

00:44:47 Sharon Black-MacKinnon: Good evening from NB Canada  
00:44:55 Lesly Brown: Good evening from Knoxville TN.  
00:44:58 Leslie Texas: Hi from Louisville, KY  
00:45:00 jeanine colwell: hello from eastern north carolina  
00:45:03 BillyJean Smith: Hello from Lincoln DE  
00:45:05 David Barnes: Hello from Lansdowne, VA  
00:45:07 Tina Hill: hello from northeast TN  
00:45:07 Kelley Nelson: Hello from Kuwait. No sound.  
00:45:08 Haley Rauch: Hi from NYC!  
00:45:09 Konnie Guthrie: Hello from Las Vegas, NV  
00:45:10 Patrick Montague: Hello from Weslaco, TX  
00:45:11 Olivia Wissinger: hello from Pennsylvania!  
00:45:12 Chris Paulison: Hello from Westchester NY!  
00:45:12 Mohamed Jamaludeen Thirapusa Mohaideen: Good evening ! This is  
Mohamed from CT.

00:45:15 Dr. Brown: Hello from Jackson, MS  
00:45:15 Fran Huntoon: Hello from VT  
00:45:16 Esther Winikoff: hello from Baltimore!  
00:45:16 Rebeka Matthews Sousa: Hello from Bermuda  
00:45:16 Barbara Manley: Hello from Jackson, TN.  
00:45:17 Will Roberts: Hello from Little Canada, MN  
00:45:17 Bruce Graham: Hello from Durham NC  
00:45:17 Amy Tucker: Hi from Wayne, Maine  
00:45:17 W Tad Johnston: Hi from DC  
00:45:18 Rachel White: Hello from Southern Maine.  
00:45:20 Joyce Meier: Hello from Crystal Lake, IL  
00:45:20 Lisa Piandes: Hello from cloudy New Hampshire!  
00:45:20 Dane Dwyer: Hello, from Wiscasset, Maine  
00:45:20 dana dulzo: hello from novi mi  
00:45:21 Stephanie Caragher: hello from nh  
00:45:22 Drew Brammell: Hello from Georgetown, KY  
00:45:23 Prerana Sanghavi: Hello from Mumbai, India  
00:45:23 Cindy Bryant: Greetings from Springfield, MO!  
00:45:24 Michelle Webb: Hi from Nashville TN  
00:45:24 Katherine Stanford: Hello from Farmington, New Mexico!  
00:45:25 Teresa Barut: Hello from MASSACHUSETTS!! 😊  
00:45:25 Jeff Shih: Hi from Las Vegas, NV  
00:45:26 Michael Lanstrum: Welcome from Cleveland, Ohio  
00:45:26 Wilson Chen: Hi good evening, from Boston, ma  
00:45:26 Maria Dolores Estravez: Good evening, everyone.  
00:45:27 Jacob Watford: Hello from Mobile, AL.  
00:45:27 Phyllis Creech: Hello Phyllis from Savannah, GA  
00:45:28 Chonda Long: Handout for Mike's session is at  
<https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf>

00:45:28 Claudia O'Keefe: Hello from Buffalo, NY!  
00:45:30 Mary Johnson: Hi from Pensacola, FL  
00:45:30 Ruth Glasgow: Hello from Sydney Australia  
00:45:32 Alison Jo Frost: Hello from Beckley WV  
00:45:32 James Sullivan: Greatings from Sacramento, CA

00:45:32 Richard Pieper: From Rexburg, ID  
00:45:32 Tiffany Gallagher: Hello all from Northern New Jersey  
00:45:32 Necole Atkins-Dowd: Hello from Las Vegas, NV  
00:45:33 Pamela Goodwin: Hello from NJ  
00:45:33 Laura Kaplan: Hello from Chicago!  
00:45:33 sabrina reed: hello from Nashville tn  
00:45:34 Joce Masasi: Hello from Omaha, NE  
00:45:34 Diana Telders: Hello from Raymond, WA

00:45:34 Jolene Peterson: Hello from Kansas!  
00:45:35 Nithya Soundararajan: Hello  
00:45:36 Jason Wright: Hello from Howland, Maine  
00:45:36 Eme Grace Suarnaba: hello everyone!  
00:45:36 Michael Brown: Hi from Cumberland Rhode Island  
00:45:37 Charles Clark: Hi from Casa Grande Arizona  
00:45:39 Sharon Engle: Hello from the Pocono Mountains of Pennsylvania!  
00:45:39 Christina Tully: Las Vegas, NV  
00:45:39 DawnMarie Gaghan: Hello from Long Island!  
00:45:40 Jonathan Abellera: Good evening! from Pecos, TX  
00:45:40 Tina Hill: A good mathematics problem contains critical  
thinking  
00:45:41 Emily Zegura: Hello from Loreauville, LA!  
00:45:41 David Barnes: Handout for Mike's session is at  
<https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf>  
00:45:42 ReyceI Pacaanas: hello from shiprock nm  
00:45:42 Konnie Guthrie: The answer is not immediately obvious.  
00:45:42 Jenny Sagrillo: Hi from Milwaukee WI  
00:45:43 Kimberlee Margosian Ruelas: Hello from Monterey, California  
00:45:43 Marwa Ali: Hello, from north virginia  
00:45:43 Modena Paulsen: Hello from Tempe, AZ  
00:45:44 Rebecca Peiffer: Hello from Phoenix AZ :)  
00:45:44 Aric Barnes: Hello from Houston, TX !  
00:45:45 Sharon Laahs: Hi from Scottsdale, AZ  
00:45:45 Jorge Veloso: Hi from Dundo, Angola.  
00:45:45 Veronica Kwok: Hello from NYC!  
00:45:46 Joseph Bianchi: Milwaukee, WI  
00:45:46 Tess Wilson: hello from Bardstown KY  
00:45:46 Lorie Huff: Hello from Fayetteville, Arkansas  
00:45:46 Wayne Christmas: Hello from Hutto, TX  
00:45:46 Marissa Bay: Hi from Chicago!  
00:45:47 Gloria Flores: Hello from Texas  
00:45:47 Mike Cooke: Hello all from Summerland, BC, Canada  
00:45:47 Diane Thole: Diane from Bronxville, NY  
00:45:48 Rita Kwong: Hello from Deming, NM.  
00:45:48 Carmela Minckler: Hello from Norwich, NY  
00:45:48 Bryan Bagala: Hi from Westchester, NY  
00:45:48 Cathy Kim: :) Tacoma, WA  
00:45:48 Helen Maurice: NJ  
00:45:49 Erin Meade: hello, from fort Leavenworth KS  
00:45:49 Marilu Deal: Hello From Ottawa, Ontario, Canada!

00:45:50 Jacques Ludman: Hi from New Hampshire, USA  
00:45:50 Kim Ellis: hi from Winter Park, FL  
00:45:50 Kate O'Grady: hello from minnesota  
00:45:51 Aya Zvaigzne: Greetings from Nashville, TN  
00:45:51 Catherine Anderson: Hello from Virginia  
00:45:52 Skip Fennell: Hi from Westminster, MD  
00:45:52 Sydna Eastman: Hi from Richmond VA  
00:45:53 Maryn Foote: Hello from Long Beach, CA  
00:45:53 Christine Rudakewycz: Hello from New York City!  
00:45:53 Shannon Otey: Hello from SeaTac, Washington  
00:45:54 Edward Beard: Buffalo, NY STAND UP!!!!!!!  
00:45:54 James Overbey: Scarsdale, NY  
00:45:55 Tanya Landry: Greetings from Baton Rouge!  
00:45:55 William Speer: Bill Speer Las Vegas  
00:45:55 Said Chatir: Hello from Plainfield, NJ  
00:45:57 Ma Cecilia Francisco: Hi from Arizona  
00:45:57 Ruth Guenther: hello from Pennsylvania  
00:45:58 Kelli Epperson: Hello from Pennsylvania!!  
00:45:59 Rita Shamrock: Rita Senoia, GA  
00:45:59 Amy Robinson: Danville, Illinois  
00:46:00 Delia Kwon: Hello. Delia Kwon. Durham, NC  
00:46:00 Bernabe Avila-Cortez: hello from toppenish wa  
00:46:00 Tim Bartlett: Tim from Lake Stevens, WA  
00:46:01 Miki Ray: Hello from Kalama, WA  
00:46:04 Hong Pun: Hello from San Jose, California  
00:46:05 Jessie Lee: Hello from Cypress, CA  
00:46:06 Ronald Austria: Hello from North Carolina  
00:46:06 Mike Murphy: Hello all!  
00:46:07 sydney long: hello from northern Ky  
00:46:07 Kay Wohlhuter: Hi from MN  
00:46:08 Trena Wilkerson: Hello from Waco, TX!  
00:46:09 Joanne Wilson: Joanne Wilson from Chicago ..CPS  
00:46:09 Nora Chase: Good Afternoon from Scottsdale Arizona, it's 102  
degrees  
00:46:10 Alicia Felton: Alicia Felton, Springfield, Oregon  
00:46:12 Daniel Seif: Hello from Bensalem, Pennsylvania  
00:46:12 Amy Tucker: I see 4 Mainers?  
00:46:13 Kathryn Prater: Hello from Grundy TN  
00:46:14 Lisa Kowalski: Hi from St. Louis  
00:46:15 moto e6: hello from soboston va  
00:46:15 Danife Palisoc: Hello everyone! Danife Palisoc from East Montgomery  
High, NC. Math teacher  
00:46:23 Diane Leighty: Hello from Virginia  
00:46:24 Larry Singletary: Hi from San Antonio TX  
00:46:24 Vicki Roman: Hi from Worcester, MA  
00:46:28 Daniel Irving: Hello from North Providence, RI.  
00:46:32 Kathleen Bulmer: hi from Florence, KY  
00:46:35 David Dai: Happy Wednesday from Mobile, AL!  
00:46:37 Olga Kosheleva: Hello from El Paso, TX  
00:46:38 Peter Omura: What's up, from Woodstock NY

00:46:39 Stephanie Bell: Hello from St Louis MO  
00:46:39 patricia maia: pat from providence ri  
00:46:41 Janice Holland: Hello from Virginia  
00:46:43 Veronica Ross: Hello from Woodville, MS.  
00:46:43 Jenny Cheng: Hello - Jenny from Redwood City, CA!  
00:46:44 Katie Bailey: Katie Bailey from Harnett County, NC  
00:46:49 amy mcdowell: Howdy from Northern Virginia  
00:46:56 Ariane Eicke: Ariane Eicke from Laramie, WY  
00:46:58 Tara Maynard: Hello CRK  
00:46:58 Alfredo Mujica: Hello From Texas  
00:47:00 Michael Chrzan: What up doe?! Here from Detroit, MI.  
00:47:05 Nicole Burgess: Hi Everyone from Nashville  
00:47:05 Menchie Besa: Hello from Jacksonville, Florida  
00:47:06 Deborah Chapdelaine: Howdy from Edmonds WA  
00:47:08 Marilu Deal: Woohoo! Ottawa!  
00:47:08 David Nelson: David Nelson from Bridgeport, Ohio  
00:47:09 Jet Yeung: Hello everyone --Henderson NV.  
00:47:10 Benjamin Sinwell: Hi from Anderson, SC!!!!  
00:47:17 Michelle Yelaska: Hi from Chicago!  
00:47:17 Jean Young: Aloha from Hawaii!  
00:47:20 Tara Maynard: Hello from Grand Rapids, Michigan  
00:47:20 Mary Shortino: Hi from Portland, Oregon  
00:47:21 Abir Akil: Hello everyone, I'm Abir Akil from MI.  
00:47:29 Chonda Long: Handout for Mike's session is at  
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00:47:38 Amy Tucker: I appreciate being able to attend; I would not be able to go to Chicago.

00:47:40 Maria Celeste Rellosa: Hello from from Bessemer City, NC  
00:48:05 Beverly Krumpe: Hello from Paris, TX  
00:48:09 Prerana Sanghavi: yes  
00:48:09 Caitlin Maggi: Hi from NY  
00:48:09 Pamela Goodwin: yes  
00:48:10 Joanne Wilson: yes  
00:48:10 Beverly Krumpe: Yes  
00:48:11 Fran Huntoon: yes  
00:48:12 Leslie Texas: yes  
00:48:12 Kim Ellis: yes  
00:48:12 Marilu Deal: Yes  
00:48:13 Gloria Flores: Yes  
00:48:13 Sharon Black-MacKinnon: yes  
00:48:15 Noe Eugenio: yes  
00:48:15 Ronald Austria: yes  
00:48:16 Abir Akil: yes  
00:48:16 Michael Brown: sounds good  
00:48:16 Joanne Wilson: I can hear you  
00:48:17 Myra Collins: Myra from Greentop, MO  
00:48:20 Ashlee Treadway: yes

00:48:31 Bette Barkley: yes!  
00:48:35 Laura Beth Snoap: hello from holland mi  
00:48:44 Chonda Long: Handout for Mike's session is at  
<https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf>  
00:48:45 Sharon Ling: Hello from NJ!  
00:48:50 Liz Means: Hello from Kansas City, MO  
00:48:57 Rachel Rupnow: hello  
00:48:58 Jeanetta Glass: hi from Memphis, TN  
00:49:02 Kelley Nelson: Can't hear.  
00:49:08 Julianna Messineo: Hello from Austin TX!  
00:49:08 Faith Peddie: Please have this handout open for Mike's session  
Handout for Mike's session is at  
<https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf>  
00:49:08 David Barnes: Handout for Mike's session is at  
<https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf>  
00:49:15 Lesa Turner: Hello from Springfield, TN  
00:49:48 Mary Dugas: hi From Louisiana  
00:49:51 Leslie Texas: yes  
00:49:52 Marilu Deal: yes  
00:49:52 Tiffany Gallagher: yes  
00:49:52 Cindy Bryant: Yes  
00:49:52 Fran Huntoon: yes  
00:49:53 Shannon Otey: y  
00:49:53 Meredith Arthur: yes  
00:49:54 Pamela Goodwin: yes  
00:49:54 Claudia O'Keefe: yep  
00:49:54 Faith Peddie: Welcome everyone and enjoy tonight's session!  
00:49:54 Emily Volk: yes  
00:49:55 Richard Miles: yep  
00:49:55 Will Roberts: yes  
00:49:55 Gloria Flores: Yes  
00:49:55 Sharon Black-MacKinnon: yes  
00:49:55 Ronald Austria: yes  
00:49:56 Kathryn Prater: yes  
00:49:56 Deborah Chapdelaine: yep  
00:49:56 Jan Back: Jan Back from Hampton, Tennessee  
00:49:56 dana dulzo: yes  
00:49:56 Todd Craver: yes  
00:49:56 Joanne Wilson: yes  
00:49:57 Kim Ellis: yes  
00:49:57 Maria Dolores Estravez: yes  
00:49:57 Wayne Christmas: yes  
00:49:57 Liz Means: Yes  
00:49:58 Barbara Boschmans: Yes  
00:49:58 Jacques Ludman: 5 by 5  
00:49:58 Javier Ruiz: Yes  
00:49:59 Amanda Mills: yes  
00:49:59 Wilson Chen: yes  
00:49:59 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

00:51:35 Christine Tabor: Real life

00:51:37 Laura Cranmer: linked and relevant to their lives

00:51:38 Fran Huntoon: WE can't see your screen

00:51:41 Mary Anne Opila: real life

00:51:42 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

00:51:43 Leslie Texas: Open ended and interesting

00:51:43 Lisa Piandes: scaffolding problems

00:51:43 Ma Cecilia Francisco: open ended

00:51:43 Michelle Yelaska: When the problem has more than one way to get to the solution

00:51:44 dana dulzo: multi facted problems

00:51:44 Kim Ellis: when people talk about amongst themselves and talk to others outside the classroom

00:51:44 Danife Palisoc: every living

00:51:46 Amy Tucker: Many ways to solve

00:51:46 David Barnes: low entry and high ceiling

00:51:46 Gloria Flores: Higher thinking problems

00:51:46 Denise Quarles: What do they say..high ceiling, low floor – entry points for all students.

00:51:46 Carmela Minckler: hands-on, open ended, real life

00:51:48 Mary Shortino: language is accessible. visual supports to understand

00:51:48 Charles Clark: Real world word problems

00:51:48 Diane Davis: multiple representations

00:51:48 Rachel White: Real world and open ended

00:51:49 Catherine VanNetta: can be represented in multiple ways

00:51:49 Jason Wright: Problems that have an application to something in the student's lives.

00:51:50 Katherine Stanford: Something real life that has value and meaning for them,

00:51:50 Christina Tully: Questions posed as challenges

00:51:50 W Tad Johnston: it's clear when you have a solution so one can reflect

00:51:51 Ma Cecilia Francisco: real life

00:51:51 Eme Grace Suarnaba: practical examples

00:51:52 Todd Craver: Questions that students want to solve - have an interest in

00:51:55 Matthew James: hello from west of Boston

00:51:56 Aric Barnes: Problems that make them "notice" and/or "wonder"

00:52:01 Nithya Soundararajan: Anything related to their interests and that involves critical thinking with multiple strategies

00:52:01 Monica Roland: Good evening from Savannah, Ga

00:52:04 Denise Quarles: Something that they can connect with

00:52:08 Kelley Nelson: Questions that relate to their world.

00:52:08 dana dulzo: place based problems from the community

00:52:09 Julianna Messineo: When I understand what the problem is asking/can visualize it

00:52:11 Nicole Burgess: probems 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; ones 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 tonight! <https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf>

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 Amy Tucker: 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 Sampson 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: <https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf>

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: <https://www.nctm.org/uploadedFiles/Problems-to-Ponder-Handout-1%20.pdf>

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 zirniss: 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 Gabrino: 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 Wissinger: 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 Eme 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

01:06:41 Faith Valentine: I drew a picture.  
01:06:42 Eric Schmidt: 72  
01:06:42 Olivia Wissinger: drew a picture of 8 seats and counted the  
options  
01:06:43 Marissa Bay: 72  
01:06:43 Sharon Ling: 72  
01:06:44 Beverly Krumpe: Drew a picture, got 72  
01:06:44 Elizabeth Gentes: I drew it out  
01:06:44 Cynthia Bell: I started by making a model in my head  
01:06:44 Wilson Chen: 72  
01:06:46 Ashlee Treadway: 10 less 1 choose 2  
01:06:46 Tara Maynard: a picture is needed for sure!  
01:06:47 Pamela Goodwin: I drew a picture  
01:06:47 Caitlin Maggi: I drew it out  
01:06:48 Christina Roe: I drew a line of 10 dots and looked at where player  
2 would sit based off where player 1 was  
01:06:49 Gloria Flores: Draw it out  
01:06:50 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  
01:06:50 Barbara Boschmans: Find a pattern with 1 seat in between, 2  
seats in between. etc.  
01:06:51 Helen Maurice: 72  
01:06:51 Jorge Veloso: 72  
01:06:51 Amy Robinson: 36- I cheered and used my figures  
01:06:52 Jennifer Heldenbrand: Started with a drawing  
01:06:53 Rachel White: I drew a picture  
01:06:53 Katherine Raiguel: I drew a visual  
01:06:53 Ashlee Treadway: combinatorics  
01:06:53 Casey McGrath: I drew a picture of 10 seats and started on the left  
01:06:53 Elizabeth Wertemberger: I always have to start with a picture  
01:06:53 Christina Tully: I drew a picture  
01:06:54 Menchie Besa: 72  
01:06:54 Elizabeth Gentes: I found a pattern after 3 rows and went from  
there  
01:06:54 Olivia Wissinger: sorry drew 10 seats and counted options  
01:06:54 Mary Anne Opila: drew a picture  
01:06:54 Rebeka Matthews Sousa: how far apart do the people have to sit  
01:06:55 Veronica Kwok: I drew a diagram  
01:06:55 Jill Perry: people can also hold up their responses:  
01:06:56 Jeanine King: I drew lines to represent the seats  
01:06:56 Meredith Arthur: draw a picture  
01:06:56 Gabrielle Gentile: I drew 10 blanks to represent the 10 seats  
01:06:56 Carole Castonguay: I thought about having them 1 seat apart,  
then 2 seats apart, then 3 seats apart  
01:06:57 dana dulzo: draw a picture  
01:06:57 Anne Feeney: I drew out 10 spots and started putting people in  
01:06:58 Kim Adkins: I drew a picture  
01:06:59 Pamela Woodbury: I made ten little lines  
01:06:59 Joseph Bianchi: I drew out a diagram and counted  
01:06:59 Dr. Brown: I Initially drew a pic.

01:06:59 Michelle Yelaska: draw a picture with different numbers of seats in between

01:06:59 Mirasol Laberinto: picture is needed

01:07:00 Becky Zielinski: drew a picture

01:07:01 Noe Eugenio: Draw 10 circles and count

01:07:02 Fran Huntoon: Drew a diagram then ordered the seats

01:07:02 Tiffany Gallagher: As an original elementary teacher, I would draw a picture or model with manipulatives

01:07:02 Chi-Man Ng: I drew a picture with 10 boxes then I just used 1 arrow to designate 1st person

01:07:02 Dulce Davidson: Picture

01:07:02 Katherine Rossignuolo: picture

01:07:02 James Overbey: Combination. 8C2, since they can't sit next to each other?

01:07:03 Bruce Graham: I drew a picture and counted spots while looking for a pattern in the numbers

01:07:03 W Tad Johnston: set an act it out - a list

01:07:03 Carmela Minckler: You can try to draw a picture.

01:07:05 Jenny Sagrillo: Made a table, sort of

01:07:06 Linda Thommen: First, determine how many ways there are is A sits in seat #1.

01:07:06 Teresa Barut: Drew a picture and found pattern

01:07:06 Daniel Seif: paired up with at least 1 seat apart

01:07:07 Michael Brown: 10 choose 3 times 2

01:07:07 Lisa Rogers: I drew a picture and made a chart

01:07:07 Nora Chase: Are they benches or stools?

01:07:07 Katherine Stanford: Okay, I just used a permutation.

01:07:08 Richard Miles: I thought about the two seats on the end, then the eight middle seats

01:07:08 Liz Swerling: I made a chart/drawing.

01:07:08 Caroline Mitchell: start with a visual

01:07:09 Benjamin Sinwell: Think about which combinations are not possible.

01:07:09 Denise Smith: picture, then chart, then pattern

01:07:09 Kristy Allen: draw a picture, assign each person a different color, came up with 72

01:07:10 Marilu Deal: does order matter?

01:07:10 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

01:07:10 Donald Wahlers: Does it matter who is in each seat. Meaning Person A in seat 10 and B in seat 8 versus vice versa?

01:07:10 Peter Omura: I drew a picture and looked for a pattern

01:07:10 Maryn Foote: From an 8th grader, I would wonder how long a counter is? and How far are the seats from each other?

01:07:10 Sharon Ling:  $2 * (\text{choose}(10,2) - 9)$

01:07:10 Renee Parsley: I looked at what would happen if the first customer chose seat 1, then 2, then 3, etc.

01:07:11 Alfredo Mujica: pic

01:07:11 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  $9 \times 8$  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  $2 \times 8 + 8 \times 3$   
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

01:07:35 Jean Young: picture, tables counting the # of spaces apart...first 1 apart, then 2 apart, then 3 apart...

01:07:37 W Tad Johnston: not sure permutation works since all spaces aren't filled

01:07:39 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?

01:07:39 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  $10 \times 8$  then there are 5 next to each other combinations subtracting those I get 75

01:07:40 Beth Kobett: diagram then developed a pattern

01:07:42 Ashlee Treadway: by drawing blanks

01:07:43 peter zirniss: stay at home and we will soon get to phase 2 of the re-entry plan and distancing won't matter --- EAT AT HOME

01:07:46 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  $8+7+6+5+4+3+2+1$

01:07:46 Samantha Bustos: drew it out. I know there's a formula I probably could've used but I don't know it

01:07:50 Denise Quarles: I also assumed there might be a trick.

01:07:50 Melanie Doody: I really want to talk to people about this!

01:07:53 Javier Ruiz: I did it mentally :)

01:08:03 Jeanette Polanski:  $8*7 + 2*8 = 72$

01:08:10 Ronald Austria: 72

01:08:11 W Tad Johnston: Rebecca I did person A and Person B on left to get the set

01:08:18 Becky Zielinski: Will we be able to see this after the zoom meeting?

01:08:20 Veronica Kwok: I did!

01:08:20 Cynthia Bell: that's what I did

01:08:20 Nithya Soundararajan: Same method as Jeanette

01:08:23 Will Roberts: I did this

01:08:23 Anne Feeney: I did that exactly

01:08:26 Shannon Otey: y

01:08:27 Melanie Doody: yep!

01:08:29 Emily Volk: I do that in my class

01:08:29 Casey McGrath: I did that exactly as well

01:08:30 Rebecca Peiffer: Then I realized that the order makes a difference; so I multiplied by 2

01:08:31 Carmela Minckler: That is what I did

01:08:31 Samantha Bustos: yup.

01:08:33 Erin Meade: that is what I did

01:08:33 Fran Huntoon: yup did that

01:08:34 Bryan Bagala: I drew a picture and got 72

01:08:34 MARDONIO FIGUEROA: Good evening everyone, I am Mark Figueroa from New York

01:08:34 carla spyksma: Did that.

01:08:35 Jennifer Gailey: That is exactly how I started

01:08:37 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  $8 + 7 + 7 + 7 \dots + 8$

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, There 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 jeanine 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 David Barnes:  $1 < 2 < 3 < 4$   
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  
01:13:30 Dave Hankin:  $2 + 4 = 1 + 3$   
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 being 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

01:17:15 Mike Murphy: Anyone doing area formula 4 times?  
01:17:27 Will Roberts: oh snap I see the  $1:3 = 1/2$   
01:17:32 Sandhya Raman: III is thrice I  
01:17:33 Jacques Ludman: I get 4 equations with 4 unknowns from these, so I  
can solve this in a few minutes.  
01:17:36 Peter Duong:  $ABCD = 6 * II = 12 * I = 3 * III = (5/12) * IV$

01:17:40 Gabrielle Gentile: I did it 3 times then subtracted  
01:17:58 W Tad Johnston: like the similar triangles - I did not go there  
first  
01:18:10 Delia Kwon: 4  
01:18:11 Sandhya Raman: 3  
01:18:11 Penina kamina: I+II is a fourth the whole  
01:18:12 Chris Paulison: 4  
01:18:13 Meredith Arthur: 3  
01:18:13 Diane Davis: how do we know for sure that point E is halfway  
between A and D?  
01:18:13 paloma carrera: 3  
01:18:17 Caitlin Maggi: 4  
01:18:17 Mohamed Jamaludeen Thirapusa Mohaideen: 3  
01:18:18 Laurie Boswell: 4  
01:18:18 Merrellyn Banks: 4  
01:18:18 Jason Wright: 3  
01:18:19 Angela Tseng: 4  
01:18:19 Gabrielle Gentile: I would think 4  
01:18:20 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.  
01:18:20 Jacob Watford: 4  
01:18:21 Jennifer Woods: 3  
01:18:23 Daniel Seif: 2.5  
01:18:24 Ange Kendall: 4  
01:18:28 Mary Anne Opila: 4  
01:18:30 Mohamed Jamaludeen Thirapusa Mohaideen: BETWEEN 3 AND 4  
01:18:33 Dave Hankin: 3  
01:18:33 Vittorio Ciummo: TRIANGLE EDF IS SIMILAR TO TRIANGLE CBF  
01:18:36 Pamela Goodwin:  $I + IV = II + III$   
01:18:39 Maria Dolores Estravez: That makes sense; angle end and angles BFD  
are vertical angles.  
01:18:44 Penina kamina:  $i+iv$  is half the whole  
01:18:47 Maria Dolores Estravez: EFD  
01:19:18 Saul Gonzalez:  $(DB)(EF + FC)/2 = .5(\text{area of square})$   
01:19:20 W Tad Johnston: How do you know?  
01:19:27 Gloria Flores: II and III are also half the whole  
01:19:29 Laurie Boswell: 1:2:4:5  
01:19:33 Steven Case: would it take 4 I's to make the area of one III?  
01:19:33 Rachel White: hi  
01:19:46 W Tad Johnston: I got equal altitudes by algebraic methods  
01:19:50 Merrellyn Banks: 1:2:4:6  
01:19:56 Sreevelmurugan Vamadevan: Hi everybody  
01:20:04 Sandhya Raman: What's a good place to find such problems? Very

interesting  
01:20:07 W Tad Johnston: 2:3:6:7  
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 Sreevelmurugan 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

01:22:39 Catherine Anderson: Thank you so much!!!  
01:22:39 Dr. Brown: Thank you!  
01:22:40 Marilu Deal: haha! Thank you.  
01:22:41 Joce Masasi: thank you!  
01:22:41 Matthew James: yes  
01:22:41 Jennifer Woods: Sensational!  
01:22:41 Penina kamina: Thanks  
01:22:41 Beth Kobett: The problems are so great! Slow... problem solving...  
Like a slow twitter chat!  
01:22:43 Caitlin Maggi: Thank you  
01:22:47 Mike Cooke: I know what I will be working on this weekend -  
thank you!!  
01:22:48 Jennifer Schilling: Thank you!  
01:22:54 Konnie Guthrie: I am so glad to have access to that resource.  
01:22:55 Lisa Piandes: Thank you I was trying to copy each problem  
01:23:00 peter zirniss: I have a 7:45 dinner date!!!  
01:23:01 amy mcdowell: thank you  
01:23:01 Hanayo Hattori: Can anyone tell me how you can tell the triangles I  
and II has the same height?  
01:23:02 Peter Duong: the picture requires to prove some points has to be  
linear.  
01:23:03 Bette Barkley: do we assume that e is halfway along the line?  
01:23:04 Susan Balcerski: Thanks!  
01:23:22 Jennifer Gailey: yes, we were given that 3 is midpoint  
01:23:30 Jennifer Gailey: that e is midpoint  
01:23:31 Dave Hankin: He did say it was the midpoint.  
01:23:37 jeanine colwell: Hanayo, they go from the bottom to the  
vertex, the straight height  
01:23:42 W Tad Johnston: loops forgot the 1/2 on one area 1, 2, 4,5  
01:23:46 Casey McGrath: I found the area of each piece using trig and other  
theorems  
01:23:55 Nithya Soundararajan: Can someone please tell me the resource he  
mentioned? I didn't hear it! Thanks  
01:23:57 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  
01:24:24 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.  
01:24:25 Christine Suurtamm: Mike will be giving a link to a set of  
problems at the end.  
01:24:25 Angela Tseng: @Nithya, he'll post it at the end of the webinar  
01:24:31 Leslie Texas: Nice extensions, particularly in thinking about  
whether the strategies still work  
01:24:33 Nithya Soundararajan: Thank you  
01:24:37 Jacques Ludman: that was a great one!  
01:24:50 Veronica Kwok: I wonder how this will play out for ELL students  
01:24:57 W Tad Johnston: LIke the equidistant on the diagonal, good theorem  
to consider  
01:24:58 Catherine VanNetta: Construct segment EB to form a triangle  
congruent to 2 and a triangle congruent to 1 + 2

01:24:58 Maria Dolores Estravez: Awesome!

01:25:00 Jennifer Woods: Awesome!

01:25:01 Monica Roland: Thank you!

01:25:08 Jennifer Hagman: Love this problem!

01:25:23 Veronica Kwok: My students are all ELLs and have trouble with a lot of basic math skills including working on basic arithmetic with integers

01:25:36 Veronica Kwok: How can I help them access problems like this better?

01:25:38 Vittorio Ciummo:  $I:II:II = 1/3 : 2/3 : 4/3$

01:25:38 W Tad Johnston: If even need at least three numbers

01:25:47 Barbara Manley: Blitzer?

01:25:52 Olivia Wissinger:  $6=1+2+3$

01:25:56 Angela Tseng:  $6 = 1+2+3$

01:25:56 Elena Olive: 6

01:25:59 Sandhya Raman: 6

01:26:05 Rachel Slezak: to help access open-ended problems, assess and review prior knowledge

01:26:14 W Tad Johnston: if odd, always have at least 1 way

01:26:23 Merrellyn Banks:  $19 = 9+10$

01:26:25 Sandhya Raman:  $0+1+2=3$

01:26:31 Mark Phipps: Which can be written in multiple ways 12345, 78, 456

01:26:35 W Tad Johnston: even is limited - e.g, no solution for 2 or 4

01:26:40 Jennifer Heldenbrand: Useful for playing KenKen!

01:26:46 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

01:26:52 Marilu Deal: And Kakuru

01:26:55 Nithya Soundararajan: Any odd number can be written as a consecutive sum

01:26:56 Sandhya Raman: Low floor...well played!!

01:27:02 W Tad Johnston: I'm conjecturing that powers of 2 won't work

01:27:02 Ann Martin: 3 times the middle number

01:27:02 Trent Thomason:  $21=6+7+8$

01:27:10 Konnie Guthrie: 1, 3, 6, 10, 15, 21, 28, etc.

01:27:12 Fran Huntoon: This is one of the problems in Youcubed Week of Inspirational Math. It's a good one

01:27:12 Laurie Boswell: any odd number

01:27:13 Michael Chrzan: At least all odd numbers and 6 lol

01:27:25 Amanda Helgerson: any odd number

01:27:27 Cynthia Bell: I love this low floor high ceiling

01:27:30 Jennifer Hagman: so all odd numbers can be the sum of 2 numbers...

01:27:38 Mary Anne Opila: fun

01:27:38 Faith Valentine: Whole numbers as in counting numbers or integers?

01:27:39 Amy Tucker: 12 works

01:27:41 Wendy Kraft:  $3x+3$

01:27:44 Chris Paulison: something about 3's

01:27:44 Larelle Hendon: odds and triangular numbers among others.

01:27:46 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 like 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  
 $20+21+22=63$

01:28:38 Ange Kendall: 27, 21 prediction multiples of 3.

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,  $4n+6$  ( $n = 1,2,3, \dots$ )

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 +  $n$  sub 2 -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  $3 \times n$ . 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  $n>0$

01:29:16 Todd Craver: If 3 consecutive numbers begin with an odd, the answer is even

01:29:21 Myra Collins: Vocabulary becomes important here. Students need to understand consecutive and sum especially.

01:29:24 Laura Perrier: any consecutive whole numbers add to a whole number sum

01:29:24 Marcel te Bokkel: why not list the ones we can't do?

01:29:26 Barbara Manley: I think a copy of the chat would be helpful for later, too.

01:29:27 Gordon Clark: all/

01:29:28 Bruce Graham: Odd numbers and even numbers that have an odd factor?

01:29:32 Larelle Hendon:  $4k - 2$  for 4 consecutives.

01:29:33 Laurie Boswell: odds, multiples of 3, multiples of 5

01:29:34 Mark Phipps: Powers of 2 are the problem, others can we do them all?

01:29:36 Katherine Stanford: Any number that can be arrived at through  $2x=1$ ,  $3X+3$ ,  $3X+6T$  and so on.

01:29:37 Cindy Vaquero: hello? I can't hear anything.

01:29:37 Dave Hankin: Sum is divisible by 3

01:29:38 Jenny Sagrillo: 12 is nonprime and it doesn't work

01:29:40 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

01:29:42 Maria Dolores Estravez: 10, 14, 18, 22,.. can be written as sum of four consecutive whole numbers

01:29:42 Elizabeth Wertemberger: triangular numbers and odd numbers

01:29:43 Ma Cecilia Francisco: eve+odd=odd

01:29:43 Claudia O'Keefe: The only ones I can't find are powers of 2

01:29:45 Todd Craver: 4 consecutive numbers are always even

01:29:45 Jacques Ludman: most of them.

01:29:46 Mike Cooke: multiples of 5, 7 , 9 , 11, ...

01:29:49 Sydna Eastman: 6, 10, 28, 36 are the first evens correct?

01:29:49 Drew Brammell: Multiples of 3

01:29:54 Tim Bobay: Copy of chat would be helpful

01:29:55 Faith Valentine: Two consecutive - Odd Numbers greater than 1  
Three consecutive - multiples of 3

01:29:56 Michelle Webb: numbers greater than 2

01:29:58 Laurie Boswell: guessing multiples of odd numbers

01:30:01 [Moto G (5... (657)]0: look for ones that can't

01:30:06 Chris Paulison: 4 doesnt

01:30:08 Haley Rauch: agreed copy of the chat would be great

01:30:10 [Moto G (5... (657)]0: 8 can't...

01:30:12 Fran Huntoon: Well, if you have three consecutive numbers then it's a multiple of three

01:30:16 Michelle Webb: I think my screen is frozen

01:30:17 Hoang Nguyen:  $9=2+3+4$  and  $9 = 4+5$

01:30:18 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?

01:30:19 Cynthia Bell: I appreciate SS who would just pick consecutive



integers add them together to answer the problem as well

01:30:22 Chris Paulison: odds + multiples of odds?

01:30:28 Tracie Skok: multiples of three if you are adding 3 consecutive numbers

01:30:29 Konnie Guthrie: All odd numbers =  $2n - 1$

01:30:30 Katherine Stanford: Wouldn't it be just about any of them?

01:30:31 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,  $n+(n+1)+(n+2)=3n+3$

01:30:31 paloma carrera: 9 and 15 have multiple ways

01:30:32 Ronald Austria: 9

01:30:33 Joanne Wilson: Great session...need the website

01:30:33 Anne Feeney: I'm looking at the ones that don't work- 1, 2, 4, 8, etc

01:30:34 Michael Chrzan: Odds and their multiples

01:30:35 Faith Valentine: Four consecutive =  $10+4n$

01:30:40 Tricia Percival: Can't do powers of 2

01:30:45 Patrick Montague: everything but non powers of 2

01:30:46 Kristina Grannan: all but 0 or 2

01:30:50 Ronald Austria:  $9 = 4+5$

01:30:51 Tracie Skok: If adding two consecutive #s, I see odd answers

01:30:56 Jacques Ludman: All except powers of 2, perhaps.

01:30:58 Peter Duong:  $n + (n+1) = 2n + 1$  --< any odd number

01:30:59 paloma carrera:  $11=5+6$

01:30:59 Dave Hankin: sum of individual numbers is divisible by 3

01:31:02 Cecilia Lopez: You can't write 4

01:31:02 Melanie Doody: multiples of odd numbers

01:31:03 Alison Jo Frost: Try 23 for your rule

01:31:05 Rebecca Peiffer: consecutive sums of 5 numbers are all multiples of 5

01:31:10 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

01:31:13 Michelle Webb:  $1+2+3$  is 5 which isn't a multiple of 3

01:31:13 Fran Huntoon: The same is true for the multiples of the sum of an odd number of numbers

01:31:17 Nithya Soundararajan: Powers of 2 cannot be written

01:31:17 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

01:31:23 paloma carrera: 8 does not work either

01:31:23 Carole Castonguay: What if you include 0

01:31:26 Mark Phipps: Or 32?

01:31:28 Peter Duong: Any odd number can be written as  $n + (n+1)$

01:31:28 Aya Zvaigzne: count by 2s then sum is with two consecutive numbers

01:31:29 Larelle Hendon: all except powers of 2.

01:31:29 Beverly Krumpe:  $2+3+4+5=14$

01:31:33 Meredith Arthur: can you use negatives?

01:31:33 Jean Young: all odds at least

01:31:35 James Overbey: Even #s can't be written as a consecutive sum

01:31:38 Jennifer Hagman: Interesting extensions – when you allow negative integers to be used as well

01:31:41 Faith Valentine:  $-1 + 0 + 1 + 2 = 2$

01:31:44 Mike Cooke: Don't seem to be able to do powers of 2

01:31:45 Olivia Wissinger: what about if you include negative numbers

01:31:46 Haley Rauch: how many terms are we limiting ourselves to?

01:31:49 Nithya Soundararajan: POWERS OF 2 CANNOT BE WRITTEN

01:31:50 Aya Zvaigzne: count by 3s then sum is with three consecutive numbers

01:31:53 Fran Huntoon: negatives are not considered whole numbers

01:31:54 Dulce Davidson: 1, 3, 5, 6, 7, 9, 11, 12, 13 so many possibilities

01:32:03 Aya Zvaigzne: i want to try this with a sum of four

01:32:03 Ange Kendall: Prediction...do prime numbers not work?

01:32:05 [Moto G (5... (657)]0: multiples of 2?

01:32:06 Aya Zvaigzne: yes

01:32:07 paloma carrera: not 15

01:32:07 Wendy Kraft: not 1

01:32:08 W Tad Johnston: yes true

01:32:08 Fran Huntoon: yes

01:32:09 Merrellyn Banks: except 1

01:32:10 Rebecca Peiffer: Not 1

01:32:11 Michelle Webb: not 3

01:32:15 Jennifer Woods: 3,6,10,15,21,28,36,45,55,66,78,91,105,120...

01:32:16 Fran Huntoon:  $1 = 1 + 0$

01:32:16 [Moto G (5... (657)]0: yes all odds can

01:32:17 Michael Chrzan:  $1+2 = 3$

01:32:17 Elizabeth Ruiz: yes 3

01:32:18 Lisa Piandes: Odd can be with two consec

01:32:18 Mike Cooke: odd numbers can be done with two values:  $n$  and  $n+1$

01:32:19 Katherine Stanford: It's not just odd because 6 and 10 work.

01:32:20 Gloria Flores: Not 1

01:32:20 W Tad Johnston: 0 is whole so  $1 + 0$

01:32:22 Tanya Landry: not powers of 2?

01:32:22 Veronica Ross: Looks like prime numbers

01:32:23 Ronald Austria:  $6 + 7 + 8 = 21$  and  $10 + 11 = 21$

01:32:29 Rachel Slezak: Yeah because  $n + n + 1 = 2n + 1$  which is just odd numbers

01:32:30 Daniel Seif: all odds except 1 can be done in pairs

01:32:32 Cecilia Lopez: can't write 2

01:32:35 Vittorio Ciummo:  $1 = 0 + 1$

01:32:36 Gordon Jones: except 1

01:32:38 Carole Castonguay: Multiples of 6 work

01:32:43 Ann Martin: 24

01:32:45 Kendall McAdams: I think there is a number beyond which all can be written as a consecutive sum?

01:32:59 W Tad Johnston: so much for the multiple of 3 idea!

01:33:00 Gordon Jones:  $2^0=1$  son cant be done

01:33:24 Nithya Soundararajan: Powers of 2

01:33:38 Cynthia Bell: 26

01:33:41 Rebecca Peiffer: mind blown

01:33:42 Jennifer Hagman: @Kendall - thinking about powers of 2 not working..so thinking there isn't a stopping point..

01:33:43 Brenda Carvalho: yes powers of 2

01:33:46 Aya Zvaigzne: awesome cool

01:33:50 W Tad Johnston: For even numbers, you need an odd number of addends

01:33:50 Cathy Kim: Click on the 3 dots... you can save the chat.

01:33:57 Pamela Goodwin: can't be even with just two numbers

01:34:05 W Tad Johnston: so 20, as a multiple of 5 uses 5 terms

01:34:07 Rachel Slezak: If you add  $n + n + 1 + n + 2$  it's always a multiple of 3 because  $3n+3$

01:34:11 Aya Zvaigzne: thanks for the save chat tip

01:34:12 Mark Phipps: Rectangles

01:34:24 Kelley Nelson: Nice to bring elementary in. Need to start problem solving there. !

01:34:25 Dulce Davidson: even numbers that are multiples of 3

01:34:35 Rachel Slezak: visual models helpful for ELs too

01:34:38 Angela Tseng: your orientation will matter for lower grade levels

01:34:40 Olivia Wissinger: extension: what if we include negative numbers?

01:34:51 Meredith Arthur: negatives

01:34:55 Hawley Agee: even numbers with odd factors that are not 1

01:35:16 Konnie Guthrie: I love that question.

01:35:39 Marcel te Bokkel: are these also called polite numbers?

01:35:50 Konnie Guthrie: Is 15 the first number that can be represented in more than one staircase?

01:36:15 Julianna Messineo: Anything that can be represented  $3n+3$  where  $n$  is a whole number

01:36:22 W Tad Johnston: 28 works,  $28/7 = 4$ , 4 is middle term 1,2,3,4,5,6,7

01:36:23 paloma carrera: 9 is the first one

01:36:25 Maria Dolores Estravez: Find their factors. For example, 15 can be done two ways: 3 consecutive and 5 consecutive

01:36:25 Delia Kwon: then we would look at intergers

01:36:28 Michael Chrzan: Nope.  $9 = 4+5$  and  $2+3+4$

01:36:31 Maryn Foote: Oh indeed for my middle schoolers

01:36:47 Vittorio Ciummo: In the previous problem, is I : II : III : IV = 1 : 2 : 4 : 5

01:37:04 Jennifer Woods: Is there a certificate as well?

01:37:21 Faith Peddie: The certificate will be linked in this chat box in the last five minutes

01:37:22 Chonda Long: 2nd Handout will be available with the recording at [www.nctm.org/100](http://www.nctm.org/100)

01:37:27 Christine Suurtamm: There will be a link to a certificate at the end as well.

01:37:27 Jolene Peterson: I love that you persevered, Vittorio.

01:37:31 Maria Dolores Estravez: Nah.. I don't think that works for all numbers

01:37:37 Faith Peddie: The handout will be available with the recording at [www.nctm.org/100](http://www.nctm.org/100) (tomorrow)

01:37:46 Chonda Long: Yes, we will be sharing the link to the certificate soon.

01:38:03 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](http://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 tinme 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](http://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:  
[www.nctm.org/uploadedFiles/Conferences\\_and\\_Professional\\_Development/Webinars\\_and\\_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf](http://www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars_and_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf)  
01:40:13 Joanne Wilson: thanks for the knowledge  
01:40:31 W Tad Johnston: nice one to put on a bulleting board and leave spaces for solutions  
01:40:38 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\\_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf](http://www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars_and_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf)  
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 past the link into your browser. Here is the link to the certificate of participation for tonight's presentation:  
  
[www.nctm.org/uploadedFiles/Conferences\\_and\\_Professional\\_Development/Webinars\\_and\\_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf](http://www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars_and_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf)  
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\\_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf](https://www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars_and_Webcasts/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:

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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:

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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\\_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf](https://www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars_and_Webcasts/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:

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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

01:44:44 Michael Chrzan: Thanks for these problems! Appreciate that there's still a space for math for math sake and not all application

01:44:44 Angela Tseng: @Peter, I think they are similar

01:44:56 Beth Kobett: I love the point of problems that age well. So true1

01:44:57 peter zirnis: correct!!!

01:45:00 Maryn Foote: These types of problems are way more interesting for students during remote learning. . .

01:45:06 Cindy Bryant: Yes, love PTPs!

01:45:12 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=tet+ed+riddles](https://www.youtube.com/results?search_query=tet+ed+riddles)

01:45:21 Kristine Butz: Thank-you for sharing!!

01:45:28 Maryn Foote: I love that something doesn't have to be solved in under 3 minutes!!!

01:45:31 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](https://www.nctm.org/uploadedFiles/Conferences_and_Professional_Development/Webinars_and_Webcasts/Webcasts/100-Days-Certificate-2020-04-29-Final.pdf)

01:45:32 Wahyuni Mailili: thanks you

01:45:32 Denise Quarles: Thank you – used to use these problems from time to time in class – time to get back to them.

01:45:35 Maria Dolores Estravez: Thanks!!!

01:45:42 KEISHA SMITH: Thanks

01:45:45 Mary Anne Opila: Thank you!

01:45:50 Delia Kwon: thank you

01:45:51 Hoang Nguyen: Thank you!

01:45:55 Maryn Foote: Thank you for your time in preparing and sharing.

01:45:55 Sharon Ling: Thank you!

01:45:56 Kristina Grannan: Thank you!

01:45:57 Katherine Rossignuolo: Thank you!

01:46:00 Marilu Deal: Thank. Really wish we did more geometry in Ontario.

01:46:01 Amanda Helgerson: Thank you!

01:46:03 Benjamin Sinwell: Thanks Mike!!!!

01:46:03 Gloria Flores: Thank You

01:46:04 Emily Volk: Thank you

01:46:05 Kim Ellis: Thank you again.

01:46:06 Lisa Hurst: Thank you!

01:46:07 Sharon Laahs: Thank you!!

01:46:08 Kelli Epperson: Thank you very much!!

01:46:09 Fran Huntoon: Thank you Mike for allowing us the time to think and try problem solving

01:46:09 Jonathan Abellera: Thank you!

01:46:09 Liz Means: Awesome!! Thank you so much!

01:46:10 Rachel White: Thank you. Great variety of word problems.

01:46:11 Tiffany Gallagher: Great information Mike..thank you!

01:46:11 Sandhya Raman: And the link?

01:46:12 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 These 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

problems.

01:47:21 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:

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01:47:22 Catherine Anderson: Thank you so much!

01:47:22 Daniel Irving: Thank you for this incredible presentation!

01:47:29 Laurie Boswell: Thank you Mike!!

01:47:30 Carole Castonguay: Thanks, thanks thanks.

01:47:32 dana dulzo: thnak you so much

01:47:35 KEISHA SMITH: Thank you!!!

01:47:37 Roberta Ludwigsen-Hill: Will a copy of the slides be included?

01:47:37 Laura Kaplan: I Googled "NCTM Problems to Ponder" and it came right up

01:47:46 Sandhya Raman: Thanks a lot all

01:47:47 Ashlee Treadway: Thank you - I will be sharing the recording with colleagues

01:47:50 Melanie Doody: Very cool! Thank you!

01:47:50 Sreevelmurugan Vamadevan: Thanks Mike for a wonderful presentation

01:47:51 sabrina reed: thank you

01:47:52 Beth Kobett: Thanks for sharing such a great gold mine of problems! Love it! There are so many wonderful member benefits!

01:47:53 Monica Roland: Thank you!

01:47:53 Dulce Davidson: Thank you so much Mike!

01:48:00 Rebeka Matthews Sousa: Thanks

01:48:01 Angela Tseng: Thank you professor!

01:48:03 Gabrielle Gentile: Thank you

01:48:03 Maria Dolores Estravez: Great webinar!!!

01:48:05 Julie Saba: Thank you!

01:48:06 Jacques Ludman: I love that you didn't tell us the answers!

01:48:10 W Tad Johnston: Thanks!

01:48:11 Kelley Nelson: Excellent webinar.

01:48:13 Fran Huntoon: Chonda, thank you for making all of this run so smoothly!

01:48:14 Kim Adkins: Thanks!!

01:48:14 Mike Murphy: Loved it. Thought provoking

01:48:15 Delia Kwon: Thank you! Loved the problems

01:48:15 Saira Ali: Thank you!

01:48:15 Marilu Deal: What a delightful evening! Thank You!

01:48:16 Johnathan Silvas: Thank you Mike!

01:48:17 Diane Thole: Really enjoyable!

01:48:17 Amy Robinson: Thank You

01:48:20 NICOLE RIGELMAN: Thank you Mike :)!!

01:48:20 Veronica Kwok: Thank you so much for the resources

01:48:20 Anne Feeney: Thank you, I got a lot of great info!

01:48:21 Sindhu A Muralidharan: Thank you so much.

01:48:22 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 Cindy Luper: Thank you.  
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!!!

01:48:54 Beverly Krumpe: Thank you  
01:48:55 Patrick Montague: Thanks, love the problems.  
01:48:55 Cathy Kim: Thank you!  
01:48:56 Enkelejda Limani: is there a link to a certificate?  
01:48:56 Sun Lee: thanks mike  
01:48:58 Faith Valentine: Thanks :)  
01:48:59 Noe Eugenio: Thank you very much Mike!!! I enjoy this session. :)  
01:48:59 Sharon Hunt: Thanks!  
01:49:00 Said Chatir: Great webinar. Thank you !  
01:49:02 Ange Kendall: This is just what I have been looking for. Thank you  
for the gift of questions as well.  
01:49:04 Ronald Austria: Thank you very much!!!  
01:49:05 dawn geshwender: Thank you very much! These will be great  
for my herd!  
01:49:06 Tina Hill: Thank you!  
01:49:06 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.  
01:49:08 Trena Wilkerson: Thank you Mike!! Great problems and  
resources!  
01:49:09 Mike Cooke: Thank you so much from Summerland, British Columbia.  
I was sorry not to be able to attend the Chicago conference but his has gone a long  
way to making up for the disappointment  
01:49:09 Hong Pun: --Thank you... considering this for the beginning of  
the next school year  
01:49:09 Rita Kwong: Thank you! Theses are great idea!  
01:49:14 Jennifer Woods: I'll be there.  
01:49:14 Holiday George: Thanks!!  
01:49:19 Angela Tseng: I'll be tehre!  
01:49:21 Konnie Guthrie: i really enjoyed this session.  
01:49:27 Cindy Bryant: THANK you Mike!  
01:49:31 Konnie Guthrie: Very useful.  
01:49:32 Michael Brown: My students might not like them... at first  
01:49:32 Johnathan Silvas: Thank you Christine!  
01:49:38 Joce Masasi: wonderful presentation-thank you and thank you for  
sharing your bank of problems  
01:49:42 Johnathan Silvas: Thank you Chonda!  
01:49:43 Pamela Goodwin: will the certificate be emailed?  
01:49:47 Abir Akil: Thank you very much.  
01:49:49 Jennifer Heldenbrand: Thank you for taking your time to share.  
Thank you to NCTM folks for always being available and making these sessions  
available.  
01:49:49 Sreevelmurugan Vamadevan: Will the district support us to join  
NCTM  
01:49:50 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!!  
01:50:02 peter zirniss: thank you  
01:50:08 Faith Peddie: Please note that the certificate will not be emailed  
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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