was the midpoint.
Jeanine colwell: Hanayo, they go from the bottom to the vertex, the straight height
W Tad Johnston: 1oops forgot the 1/2 on one area 1, 2, 4,5
Casey McGrath: I found the area of each piece using trig and other theorems
Nithya Soundararajan: Can someone please tell me the resource he mentioned? I didn’t hear it! Thanks
Gabrielle Gentile: Since the line BD is a diagonal of a square then any point on it is the same distance to each of the two sides
Jennifer Woods: I also serve grade 6 ELL students. These problems to ponder would force them to use their tier 2 academic language which is difficult for them.
Christine Suurtamm: Mike will be giving a link to a set of problems at the end.
Angela Tseng: @Nithya, he'll post it at the end of the webinar
Leslie Texas: Nice extensions, particularly in thinking about whether the strategies still work
Nithya Soundararajan: Thank you
Jacques Ludman: that was a great one!
Veronica Kwok: I wonder how this will play out for ELL students
W Tad Johnston: LIke the equidistant on the diagonal, good theorem to consider
Catherine VanNetta: Construct segment EB to form a triangle congruent to 2 and a triangle congruent to 1 + 2
Maria Dolores Estravez: Awesome!
Jennifer Woods: Awesome!
Monica Roland: Thank you!
Jennifer Hagman: Love this problem!
Veronica Kwok: My students are all ELs and have trouble with a lot of basic math skills including working on basic arithmetic with integers
Veronica Kwok: How can I help them access problems like this better?
W Tad Johnston: If even need at least three numbers
Barbara Manley: Blitzer?
Olivia Wissinger: 6=1+2+3
Angela Tseng: 6 = 1+2+3
Elena Olive: 6
Sandhya Raman: 6
Rachel Slezak: to help access open-ended problems, assess and review prior knowledge
W Tad Johnston: if odd, always have at least 1 way
Merrellyn Banks: 19 =9+10
Sandhya Raman: 0+1+2=3
Mark Phipps: Which can be written in multiple ways 12345, 78, 456
W Tad Johnston: even is limited - e.g, no solution for 2 or 4
Jennifer Heldenbrand: Useful for playing KenKen!
Rachel Slezak: But all kids can access this kind of problem if you give them the tools they will need. Like for this one, it would help EL students to know the word “consecutive” for example
Marilu Deal: And Kakuru
Nithya Soundararajan: Any odd number can be written as a consecutive sum
Sandhya Raman: Low floor...well played!!
W Tad Johnston: I'm conjecturing that powers of 2 won't work
Ann Martin: 3 times the middle number
Trent Thomason: 21=6+7+8
Konnie Guthrie: 1, 3, 6, 10, 15, 21, 28, etc.
Fran Huntoon: This is one of the problems in Youcubed Week of Inspirational Math. It's a good one
Laurie Boswell: any odd number
Michael Chrzan: At least all odd numbers and 6 lol
Amanda Helgerson: any odd number
Cynthia Bell: I love this low floor high ceiling
Jennifer Heldenbrand: so all odd numbers can be the sum of 2 numbers...
Mary Anne Opila: fun
Faith Valentine: Whole numbers as in counting numbers or integers?
Amy Tucker: 12 works
Wendy Kraft: 3x+3
Chris Paulison: something about 3's
Larelle Hendon: odds and triangular numbers among others.
Maria Dolores Estravez: 6, 9, 12, 15, 18, 21, 24,... can be written as
sum of three consecutive whole numbers

01:27:48 Jennifer Hagman: All multiples of 3 can be written as a the sum of 3
01:27:48 Jenny Kim: 3n
01:27:51 Dave Hankin: Multiples of 3
01:27:51 Maryn Foote: mod 3?
01:27:53 Jorge Veloso: All odd numbers and some even ones
01:27:53 Laura Perrier: 16=4+5+6
01:27:53 Wendy Kraft: 6, 9, 12, 15, 18, ...
01:27:55 Bryan Bagala: all odd numbers
01:27:56 Barbara Manley: multiples of 3...
01:27:57 Vittorio Ciummo: MULTIPLES OF 6
01:27:58 Konnie Guthrie: I have done a variation from the Math Learning Center called the “Handshake Problem”

01:28:00 Javier Ruiz: All multiples of 3
01:28:02 Wendy Kraft: so 3(x+1) works
01:28:02 Fran Huntoon: 0 makes it interesting
01:28:03 W Tad Johnston: 12 is an even that works 3, 4, 5
01:28:03 James Overbey: all odd #s can be the sum of 2 consecutive #s, except 1
01:28:04 Jonathan Abellera: 1+2+3+4+5=15
01:28:04 Vittorio Ciummo: ODDS
01:28:06 Carole Castonguay: The number of addend dictates the space between the numbers they create.

01:28:06 Sandhya Raman: So any 3 numbers can be written as a sum ??
01:28:08 Faith Valentine: How many consecutive numbers?
01:28:11 Marcel te Bokkel: can’t do 16
01:28:12 Rebecca Peiffer: I’m finding it helpful to think of it backwards: writing out what the sums of consecutive numbers starting with 1 are, for example

01:28:13 Gordon Jones: looks kike powers of 2 can’t be done
01:28:14 Jennifer Hagman: All even, non-multiples of 4 can be written as 4 numbers
01:28:14 Gabrielle Gentile: multiples of 3 greater than 3 can be a sum of 3 whole numbers
01:28:15 Jason Wright: all odd number, but there are more
01:28:16 Lisa Piandes: Does it have to be two or three consecutive numbers?
01:28:16 Amy Robinson: how many consecutive numbers?
01:28:17 Delia Kwon: is there a limit to how many consecutive numbers the sum should include?

01:28:19 Ma Cecilia Francisco: 12+13=25
01:28:20 Erin Meade: so if any multiple of 3 and odd numbers work, then what numbers are there left that don’t work?
01:28:23 Konnie Guthrie: n(n-1)/2
01:28:24 Barbara Manley: Multiples of 3 using 3 consecutive whole numbers.
01:28:26 Dr. Brown: I’ve done the Handshake Problem also.
01:28:26 Marilu Deal: So many possibilities...any criteria?
01:28:27 Laura Cranmer: Looks like odd numbers
01:28:29 Wahyuni Mailili: 3 = 0 + 1 + 2
01:28:33 Todd Craver: 2 consecutive numbers make an odd number
01:28:33 Kristy Allen: all odd #s greater than 3, and even numbers if they are a multiple of 3
01:28:34 Michael Chrzan: Multiples of 3
01:28:36 Meredith Arthur: multiples of 3?
01:28:37 Laura Cranmer: but 6 isn't odd
01:28:38 Pamela Goodwin: add any three consecutive numbers. Example 20+21+22=63
01:28:39 Olivia Wissinger: 10+11+12+13=46
01:28:39 Mark Phipps: Not 1,2,4,8,16,32...?
01:28:39 Jenny Kim: Where n>0
01:28:41 Brenda Carvalho: Odd, mult of 3, 10+4n ...
01:28:43 Chris Paulison: any multiple pf 3
01:28:44 Sandhya Raman: I mean..what is the catch? I'm flaking out on that..
01:28:44 Gloria Flores: 3 + 4 + 5 = 12
01:28:46 Gabrielle Gentile: x+(x+1)+(x+2)=m 3x + 3 = m 3(x + 1) = m
01:28:47 Chris Paulison: *of
01:28:47 Mike Cooke: All odd numbers, all multiples of 3, 4n+6 (n = 1,2,3, ...)
01:28:52 W Tad Johnston: can't do 10, maybe need to have a factor of 3 so evens would be multiples of 6
01:28:53 Jennifer Hagman: Fascinating watching how people are thinking of this
01:28:54 James Overbey: All multiples of 3 can be the sum of 3 consecutive #s
01:28:55 Kimberly Brown: Can we get a copy of thr chat also, REALLY GREAT points to ponder
01:28:56 Fran Huntoon: 1 works if you do 0 + 1
01:28:57 Marcel te Bokkel: can’t do 8
01:28:58 Gloria Flores: 1 + 2 + 3 + 4 = 10
01:28:58 Nithya Soundararajan: Other than powers of 2 I guess
01:28:58 Haley Rauch: why is it multiples of 3? what’s the algebraic proof?
01:28:59 Dulce Davidson: So many possibilities
01:29:00 Gordon Clark: Non prime
01:29:00 Jason Wright: The odd numbers needn’t be greater than three as whole numbers include zero
01:29:07 Mary Anne Opila: 23=11+12
01:29:08 Merrellyn Banks: all odd plus some evens
01:29:08 Gloria Flores: Tons
01:29:10 Amy Robinson: can we use integers instead of whole numbers
01:29:11 Sandhya Raman: Any 3 connective numbers can be added to be written as sum? Right?
01:29:12 Peter Omura: 3x,5x,6x,7x
01:29:12 Danife Palisoc: n+n sub 1 - 1 + n sub2 -2...
01:29:13 W Tad Johnston: 17 is prime and works
01:29:13 Kathryn Prater: For two numbers, all odds. For three numbers, do 3 x n. where n is row + 1. Have to know row numbers though.
01:29:16 Jenny Kim: Sorry, my internet connection is bad. Here is my full answer: 3n, where n>0
Todd Craver: If 3 consecutive numbers begin with an odd, the answer is even.

Myra Collins: Vocabulary becomes important here. Students need to understand consecutive and sum especially.

Laura Perrier: any consecutive whole numbers add to a whole number sum.

Marcel te Bokkel: why not list the ones we can’t do?

Barbara Manley: I think a copy of the chat would be helpful for later, too.

Gordon Clark: all/

Bruce Graham: Odd numbers and even numbers that have an odd factor?

Larelle Hendon: 4k - 2 for 4 consecutives.

Laurie Boswell: odds, multiples of 3, multiples of 5.

Mark Phipps: Powers of 2 are the problem, others can we do them all?

Katherine Stanford: Any number that can be arrived at through \(2x=1, 3x+3, 3x+6\)T and so on.

Cindy Vaquero: hello? I can’t hear anything.

Dave Hankin: Sum is divisible by 3.

Jenny Sagarillo: 12 is nonprime and it doesn’t work.

Carole Castonguay: You can find the smallest one of each series by adding the number of addends to the next one to the smallest number of the previous series.

Maria Dolores Estravez: 10, 14, 18, 22,.. can be written as sum of four consecutive whole numbers.

Elizabeth Wertenberger: triangular numbers and odd numbers.

Ma Cecilia Francisco: even+odd=odd.

Claudia O'Keefe: The only ones I can't find are powers of 2.

Todd Craver: 4 consecutive numbers are always even.

Jacques Ludman: most of them.

Mike Cooke: multiples of 5, 7, 9, 11, ...

Sydna Eastman: 6, 10, 28, 36 are the first evens correct?

Drew Brammell: Multiples of 3.

Tim Bobay: Copy of chat would be helpful.

Faith Valentine: Two consecutive - Odd Numbers greater than 1.

Three consecutive - multiples of 3.

Michelle Webb: numbers greater than 2.

Laurie Boswell: guessing multiples of odd numbers.

[Moto G (5... (657)]0: look for ones that can't.

Chris Paulison: 4 doesn't.

Haley Rauch: agreed copy of the chat would be great.

[Moto G (5... (657)]0: 8 can't...

Fran Huntoon: Well, if you have three consecutive numbers then it's a multiple of three.

Michelle Webb: I think my screen is frozen.

Hoang Nguyen: 9=2+3+4 and 9 = 4+5.

Barbara Manley: Do we want any configuration of consecutive numbers? Like only using groups of 2 or 3 consecutive numbers, or could we use more?

Cynthia Bell: I appreciate SS who would just pick consecutive...
integers add them together to answer the problem as well

Chris Paulison: odds + multiples of odds?

Tracie Skok: multiples of three if you are adding 3 consecutive numbers

Konnie Guthrie: All odd numbers = 2n - 1

Katherine Stanford: Wouldn’t it be just about any of them?

Michael Brown: 1+2+3=6, 2+3+4=9, 3+4+5=12, 4+5+6=15, 5+6+7=18....
I'm seeing multiples of 3, n+(n+1)+(n+2)=3n+3

paloma carrera: 9 and 15 have multiple ways

Ronald Austria: 9

Joanne Wilson: Great session...need the website

Anne Feeney: I'm looking at the ones that don't work- 1, 2, 4, 8, etc

Michael Chrzan: Odds and their multiples

Faith Valentine: Four consecutive = 10+4n

Tricia Percival: Can't do powers of 2

Patrick Montague: everything but non powers of 2

Kristina Grannan: all but 0 or 2

Ronald Austria: 9 = 4+5

Tracie Skok: If adding two consecutive #s, I see odd answers

Jacques Ludman: All except powers of 2, perhaps.

Peter Duong: n + (n+1) = 2n +1 --< any odd number

paloma carrera: 11=5+6

Dave Hankin: sum of individual numbers is divisible by 3

Cecilia Lopez: You can't write 4

Melanie Doody: multiples of odd numbers

Alison Jo Frost: Try 23 for your rule

Rebecca Peiffer: consecutive sums of 5 numbers are all multiples of 5

Haley Rauch: even numbers don't work bc you can cut them in half so you would have consecutive even numbers summing to an even number for example

Michelle Webb: 1+2+3 is 5 which isn't a multiple of 3

Fran Huntoon: The same is true for the multiples of the sum of an odd number of numbers

Nithya Soundararajan: Powers of 2 cannot be written

Saul Gonzalez: 4n +1 where n is a positive integer will always give you a sum of a whole number of TWO consecutive whole numbers

paloma carrera: 8 does not work either

Carole Castonguay: What if you include 0

Mark Phipps: Or 32?

Peter Duong: Any odd number can be written as n + (n+1)

Aya Zvaigzne: count by 2s then sum is with two consecutive numbers

Larelle Hendon: all except powers of 2.

Beverly Krumpe: 2+3+4+5=14

Meredith Arthur: can you use negatives?

Jean Young: all odds at least

James Overbey: Even #s can’t be written as a consecutive sum

Jennifer Hagman: Interesting extensions – when you allow negative integers to be used as well
Faith Valentine: $-1 + 0 + 1 + 2 = 2$

Mike Cooke: Don’t seem to be able to do powers of 2

Olivia Wissinger: what about if you include negative numbers

Haley Rauch: how many terms are we limiting ourselves to?

Nithya Soundararajan: POWERS OF 2 CANNOT BE WRITTEN

Aya Zvaigzne: count by 3s then sum is with three consecutive numbers

Fran Huntoon: negatives are not considered whole numbers

Dulce Davidson: 1, 3, 5, 6, 7, 9, 11, 12, 13 so many possibilities

Aya Zvaigzne: i want to try this with a sum of four

Ange Kendall: Prediction...do prime numbers not work?

[Moto G (5... (657)]0: multiples of 2?

Aya Zvaigzne: yes

paloma carrera: not 15

Wendy Kraft: not 1

W Tad Johnston: yes true

Fran Huntoon: yes

Merrellyn Banks: except 1

Rebecca Peiffer: Not 1

Michelle Webb: not 3

Jennifer Woods: 3,6,10,15,21,28,36,45,55,66,78,91,105,120 ...

Fran Huntoon: 1 = 1 + 0

[Moto G (5... (657)]0: yes all odds can

Michael Chrzan: 1+2 = 3

Elizabeth Ruiz: yes 3

Lisa Piandes: Odd can be with two consec

Mike Cooke: odd numbers can be done with two values: n and n+1

Katherine Stanford: It’s not just odd because 6 and 10 work.

Gloria Flores: Not 1

W Tad Johnston: 0 is whole so 1 + 0

Tanya Landry: not powers of 2?

Veronica Ross: Looks like prime numbers

Ronald Austria: 6 + 7 + 8 = 21 and 10 + 11 = 21

Rachel Slezak: Yeah because n + n + 1 = 2n + 1 which is just odd numbers

Daniel Seif: all odds except 1 can be done in pairs

Cecilia Lopez: can’t write 2

Vittorio Ciummo: 1 = 0 + 1

Gordon Jones: except 1

Carole Castonguay: Multiples of 6 work

Ann Martin: 24

Kendall McCadams: I think there is a number beyond which all can be written as a consecutive sum?

W Tad Johnston: so much for the multiple of 3 idea!

Gordon Jones: $2^0=1$ son cant be done

Nithya Soundararajan: Powers of 2

Cynthia Bell: 26

Rebecca Peiffer: mind blown

Jennifer Hagman: @Kendall - thinking about powers of 2 not working..so thinking there isn’t a stopping point..
Brenda Carvalho: yes powers of 2
Aya Zvaigzne: awesome cool
W Tad Johnston: For even numbers, you need an odd number of addends
Cathy Kim: Click on the 3 dots... you can save the chat.
Pamela Goodwin: can't be even with just two numbers
W Tad Johnston: so 20, as a multiple of 5 uses 5 terms
Rachel Slezak: If you add n + n + 1 + n + 2 it's always a multiple of 3 because 3n+3
Aya Zvaigzne: thanks for the save chat tip
Mark Phipps: Rectangles
Kelley Nelson: Nice to bring elementary in. Need to start problem solving there.!
Dulce Davidson: even numbers that are multiples of 3
Rachel Slezak: visual models helpful for ELs too
Angela Tseng: your orientation will matter for lower grade levels
Olivia Wissinger: extension: what if we include negative numbers?
Meredith Arthur: negatives
Hawley Agee: even numbers with odd factors that are not 1
Konnie Guthrie: I love that question.
Marcel te Bokkel: are these also called polite numbers?
Konnie Guthrie: Is 15 the first number that can be represented in more than one staircase?
Julianna Messineo: Anything that can be represented 3n+3 where n is a whole number
W Tad Johnston: 28 works, 28/7 = 4, 4 is middle term 1,2,3,4,5,6,7
Paloma Carrera: 9 is the first one
Maria Dolores Estravez: Find their factors. For example, 15 can be done two ways: 3 consecutive and 5 consecutive
Delia Kwon: then we would look at integers
Michael Chrzan: Nope. 9 = 4+5 and 2+3+4
Maryn Foote: Oh indeed for my middle schoolers
Vittorio Ciummo: In the previous problem, is I : II : III : IV = 1 : 2 : 4 : 5
Jennifer Woods: Is there a certificate as well?
Faith Peddie: The certificate will be linked in this chat box in the last five minutes
Chonda Long: 2nd Handout will be available with the recording at www.nctm.org/100
Christine Suurtamm: There will be a link to a certificate at the end as well.
Jolene Peterson: I love that you persevered, Vittorio.
Maria Dolores Estravez: Nah.. I don’t think that works for all numbers
Faith Peddie: The handout will be available with the recording at www.nctm.org/100 (tomorrow)
Chonda Long: Yes, we will be sharing the link to the certificate soon.
Carole Castonguay: how long are handouts and presentations available on nctm
01:38:04  Danife Palisoc: 1/2
01:38:22  Carmela Minckler: .5
01:38:29  Chonda Long: The handouts and presentation will be free to the public until the St. Louis Annual Meeting
01:38:36  Chonda Long: They will then be available to NCTM Members
01:38:39  Carole Castonguay: FAB!
01:38:49  W Tad Johnston: Looks like drawing more tangents would be a good start
01:38:53  Chonda Long: The handout will be available tomorrow with the recording at www.nctm.org/100
01:38:53  Kimberly Brown: Is there a way to get the zoom chat. The ideas are WONDERFUL, I would like time to read them later
01:39:04  Chonda Long: The chat will be posted with the recording
01:39:10  Liz Means: Faith, will you be emailing the participants for the 2nd handout or do we need to go to the NCTM site tomorrow? Thank you
01:39:20  Faith Valentine: You can click the 3 dots and click
01:39:26  Kimberly Brown: thank you Chonda
01:39:27  Faith Valentine: 'save chat'
01:39:27  Faith Peddie: The handout will be on the NCTM site tomorrow!
01:39:31  Faith Peddie: www.nctm.org/100
01:39:43  Liz Means: Thank you
01:40:03  Faith Peddie: Here is the link to the certificate of participation for tonight’s presentation:
01:40:13  Joanne Wilson: thanks for the knowledge
01:40:31  W Tad Johnston: nice one to put on a bulleted board and leave spaces for solutions
01:40:38  Chonda Long: Here is the link to the certificate of participation for tonight’s presentation:
01:40:46  Angela Tseng: 8
01:40:46  Javier Ruiz: Thank you :)
01:40:46  Tiffany Gallagher: Love that Tad..an interactive bulletin board
01:40:47  Christine Suurtamm: great idea!
01:40:51  Jennifer Hagman: Well you can certainly bring 8
01:40:55  Faith Peddie: Please note that the certificate will not be emailed to you tonight. Please copy and paste the link into your browser. Here is the link to the certificate of participation for tonight’s presentation:
01:40:55  Liz Swerling: 5 and 1
01:40:58  Mike Murphy: 8
01:41:05  Pamela Woodbury: you could bring back 5 gallons
01:41:16  Jennifer Hagman: 3
01:41:22  Amy Robinson: 10
01:41:37  Chonda Long: Here is the link to the certificate of participation
for tonight’s presentation:
www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars_and_Web
casts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf

01:41:39        Amy Tucker:    12
01:41:52        David Barnes:  Please note that the certificate will not be emailed
to you tonight. Please copy and past the link into your browser. Here is the link to
the certificate of participation for tonight’s presentation:
https://www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars
_and_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf

01:42:40        Rebecca Peiffer:      my mind is still blown by the staircase
numbers. Adding an odd number of consecutive numbers always results in a multiple
of how many numbers you're adding (example: adding 3 consecutive numbers leads to
multiples of 3, 5 consecutive leads to multiples of 5, 11 consecutive numbers leads
to multiples of 11...)
01:42:42        Faith Peddie:  Please note that the certificate will not be emailed
to you tonight. Please copy and past the link into your browser. Here is the link to
the certificate of participation for tonight’s presentation:
https://www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars
_and_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf

01:42:48        Ashlee Treadway:     I love this problem
01:42:49        Sandhya Raman:   Wonderful problems Mike! Thanks for sharing
01:42:49        Roberta Ludwigsen-Hill: These are Marvelous problems!
01:43:30        Delia Kwon:      similar
01:43:38        Dan Robinson:   Nice Problems 😊
01:43:39        Olivia Wissinger:   wonderful tasks to get students
talking/thinking!
01:43:41        Mohamed Jamaludeen Thirapusa Mohaideen: Thanks for the awesome
problems!
01:43:44        Carmela Minckler:   aren’t they similiar
01:43:57        Cindy Parrott:   Thank you!
01:43:57        peter zirnis:  congruent??
01:43:59        Chonda Long:   Here is the link to the certificate of participation
for tonight’s presentation:
www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars_and_Web
casts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf

01:44:00        Leslie Texas:    Love the problems. Thanks for sharing!
01:44:17        David Barnes:  Please note that the certificate will not be emailed
to you tonight. Please copy and past the link into your browser. Here is the link to
the certificate of participation for tonight’s presentation:
https://www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars
_and_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf

01:44:20        Tina Hill:      Hi, Leslie Texas!
01:44:38        Leslie Texas:   Hi Tina Hill :)”
01:44:39        jeanine colwell:  amazing seminar, great ideas, wish he had a book
Michael Chrzan: Thanks for these problems! Appreciate that there’s still a space for math for math sake and not all application.

Angela Tseng: @Peter, I think they are similar.

Beth Kobett: I love the point of problems that age well. So true!

peter zirnis: correct!!!

Maryn Foote: These types of problems are way more interesting for students during remote learning...

Cindy Bryant: Yes, love PTPs!

Cathy Kim: This isn’t all math - but if you haven’t seen these before, you might enjoy: https://www.youtube.com/results?search_query=ted+ed+riddles

Kristine Butz: Thank-you for sharing!!

Maryn Foote: I love that something doesn't have to be solved in under 3 minutes!!!

David Barnes: Please note that the certificate will not be emailed to you tonight. Please copy and past the link into your browser. Here is the link to the certificate of participation for tonight’s presentation:


Wahyuni Mailili: thanks you

Denise Quarles: Thank you – used to use these problems from time to time in class – time to get back to them.

Maria Dolores Estravez: Thanks!!!

KEISHA SMITH: Thanks

Mary Anne Opila: Thank you!

Delia Kwon: thank you

Hoang Nguyen: Thank you!

Maryn Foote: Thank you for your time in preparing and sharing.

Sharon Ling: Thank you!

Kristina Grannan: Thank you!

Katherine Rossignuolo: Thank you!

Marilu Deal: Thank. Really wish we did more geometry in Ontario.

Amanda Helgerson: Thank you!

Benjamin Sinwell: Thanks Mike!!!!

Gloria Flores: Thank You

Emily Volk: Thank you

Kim Ellis: Thank you again.

Lisa Hurst: Thank you!

Sharon Laahs: Thank you!!

Kelli Epperson: Thank you very much!!

Fran Huntoon: Thank you Mike for allowing us the time to think and try problem solving

Jonathan Abellera: Thank you!

Liz Means: Awesome!! Thank you so much!

Rachel White: Thank you. Great variety of word problems.

Tiffany Gallagher: Great information Mike...thank you!

Sandhya Raman: And the link?

Sandhya Raman: yeahh
01:46:17 Mirasol Laberinto: Thank you very much
01:46:22 Cynthia Bell: can this link be put in the chat
01:46:24 Pamela Goodwin: Thank you! Great webinar!
01:46:30 paloma carrera: Thank you!
01:46:33 Sara OConner: Thank you for all the amazing ideas and allowing us to work on them!
01:46:33 Teresa Barut: Thank you, Mike. Really great stuff!! 😊
01:46:33 Amy Tucker: https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/Problems-to-Ponder/
01:46:33 Dr. Brown: Thank you! Great webinar Mike.
01:46:34 Wilson Chen: thank you
01:46:36 Tim Bobay: Thank you!
01:46:37 Sandhya Raman: Can you put the link in chat please?
01:46:40 Claudia O'Keefe: Thank you Mike and NCTM/100 Thes have been great!
01:46:40 Sandhya Raman: Thanks amy
01:46:41 Amy Tucker: https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/Problems-to-Ponder/
01:46:42 Jenny Cheng: Thank you, Mike!! Great webinar. LOVED the problems.
01:46:43 Sharon Black-MacKinnon: Thank you
01:46:48 Amy Tucker: 😊
01:46:48 Saul Gonzalez: Thank you for the webinar!!
01:46:49 Tanya Landry: Thank you. I've enjoyed this.
01:46:51 Danife Palisoc: Thank you!
01:46:52 Rita Shamrock: Thank you
01:46:55 Pamela Liegl: Thanks, I love PTP,
01:46:56 Roberta Ludwigsen-Hill: This has been incredible! So many rich problems to share!! Thank you!
01:46:59 Kathleen Bulmer: Thank you very much
01:47:01 Diana Telders: Thank you
01:47:03 Tara Schneider: Chonda, I see tonight we click on a link to get certificate, what about last nights The Future of Mathematics?
01:47:03 Prerana Sanghavi: Thank you it was a wonderful webinar with excellent and enriching content
01:47:07 Teresa Suazo: Thank you so much Sir Mike!
01:47:10 James Overbey: Appreciate your guidance
01:47:11 Nithya Soundararajan: Thank you so much Mr. Shaughnessy
01:47:12 Amy Tucker: Thank you! This is fun!
01:47:12 Beth Kobett: Thank you so much, Mike! What a great session!
01:47:12 Cynthia Bell: thanks
01:47:13 Kelley Nelson: Awesome. I suggest that you take a picture of the site.
01:47:14 Jennifer Zane: thank you
01:47:15 Cecilia Lopez: Thank you Amy
01:47:17 Kimberly Brown: Thank you!!!
01:47:18 Haley Rauch: Thanks!!
01:47:20 Kathryn Prater: Thank you!
01:47:21 Shannon Otey: Thank you! This was great and I enjoyed the PTP
Faith Peddie: Please note that the certificate will not be emailed to you tonight. Please copy and paste the link into your browser. Here is the link to the certificate of participation for tonight’s presentation:


Catherine Anderson: Thank you so much!
Daniel Irving: Thank you for this incredible presentation!
Laurie Boswell: Thank you Mike!!
Carole Castonguay: Thanks, thanks thanks.
dana dulzo: thnak you so much
KEISHA SMITH: Thank you!!!
Roberta Ludwigsen-Hill: Will a copy of the slides be included?
Laura Kaplan: I Googled "NCTM Problems to Ponder" and it came right up
Sandhya Raman: Thanks a lot all
Ashlee Treadway: Thank you - I will be sharing the recording with colleagues
Melanie Doody: Very cool! Thank you!
Sreevelmurugan Vamadevan: Thanks Mike for a wonderful presentation
sabrina reed: thank you
Beth Kobett: Thanks for sharing such a great gold mine of problems! Love it! There are so many wonderful member benefits!
Monica Roland: Thank you!
Dulce Davidson: Thank you so much Mike!
Rebekah Matthews Sousa: Thanks
Angela Tseng: Thank you professor!
Gabrielle Gentile: Thank you
Maria Dolores Estraviez: Great webinar!!!
Julie Saba: Thank you!
Jacques Ludman: I love that you didn't tell us the answers!
W Tad Johnston: Thanks!
Kelley Nelson: Excellent webinar.
Fran Huntoon: Chonda, thank you for making all of this run so smoothly!
Kim Adkins: Thanks!!
Mike Murphy: Loved it. Thought provoking
Delia Kwon: Thank you! Loved the problems
Saira Ali: Thank you!
Marilu Deal: What a delightful evening! Thank You!
Johnathan Silvas: Thank you Mike!
Diane Thole: Really enjoyable!
Amy Robinson: Thank You
NICOLE RIGELMAN: Thank you Mike :))!
Veronica Kwok: Thank you so much for the resources
Anne Feeney: Thank you, I got a lot of great info!
Sindhu A Muralidharan: Thank you so much.
Shawn Middleton: Thank you Mike. Greatly appreciated!
01:48:22 Jenny Rolling: thank you!
01:48:22 Olga Kosheleva: Thank you.
01:48:23 Phyllis Creech: Thank you
01:48:23 DawnMarie Gaghan: Thank you! Great Webinar!
01:48:25 Elizabeth Gentes: THANK YOU! I am moving into a department head position next year and this is exactly the type of thing I want to encourage our department to work on with students.
01:48:25 Katherine Stanford: Thank you so much. This has been the most useful session I have attended!
01:48:25 Vicki Roman: Thank you!
01:48:26 Myra Collins: This was great! I mostly work with elementary students and I got some great ideas as well as some problems I can use. The hour went FAST!
01:48:27 Meredith Arthur: thank you!
01:48:27 Jacques Ludman: Excellent webinar; thanks.
01:48:28 Gloria Flores: Thank You Mike
01:48:28 Stephanie Bell: Thank you so much!
01:48:29 Jenny Kim: Thank you soooooo much!
01:48:30 Nora Chase: Thank You
01:48:31 Aya Zvaigzne: Thank you most kindly, this seminar was beyond excellent !!!!!!
01:48:31 Pamela Woodbury: thank you
01:48:32 Javier Ruiz: This presentation was wonderful, thank you
01:48:32 Jennifer Gailey: Thanks
01:48:32 Menchie Besa: Thank you so much.
01:48:34 Leslie Texas: Fun evening!
01:48:34 Jenny Kim: This was WONDERFUL!!!
01:48:35 Jet Yeung: Thank you for the informations
01:48:35 Benjamin Sinwell: Thanks again Mike!
01:48:36 Teresa Barut: Thank you to Christine and Chonda, as well!!
01:48:37 Jolene Peterson: Thank you so much!
01:48:38 Bryan Bagala: Thank you!
01:48:38 Lisa Piandes: Thank you for the great problems!
01:48:38 Honey Sacro Swem: Thank you so much for all these great ideas.
01:48:39 Daniel Seif: fantastic .... I got so much out of it... thank you
01:48:40 MARDONIO FIGUEROA: Thank you so much
01:48:42 Beth Kobett: really Wonderful! Loved the engagement!!!
01:48:43 Joyce Meier: Thank you!
01:48:45 Pascal Despeignes: Thank you
01:48:46 tanja solano: Thank you! Great webinar!
01:48:47 Dave Hankin: Thank you... Great as always!!
01:48:48 Maria Padiernos: Gracias!
01:48:49 Penina kamina: Thanks Mike
01:48:52 Jennifer Woods: Thank You Mike!
01:48:53 Tammy Gelenaw: thank you to everyone involved! Your passion for math shines through
01:48:53 Ashlee Treadway: I have always enjoyed your contributions to the teaching of math!!!
Beverly Krumpe: Thank you
Patrick Montague: Thanks, love the problems.
Cathy Kim: Thank you!
Enkelejda Limani: is there a link to a certificate?
Sun Lee: thanks mike
Faith Valentine: Thanks :)
Noe Eugenio: Thank you very much Mike!!! I enjoy this session. :) 
Sharon Hunt: Thanks!
Said Chatir: Great webinar. Thank you!
Ange Kendall: This is just what I have been looking for. Thank you for the gift of questions as well.
Ronald Austria: Thank you very much!!!
dawn geshwender: Thank you very much! These will be great for my herd!
Tina Hill: Thank you!
Christina Tully: This was super useful! My kids love a challenge right now in the distance learning time. They like to keep their minds on something other than the fact that we can’t meet in person.
Trena Wilkerson: Thank you Mike!! Great problems and resources!
Mike Cooke: Thank you so much from Summerland, British Columbia. I was sorry not to be able to attend the Chicago conference but this has gone a long way to making up for the disappointment
Hong Pun: --Thank you... considering this for the beginning of the next school year
Rita Kwong: Thank you! Theses are great idea!
Jennifer Woods: I'll be there.
Holiday George: Thanks!!
Angela Tseng: I'll be tehre!
Konnie Guthrie: i really enjoyed this session.
Cindy Bryant: THANK you Mike!
Konnie Guthrie: Very usefull.
Michael Brown: My students might not like them... at first
Johnathan Silvas: Thank you Christine!
Joce Masasi: wonderful presentation-thank you and thank you for sharing your bank of problems
Johnathan Silvas: Thank you Chonda!
Pamela Goodwin: will the certificate be emailed?
Abir Akil: Thank you very much.
Jennifer Heldenbrand: Thank you for taking your time to share.
Thank you to NCTM folks for always being available and making these sessions available.
Sreevelmurugan Vamadevan: Will the district support us to join NCTM
Hawley Agee: Thank you!! Going to share this with my secondary education professors and classmates at Clemson University! We follow Principles to Actions and Habits of the Mind in our course work too! Loved this!!
peter zirnis: thank you
Faith Peddie: Please note that the certificate will not be emailed to you tonight. Please copy and past the link into your browser. Here is the link to
the certificate of participation for tonight’s presentation:


01:50:13  peter zirnis:  everyone keep safe
01:50:20  peter zirnis:  good night
01:50:26  Rizza Casabuena:  Thank you very much!
01:50:27  Gloria Flores:  Stay Safe
01:50:28  Merrellyn Banks:  Thank you
01:50:31  Maryn Foote:  Bye everyone. Stay well.
01:50:32  Maria Dolores Estravez:  Thank you! Thank you all and be safe!
01:50:33  peter zirnis:  thank you so much great work
01:50:38  Teresa Barut:  bye bye
01:50:38  Charles Clark:  thank you
01:50:39  Dan Robinson:  thanks
01:50:40  Delia Kwon:  Good night
01:50:42  Deborah Chapdelaine:  please post that link again to the problems