

00:18:16 Trena Wilkerson: Hello from Waco, TX via Philadelphia, MS  
tonight!  
00:18:32 Maria Padiernos: Hello from Detroit, MI  
00:18:43 Kathleen McFadden: Hi from Queens NYC  
00:18:44 Kay McHeffey: Hello from San Diego  
00:18:44 Donna Misciagna: Hello from Tucson, AZ.  
00:18:54 MYLA DETECIO: good morning from the Philippines  
00:18:57 Ramona Hall: Hello from Charlotte, NC!  
00:18:59 Cathleen Hincker: Hello from Danville, VA  
00:19:00 Olga Kosheleva: Hello from El Paso, TX  
00:19:05 Lance Brauchla: Hi from Fort Wayne, IN!  
00:19:06 Jenny Sagrillo: Hi from Milwaukee, WI!  
00:19:06 DENİZ ÇAKIR: good evening from Turkey  
00:19:06 Linda Koval: Hello from Bealeton, VA.  
00:19:07 Christine Anderson: Hi from Claremont, CA  
00:19:07 Sarah Barrett: hi from Elfrida, Az  
00:19:08 Gil Geeran Bangeles: Good morning from the Philippines.  
00:19:11 Trena Wilkerson: Excited to celebrate 100 years with great  
math problems tonight with Alicia and Jessie!  
00:19:22 Anna Stawowski: Hi from Chicago  
00:19:25 Janet Turner: hello from mn  
00:19:29 Rosalyn Bantay: hello from Philippines  
00:19:30 Wisnu Siwi Satiti: Hello everyone! Good morning from Indonesia!  
00:19:39 Simon Terrell: Northern California  
00:19:40 Delores Rushing: Dee Ru7shing from Washington, DC Hello  
Everyone  
00:19:50 Eugene Bacon: Hi form Monterey  
00:19:51 Penny Soutar: Bothell, Washington, USA  
00:19:53 Keiara Jones: Hello from Daingerfield, TX!  
00:19:57 Trena Wilkerson: #92 tonight!  
00:20:06 Patti Gawronski: Hi from Texas!  
00:20:10 Pamela Liegl: Hi from Illinois  
00:20:11 Emily Kavanagh: Hi from Columbia, MD  
00:20:27 Vanessa Stokes: hello from chicago !  
00:20:57 Jorge Veloso: Hi from Angola.  
00:21:01 Daniel Irving: Hello from North Providence, RI!  
00:21:04 Tanya Landry: Hi from Baton Rouge!  
00:21:20 Cynthia Juarbe: hello from Brooklyn, New York  
00:21:32 Kathryn Del Prete: Hi from Long Beach, NY!!  
00:21:40 Christine Yokoyama: Hello from Cerritos, CA  
00:21:44 Beverly Bailey: Diamond, Ohio  
00:21:48 Claudia Amador: hello from Miami florida  
00:21:50 Emerlina Binuya: Hello everyone from Petersburg,VA  
00:21:53 LANY JAMERO: good morning from philippines  
00:22:00 Karen Laurent: Hi! All the way from Queens, NY  
00:22:07 Cheryl Ann Doyle E Barran: hi from Bronx , NY  
00:22:13 Delphine Stallworth: Hello from Stockton CA  
00:22:25 Justin Klinger: Heeeelllllllllllllllooooooo from Romeoville IL  
00:22:28 Wanda Parker: Hi from Virginia!  
00:22:37 Roger Moore: Welcome from basement Edmonton, Alberta

00:23:24 Mary France Imperial: Hello from Philippines

00:23:43 Jonathan Marcovitz: Greetings from Fort Lauderdale

00:23:57 Jeanetta Glass: Hello from Memphis, TN!

00:24:21 Sharon Dawkins: Hello from Brooklyn NY

00:24:37 Chonda Long: Hello everyone!

00:25:10 Maricar Sanchez: Hi from the Philippines

00:25:25 Haley Salyer: Hello from Ohio... OH-

00:25:28 Rebecca Nachbin: IO

00:25:35 Todd Smallcanyon: Southern Utah

00:25:42 Lorie Huff: Remember to change your chat delivery to "all panelists and attendees." We want all participants to benefit from your comment.

00:25:49 Skip Fennell: Hello from Maryland

00:25:58 Cindy Bryant: So glad to finally be joining the session.

00:26:13 Cindy Bryant: Hello from Springfield, MO!

00:26:16 Linda Koval: 9.5

00:26:34 David Barnes: Welcome Cindy. 600+ if you were wondering.

00:29:57 Cindy Bryant: Thanks Dave!!! Glad to be here!

00:31:57 Pamela Liegl: one cube has no paint, center of large cube

00:31:58 Cynthia Juarbe: I noticed that there will be cubes that have more than one side covered with paint

00:32:05 Keiara Jones: Does anyone know where to begin?

00:32:06 Emerlina Binuya: How many pieces are there in the cube?

00:32:15 Emily Kavanagh: I really like this example

00:32:18 Keiara Jones: 27 pieces

00:32:23 Delores Rushing: There are a total of 27 cubes 3by3by

00:32:26 Philippa Miller: Wonder. Is there a pattern?

00:32:32 DENİZ ÇAKIR: 1cube- no side painted

00:32:39 Rozelta Boyd: 8 cubes have 3 faces painted

00:32:58 Delphine Stallworth: Maybe half the students will have paint on them

00:33:03 Rozelta Boyd: 6 cubes have 1 face painted

00:33:03 DENİZ ÇAKIR: 6 cube- one side 8cube-three side

00:33:03 Tagreed Badwai: three sided cubes are are on the corners

00:33:04 Penny Soutar: draw a picture!

00:33:08 Kathleen McFadden: Edge cubes have three sides with paint

00:33:25 Lance Brauchla: 8 cube - 3 side

00:33:25 Trena Wilkerson: Love it -so true!

00:33:30 Cynthia Juarbe: 26 pieces ?

00:33:33 DENİZ ÇAKIR: 8cube- two side

00:33:47 Krystal Mills: 12 have 2 with paint

00:33:48 Christine Yokoyama: Is there piece of scratch paper?

00:34:05 Sarah Battersby: Started on the corners - 8 corners = 3 sides painted

00:34:11 Mary France Imperial: some parts are painted

00:34:21 Pamela Liegl: Tactile learners would try to put it together

00:34:53 DENİZ ÇAKIR: 12cube- two side

00:35:01 Pria Saptono: 1 cube no paint, 6 cubes with 1 side painted, 12 cubes with 2 sides painted, 8 cubes with 3 sides painted

00:35:05 Penny Soutar: will kids be able to have markers or stickers to label their 3 D cube model?

00:35:08 Delphine Stallworth: Can you give the students individual cubes for this assignment?

00:35:26 Penny Soutar: what grade level would this be?

00:35:40 Cynthia Juarbe: middle school level right?

00:35:48 Cynthia Juarbe: ok great

00:35:54 Carole Bamford: You can use GeoGebra to view cube in 3D

00:35:55 Penny Soutar: Thank you

00:36:07 Christine Yokoyama: Yes, many possible responses

00:36:28 Penny Soutar: it's a geometric sequence!!!

00:37:14 Jerome Schmidt: what about  $n \times n \times n$  cube?

00:37:29 Cynthia Juarbe: nice

00:37:44 Penny Soutar: inductive reasoning...make a function to represent the geometric sequence

00:37:58 Portia Rombaoa: 8 cubes, 3 faces painted  
10 cubes, 2 faces  
9 cubes, 1 face

00:38:22 Lorie Huff: Remember to change your chat delivery to "all panelists and attendees." We want all participants to benefit from your comment.

00:41:16 Trena Wilkerson: Love problems that are exceptional across grade levels—so much wonderful learning, creativity, and problem solving!

00:41:51 DENİZ ÇAKIR: It reminds me menger sponge

00:43:45 Delores Rushing: Do the elementary students come up with  $l \times w \times h$  to figure out the number of cubes?

00:45:20 Delores Rushing: That was length times width times height to find the number of cubes

00:45:35 Trena Wilkerson: Love it Jessie—Their learning journey!

00:47:17 Christine Anderson: Squares of different sizes, like  $2 \times 2$ ,  $3 \times 3$ , etc.

00:47:25 Emily Kavanagh: Another great example

00:47:27 MYLA DETECIO: 204 squares

00:47:38 Delphine Stallworth: around 98 squares

00:47:51 Jessie Shirley: many of them can explain what to do with words and with the cube

00:48:06 Ginette Peralta Suarez: great problems!

00:48:22 Mark Phipps: Feels like  $64 + 49 + 36 + \dots + 1$

00:48:28 Vikas Saxena: 208

00:48:28 Jessie Shirley: some students get the expressions

00:48:53 MYLA DETECIO:  $1^2 + 2^2 + 3^2 + \dots + n^2$

00:49:34 Emily Kavanagh: I say 206

00:49:35 Rozelta Boyd:  $64$  1 by 1 squares +  $16$  2 by 2 squares + ...

00:49:35 Kathleen McFadden:  $n$  squared +  $n-1$  squared +  $n-3$  squared

00:49:48 Penny Soutar: can you explain diagonal square?

00:50:11 Cynthia Juarbe: 226?

00:50:24 Jennifer Holland:  $64, 49, 36, 25, 16, 9, 4, 1$ — $1 \times 1, 2 \times 2, \dots, 8 \times 8$ .  
204

00:50:28 Pria Saptono: 204 squares?

00:50:49 Lorie Huff: Remember to change your chat delivery to "all panelists and attendees." We want all participants to benefit from your comment.

00:50:59 Lorie Huff: Remember to change your chat delivery to "all panelists and attendees." We want all participants to benefit from your comment.

00:51:03 Jennifer Holland: 64, 49, 36, 25, 16, 9, 4, 1-1X1, 2X2.... 8x8. 204

00:52:33 Delores Rushing: Do you square the 8x8? iif so then there 512 squares

00:52:55 Linda Koval: This is so beautiful!

00:52:58 Penny Soutar: it's a chess board, actually. :)

00:53:46 Penny Soutar:  $n*n + (n-1)(n-1) + \dots$

00:53:47 Trena Wilkerson: I really like the idea of 'telling your story' about solving the problem. Incorporates, communication, reflection, vocabulary, valuing voice, representations, and the list goes on!

00:54:36 Mohamed T: Amazing

00:55:35 Emily Kavanagh: I love the examples you are presenting

00:55:35 Kelly Cota: And loonies! Yay!

00:56:17 MYLA DETECIO: the missing dollar is with the manager

00:56:39 Jessie Shirley: The diagonal square are the squares on the vertices

00:56:47 Adriana Gómez Reyes: that's a beautiful problem

00:57:29 Jessie Shirley: that is so sweet!

00:57:59 Mohamed T: No missing

00:58:07 Sharon Black-MacKinnon: I too recall this question with a different scenario

00:58:26 Mohamed T: because  $25/3$

00:58:27 Delphine Stallworth: Wow I have got to use this one .....

00:58:48 Mohamed T: \$ 8.33 each person

00:58:55 Mohamed T: So no missing

00:59:07 Delores Rushing: Ladies these are great problems and change you to think. Thank you!

00:59:11 Lorie Huff: Remember to change your chat delivery to "all panelists and attendees." We want all participants to benefit from your comment.

00:59:22 Lorie Huff: Remember to change your chat delivery to "all panelists and attendees." We want all participants to benefit from your comment.

00:59:53 Wanda Parker: This is so true!

00:59:56 Trena Wilkerson: Polya is one of my favs..He also said Mathematics is not a spectator sport!

01:00:12 Vikas Saxena:  $9*3=27-2=25$  so no missing dollar

01:00:18 Jennifer Holland: Mine complain about not having just one way to solve a problem. The idea that it can be done in different ways is so frustrating for them.

01:00:35 Jessie Shirley: Thinking is challenging:)

01:01:01 Mohamed T: could you please go back the previous slide?

01:01:07 Mohamed T: Math problem

01:03:16 Kelly Cota: Can you explain "Bring them down a little bit"?

01:03:32 Kelly Cota: Are you refering to grade or how they see themselves

as a math learner?

01:05:09 Cindy Bryant:  
.http://mathforum.org/dr.math/faq/faq.missing.dollar.html

01:06:07 Chonda Long: <http://www.aliciaburdess.com/>  
01:06:30 Delphine Stallworth: Thank you  
01:06:45 Mohamed T: Thanks so much!!  
01:07:02 Carole Bamford: Thank you!  
01:07:03 Patti Gawronski: thank you!  
01:07:08 Sharon Black-MacKinnon: Thank you so much!!  
01:07:09 MYLA DETECIO: thank you  
01:07:14 Cynthia Juarbe: It was great. Thank you!  
01:07:31 Cathleen Hincker: This was awesome!! Thank you!  
01:07:47 Mary France Imperial: Thank you so much  
01:07:58 Kelly Cota: I think it sort of "redefines" what being good at  
math is. Jo Boaler idea about what math is.  
01:08:00 Daniel Irving: Thank you very much!  
01:08:03 Carole Bamford: Especially high achieving students on the autism  
spectrum!  
01:08:06 Lianfang Lu: Thank you!  
01:08:10 Christine Yokoyama: Great Math - Excellent Student Work Samples.  
Thank you  
01:08:12 Delores Rushing: This was great! I'm locating my blocks so I  
can build various cubes. Thank you again ladies!  
01:08:17 Kelly Cota: Thanks.  
01:08:21 Wanda Parker: Enjoyed this. Thank you!  
01:08:32 Beverly Bailey: I agree completely... They can memorize an  
algorithm, but can not always apply skills. I love these activities for them.  
01:08:41 SUHAIDAH TAHIR: thank you... congratulation. Love this session.  
Learnt a lot from it. Will use some of those questions in my workshop with teachers  
in future... thank you  
01:08:44 Christine Anderson: Do you have suggestions for how to do the  
groupwork on line?  
01:09:02 Sharon Dawkins: This was great, I love the problems.  
01:09:07 Jerome Schmidt: Are the grade 2 and 3 books different than the grade  
8 book?  
01:09:24 Jennifer Holland: This was the first session I was actually  
able to make it to. Thank you so much, I really enjoyed this session! Such great  
problems and fun to solve.  
01:09:36 Penny Soutar: THIS IS WAY TOOOOO MUCH FUN  
01:09:39 Maria Padiernos: Love your enthusiasm and your honesty about  
the classroom...will follow your example, Great Job ladies!!!  
01:10:01 Pamela Liegl: Thank you for a FUN presentation!  
01:10:06 Trena Wilkerson: Thank you Alicia and Jessie! Certainly big,  
beautiful problems and I appreciated you engaging, excitement in problem solving.  
Excellent session!  
01:10:15 Josephine Romero: Thank you so much!  
01:10:27 Linda Koval: This has been wonderful!  
01:10:39 Penny Soutar: any time!!  
01:10:40 Olga Kosheleva: Thank you!

01:10:41 Maria Padiernos: I AGREE....productive struggle and learning for mistakes are the secrets!!!

01:10:44 Trena Wilkerson: HI Jennifer--so glad you were able to make it tonight for your first one!

01:10:44 Linda Koval: Thank you so much for presenting and sharing all of your resources!

01:10:45 Cynthia Juarbe: Thank you!

01:11:33 Mary France Imperial: This is wonderful!

01:11:46 Philippa Miller: Thank you

01:11:49 Tagreed Badwai: Thank you!

01:11:53 Emerlina Binuya: Thank you it was really great how you presented the different problems.

01:12:03 Jerome Schmidt: Thank you so much! Wonderful stuff!

01:12:22 Wisnu Siwi Satiti: Great session! I love the problems! Thank you Alicia and Jessie!

01:12:28 Christine Anderson: Thank you!

01:12:36 Gianni Rodriguez: Thank you so much! As a pre-service teacher this was great!!

01:12:43 Claudia Amador: Thank you !!

01:12:43 Wisnu Siwi Satiti: thank you so much everyone!

01:12:46 Penny Soutar: Shi Shi

01:12:50 Rose Hutcherson: Thank you!

01:13:09 Kathy Rubendall: Thank you so much!

01:13:09 Roger Moore: Thank you both for great presentation. Take care.

01:13:21 Pria Saptono: Thank you so much

01:13:24 Sarah Battersby: Thank you!

01:13:35 Maria Padiernos: Thank you, Muchas Gracias, Sukran from Southwest Detroit,MI!!!

01:13:44 David Barnes: <http://www.nctm.org/change>

01:13:45 Jonathan Marcovitz: Thank you

01:13:54 paloma carrera-Andino: Thank you!

01:14:00 Cindy Bryant: Great job Alicia and Jessie!

01:14:12 Jennifer Holland: I have the high school book and it is great!

01:14:33 Trena Wilkerson: More great problems!  
<https://www.nctm.org/pows/>

01:14:34 Vikas Saxena: Thanks!

01:14:35 Delphine Stallworth: These sessions have increased my Math Teacher Library

01:15:11 Chonda Long: <https://www.nctm.org/virtual2020/>

01:15:40 Trena Wilkerson: So excited about the virtual conference!  
[www.nctm.org/virtual/2020](http://www.nctm.org/virtual/2020)

01:16:20 Jennifer Holland: Thanks again!!

01:16:26 Tanya Landry: Thanks!

01:16:38 Delphine Stallworth: Thank you

01:16:44 Jerome Schmidt: So good!!!! Thank you! Have a great week!

01:16:47 Aya Zvaigzne: Thank you enormously. These webinar/seminars help all of the students whose teachers are inspired and now have more knowledge and gold in their toolbox. This knowledge is spreading in positive ways. Blessings to all.