

Wisconsin Math Conference

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CHICLE
TABS
CHEWING GUM

25¢



4-orange



2-red



2-yellow



2-white



0-pink

Name: _____

Estimate

3

S5

Draw a picture to show your thinking:

$$4 + 2 + 2 + 2 + 0 =$$

10

Use numbers to show your thinking:

Answer:

10

Name: [Redacted]

S1

Estimate
6

Draw a picture to show your thinking:



Use numbers to show your thinking:

[Blank area for numerical work]

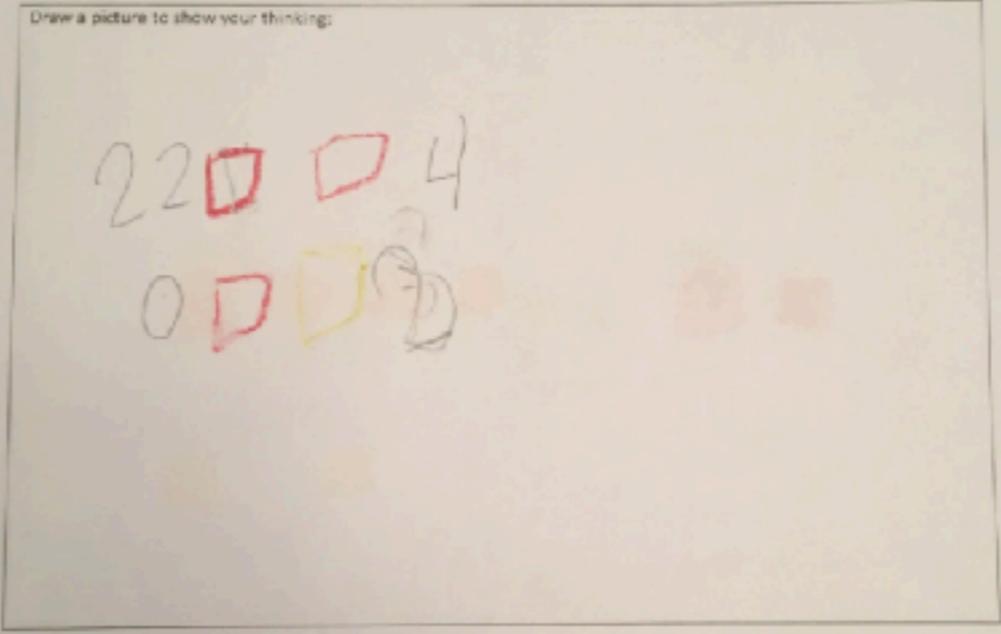
Answer:

Name: [Redacted]

S6

Estimate
1

Draw a picture to show your thinking:



Use numbers to show your thinking:

[Blank area for numerical work]

Answer:

Name: ~~XXXXXXXXXX~~

S3

Answer

Draw a picture to show your thinking



Use numbers to show your thinking

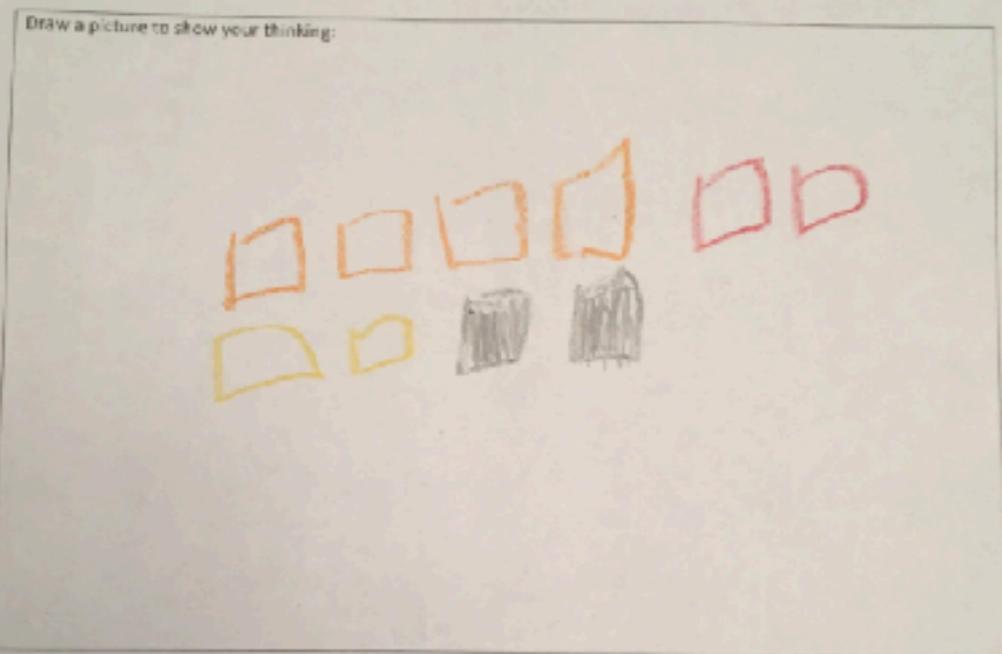
Blank area for using numbers to show thinking.

Answer:

Name: [Redacted]

S8

Estimate
9



Use numbers to show your thinking:

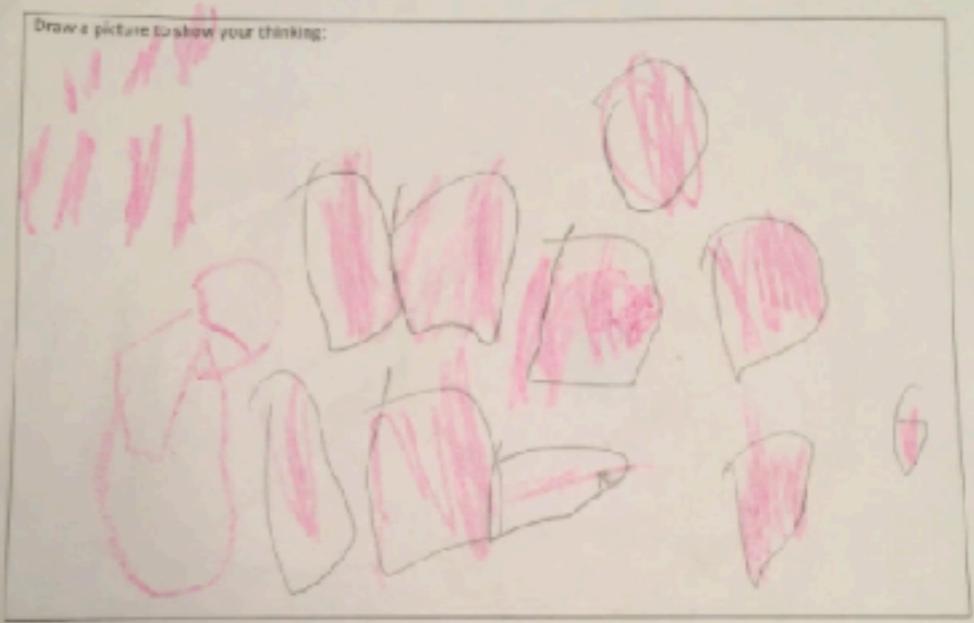
1 2 3 4 2 6 7 8 9 10

Answer:

Name: [Redacted]

S23

Estimate
5



Use numbers to show your thinking:

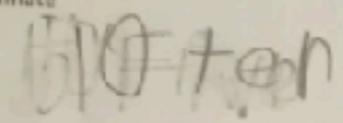
Answer:

 **4-orange**  **2-red**

 **2-yellow**  **2-white**

 **0-pink**

Name: 

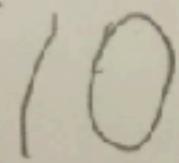
Estimate:  **57**

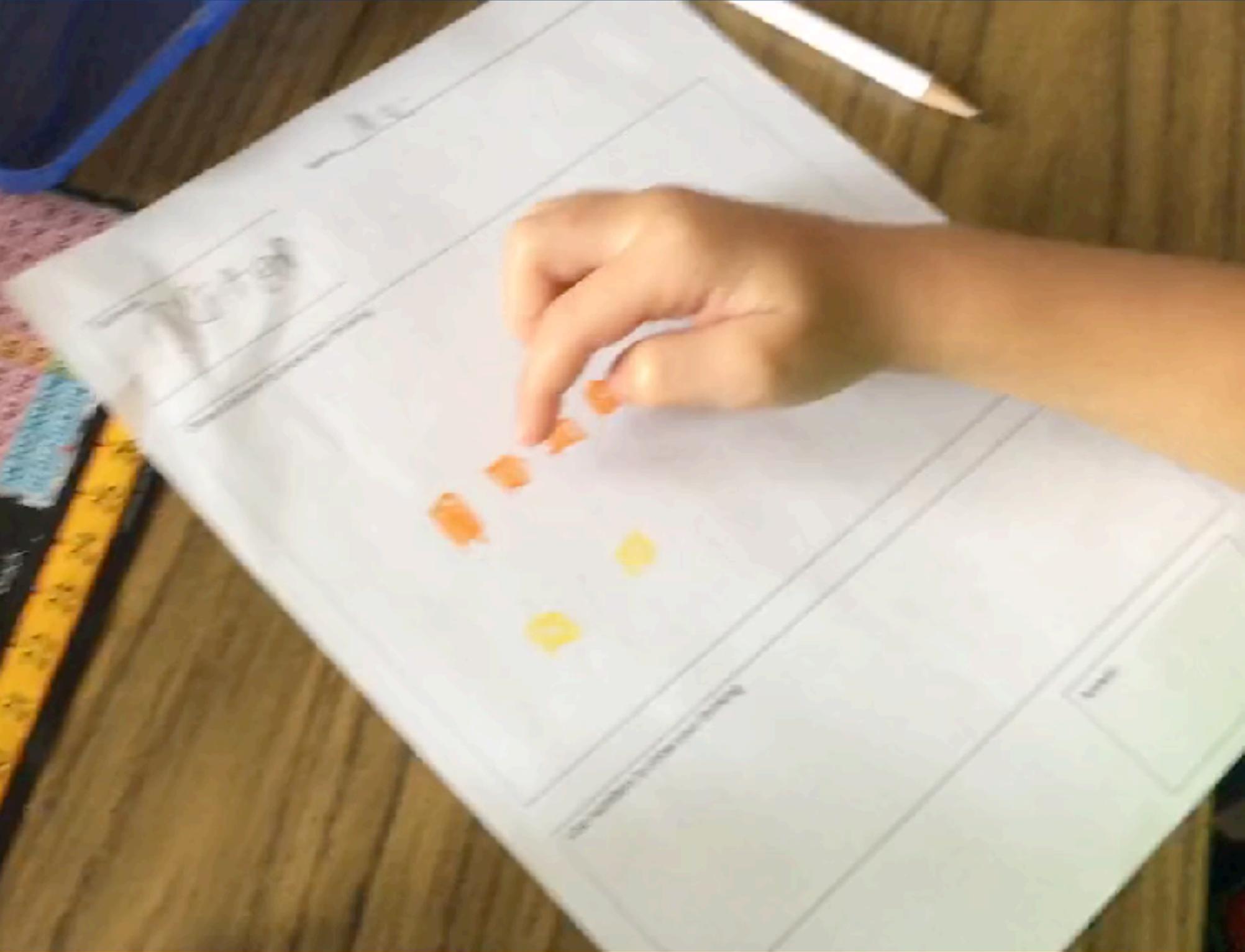
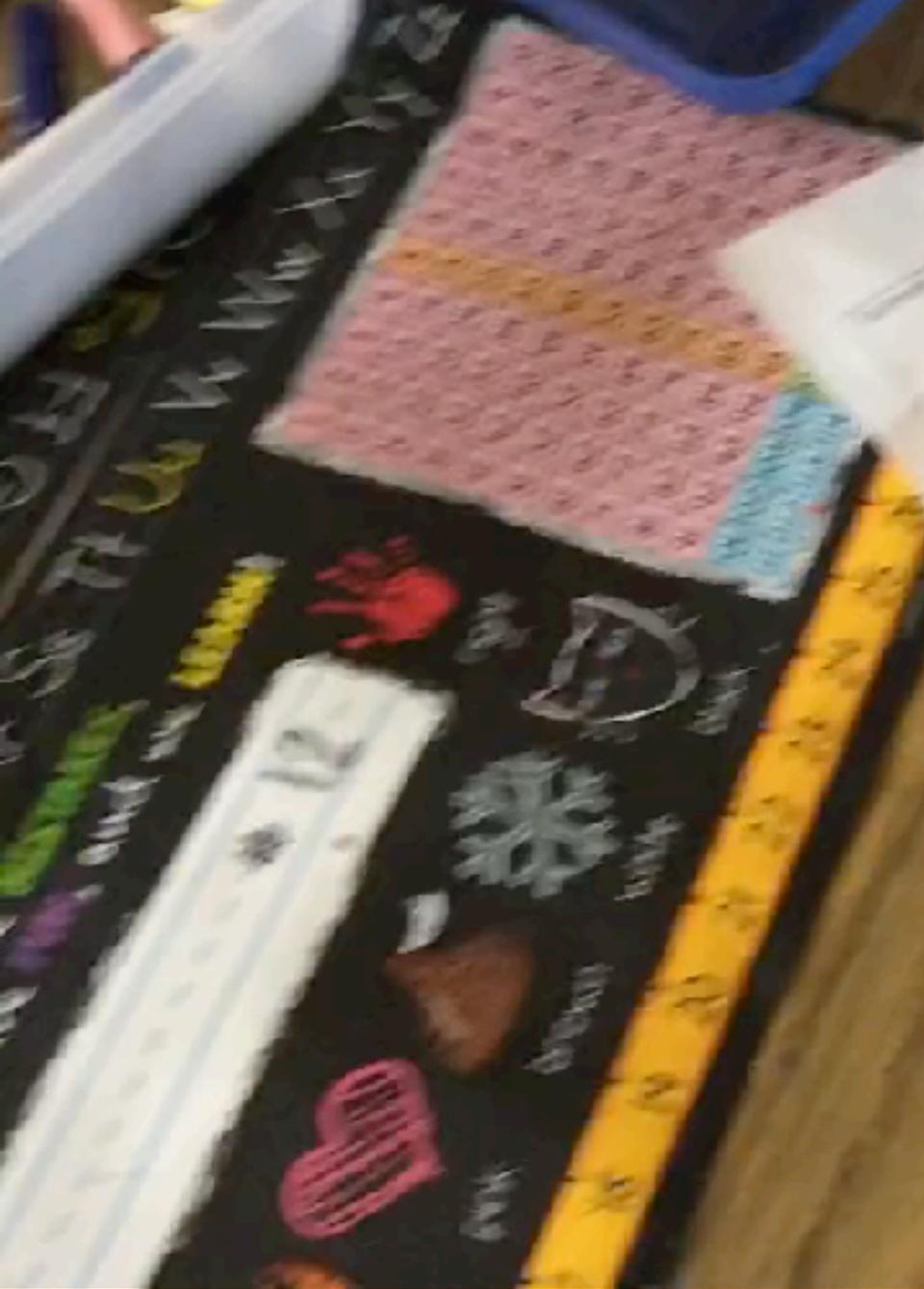
87

Draw a picture to show your thinking:



Use numbers to show your thinking:

Answer:  **10**



Name: ~~XXXXXXXXXX~~

S3

Answer

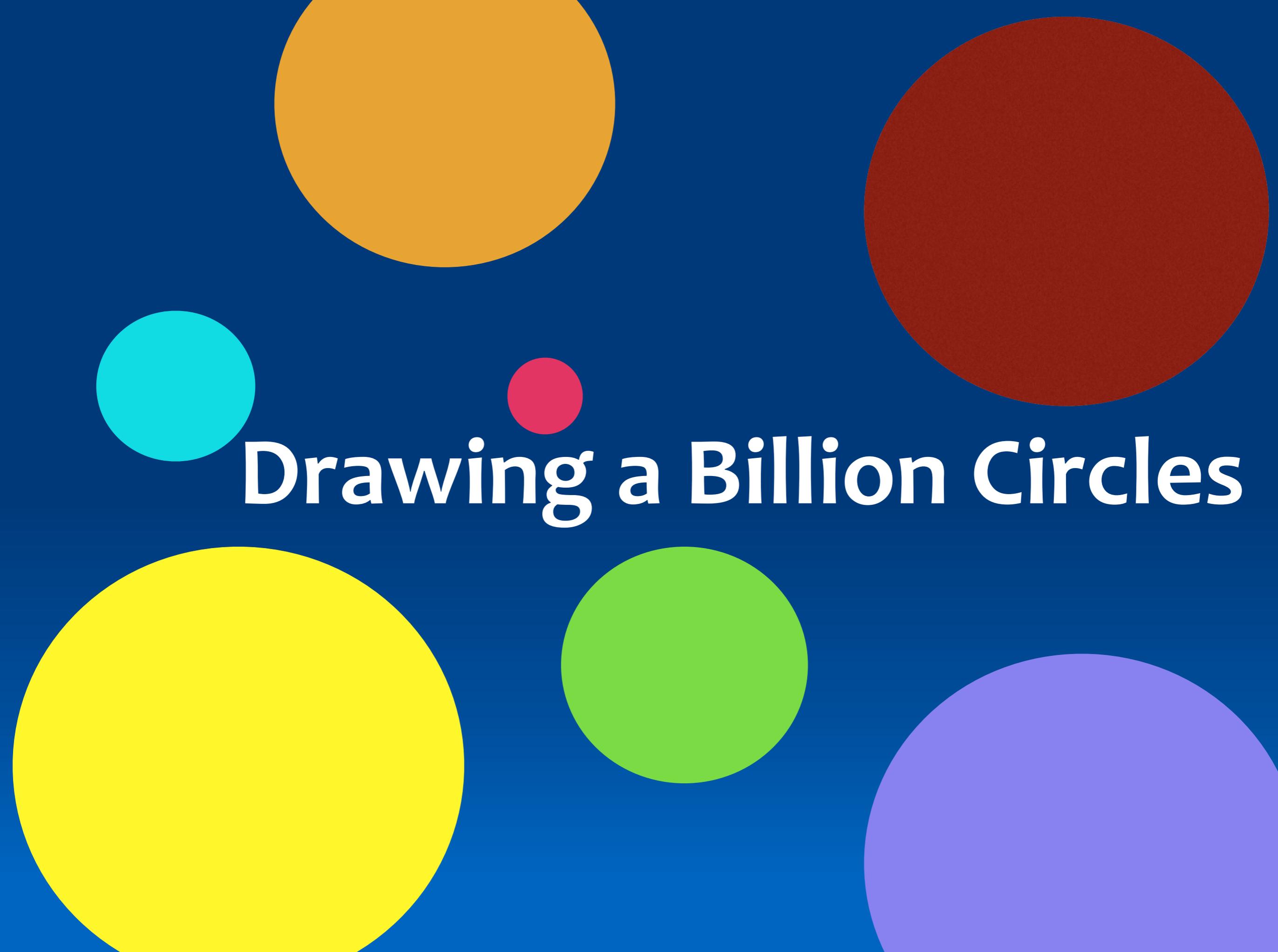
Draw a picture to show your thinking



Use numbers to show your thinking

Blank area for writing numbers to show thinking.

Answer:



Drawing a Billion Circles



100 circles : minute

144,000 circles : day

1,000,000,000 would take 6944 days

19+ years with no sleep



Mark Chubb @MarkChubb3 · 16m
[@gfletchy](#)



Where does 1 billion go?



Where does 1 billion go on the number line?



Where does 1 billion go on the number line?



Putting Numbers in Perspective



<u>One-to-One Correspondence</u>	Students can connect one number with one object and then count them with understanding.
<u>Counting</u>	The number of objects remains the same when they are rearranged spatially. 5 is 4&1 OR 3&2.
<u>Number Conservation</u>	Rote procedure of counting. The meaning attached to counting is developed through one-to-one correspondence.
<u>Hierarchical Inclusion</u>	Numbers are nested inside of each other and that the number grows by one each count. 9 is inside 10 or 10 is the same as $9 + 1$.
<u>Subitizing</u>	Understanding that the last number in your count sequence tells you how many are in the set you counted.
<u>Comparison</u>	Being able to visually recognize a quantity of 5 or less.
<u>Cardinality</u>	Being able to compare quantities by identifying which has more and which has less.

NUMBER SENSE TRAJECTORY

1. **Cut and separate** all the headers and descriptors
2. **Match** the header to the correct descriptor
3. **Place** them in order
4. **Explain** the stage and what student thinking would look like in each stage (use number, pictures, and/or words).

Kindergarten



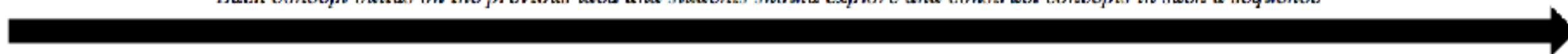
2nd Grade

<u>One-to-One Correspondence</u>	Students can connect one number with one object and then count them with understanding.
<u>Counting</u>	The number of objects remains the same when they are rearranged spatially. 5 is 4&1 OR 3&2.
<u>Number Conservation</u>	Rote procedure of counting. The meaning attached to counting is developed through one-to-one correspondence.
<u>Hierarchical Inclusion</u>	Numbers are nested inside of each other and that the number grows by one each count. 9 is inside 10 or 10 is the same as $9 + 1$.
<u>Subitizing</u>	Understanding that the last number in your count sequence tells you how many are in the set you counted.
<u>Comparison</u>	Being able to visually recognize a quantity of 5 or less.
<u>Cardinality</u>	Being able to compare quantities by identifying which has more and which has less.

Number Sense Trajectory –Putting It All Together

Trajectory	<p><u>Subitizing</u> Being able to visually recognize a quantity of 5 or less.</p>	<p><u>Comparison</u> Being able to compare quantities by identifying which has more and which has less.</p>	<p><u>Counting</u> Rote procedure of counting. The meaning attached to counting is developed through one-to-one correspondence.</p>	<p><u>One-to-One Correspondence</u> Students can connect one number with one object and then count them with understanding.</p>	<p><u>Cardinality</u> Tells how many things are in a set. When counting a set of objects, the last word in the counting sequence names the quantity for that set.</p>	<p><u>Hierarchical Inclusion</u> Numbers are nested inside of each other and that the number grows by one each count. 9 is inside 10 or 10 is the same as $9 + 1$.</p>	<p><u>Number Conservation</u> The number of objects remains the same when they are rearranged spatially. 5 is $4+1$ OR $3+2$.</p>
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Each concept builds on the previous idea and students should explore and construct concepts in such a sequence



Number Relationships	<p><u>Spatial Relationship</u> <u>Patterned Set Recognition</u> Students can learn to recognize sets of objects in patterned arrangements and tell how many without counting.</p>	<p><u>One and Two-More or Less</u> Students need to understand the relationship of number as it relates to +/- one or two. Here students should begin to see that 5 is 1 more than 4 and that it is also 2 less than 7.</p>	<p><u>Understanding Anchors</u> Students need to see the relationship between numbers and how they relate to 5s and 10s. 3 is 2 away from 5 and 7 away from 10.</p>	<p><u>Part-Part-Whole Relationship</u> Students begin to conceptualize a number as being made up from two or more parts.</p>
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Be the teacher...



PURPOSEFUL WITH DOT CARDS

Subitizing war: one card is flipped over and the first player to say the card gets to keep it

More or less: each player flips over a cards and players must say the number on the card that is MORE or LESS

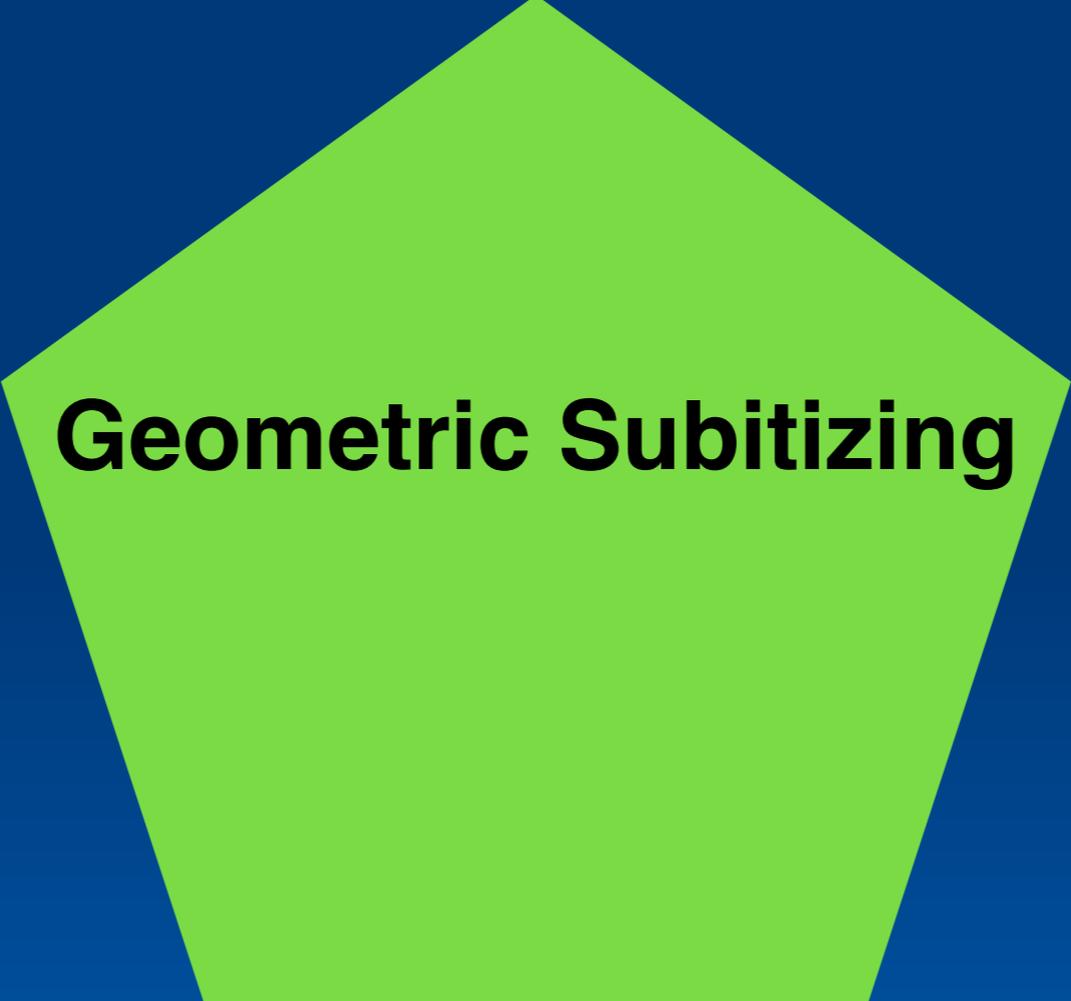
+/- 1 and 2: one card is flipped over and players must say the number that is 1 more

Addition war: 2 cards flipped over and students must say the sum of the 2 cards

Part-Whole-Head: 3 players needed. 2 players flip over a card and without looking at it they place it on their forehead. The third player says the sum of the cards and each player tries to solve for the number value that is on their head.

Number Sense Trajectory –Putting It All Together

Trajectory	<u>Subitizing</u> Being able to visually recognize a quantity of 5 or less.	<u>Comparison</u> Being able to compare quantities by identifying which has more and which has less. Students employ visual estimation to compare quantities.	<u>Counting</u> Rote procedure of counting. Forwards and backwards counting, starting and stopping at specific numbers. Not just zero OR skip counting by 10s from multiples of 10.	<u>One-to-One Correspondence</u> Students can connect one number with one object and then count them with understanding. Here students are representing numbers and quantities.	<u>Cardinality</u> Tells how many things are in a set. When counting a set of objects, the last word in the counting sequence names the quantity for that set.	<u>Hierarchical Inclusion</u> Numbers are nested inside of each other and that the number grows by one each count. Before and after number word sequence	<u>Number Conservation</u> The number of objects remains the same when they are rearranged spatially. 5 is 4&1 OR 3&2. 732=7 hundreds, 3 tens, 2 ones OR 732=73 tens, 3 ones.
Through 20							
Through 120 Through 1000					<p><u>Note:</u> As a student's understanding of develops the focus shifts from counting and cardinality to unitizing.</p> <p>Unitizing is when students see that a bundle of ten is composed of 10 ones. 100 can be composed of 10 tens or 100 ones.</p>		



Geometric Subitizing

Hundreds and 0-99 Charts

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

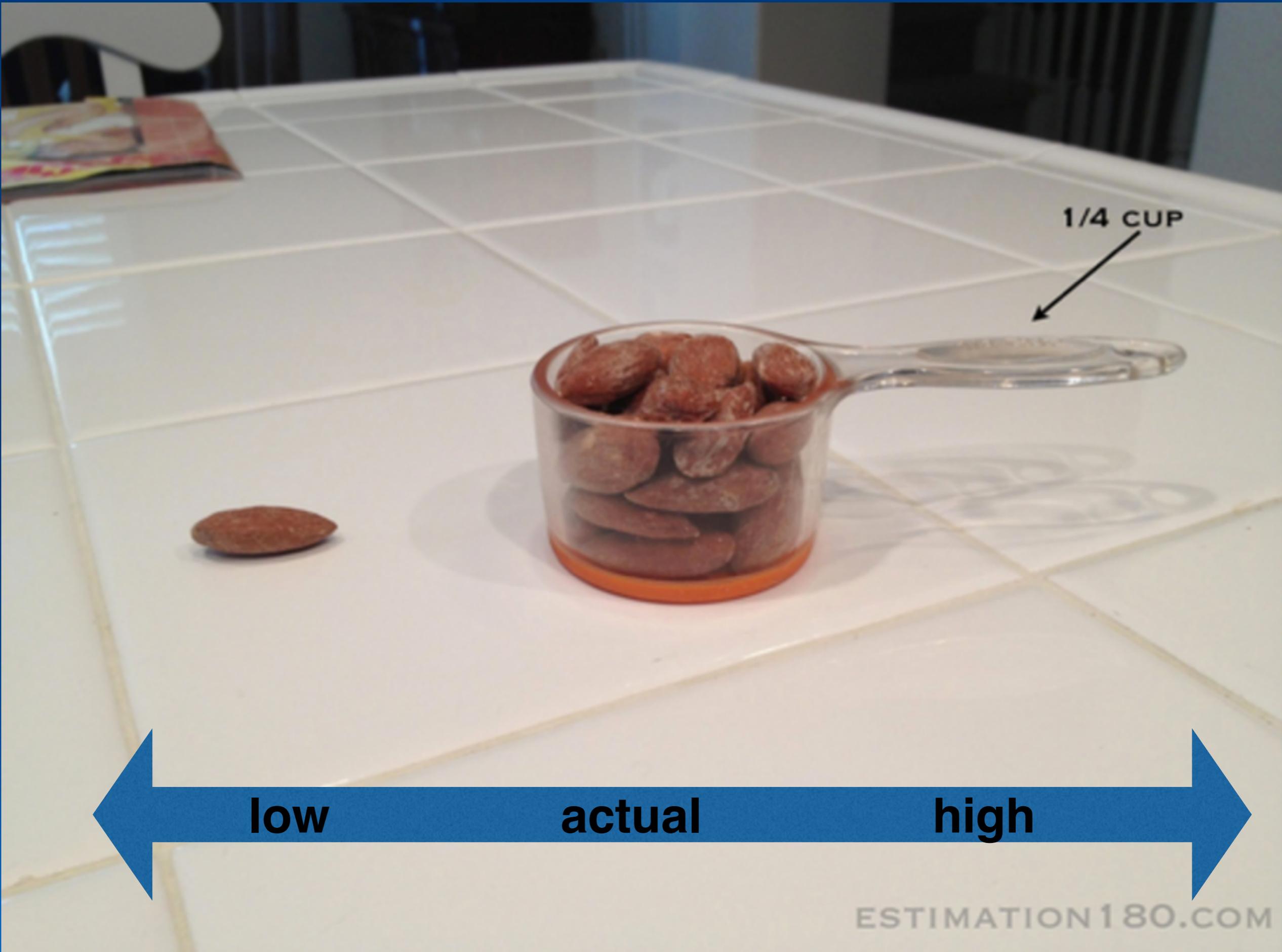
91	92	93	94	95	96	97	98	99	100
81	82	83	84	85	86	87	88	89	90
71	72	73	74	75	76	77	78	79	80
61	62	63	64	65	66	67	68	69	70
51	52	53	54	55	56	57	58	59	60
41	42	43	44	45	46	47	48	49	50
31	32	33	34	35	36	37	38	39	40
21	22	23	24	25	26	27	28	29	30
11	12	13	14	15	16	17	18	19	20
1	2	3	4	5	6	7	8	9	10

Sounds of Imaging Numbers



Becoming a good estimator takes practice

What are you currently doing to promote number sense through estimation in your classroom?



1/4 CUP

low

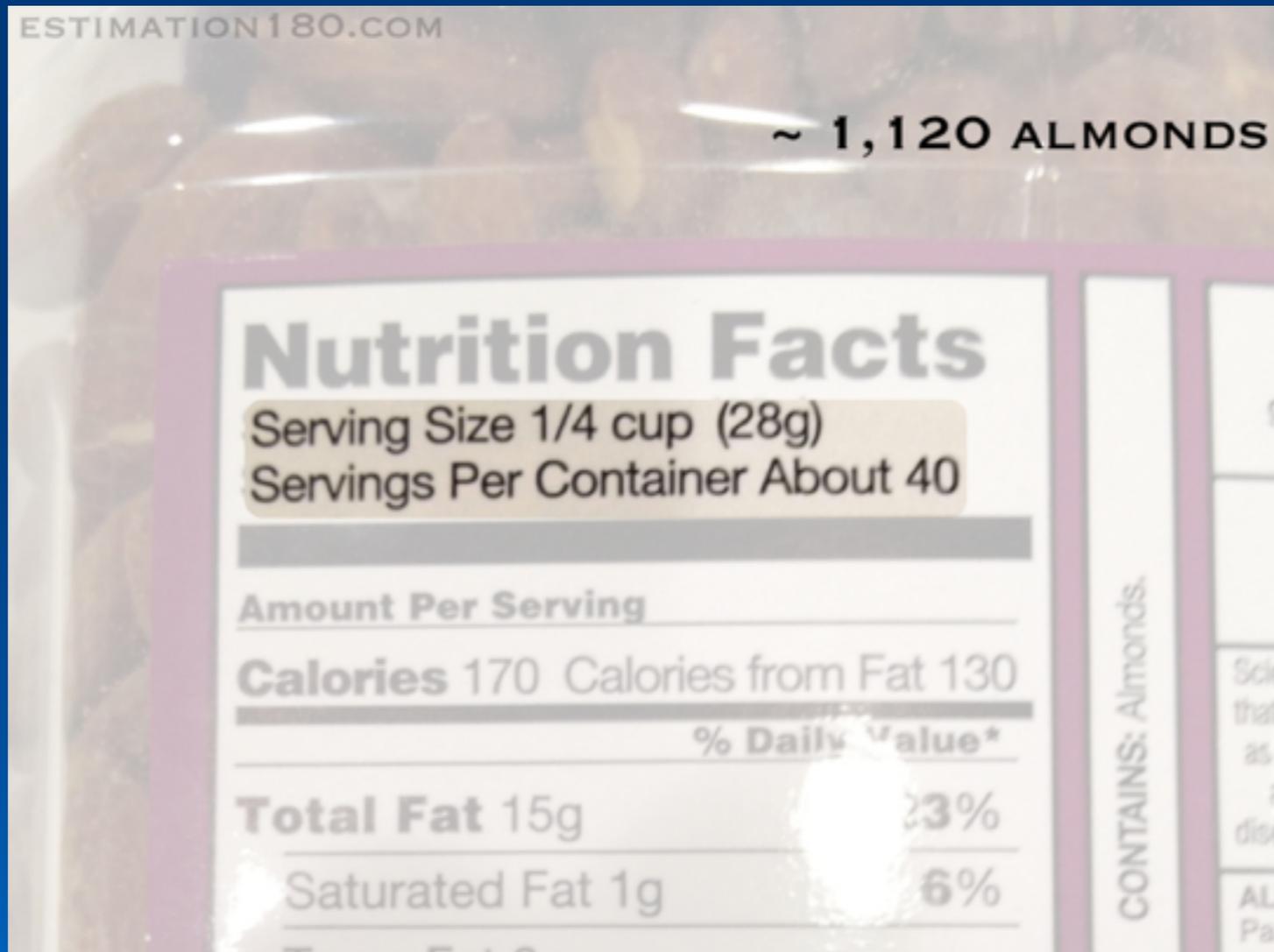
actual

high





Building number sense one day at a time.



www.esteemation.com

Estimation Station



ANISHA
21

Emma
20

Kirsten
14

Reginald
1002

LAWSON
16

Jimiyah
20

20

Blake
19

Thaddeus
200

Evan
20

Delia
20

28

Jay
20

Trianna
1100

Arman tee
100

RDBE
100

malayah
20

Hunter
15

Sammy
30

Abdul



estimation jar

Jan
Larsen
ADLE
20
Del in
20
Rejank
1002
50
Kirsten
14
Blake
19
Thaddeus
200
Jimish
20
32

16 100 20 20 1002 50 14 19 200 20 32

Sammy

30

ARISM

21

Emma

20

E. Jain

20

91K

20

malayah

20

Delicon

20

Jimitah

20

