



# CREATING A CLASSROOM OF COLLABORATIVE PROBLEM SOLVING AND PERSISTENCE

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**1.NAMES**

**2.SEE**

**3.WONDER**







# SHARE OUT



# TURN AND TALK . . .

**What are some pitfalls or challenges that a teacher may face when implementing complex tasks?**



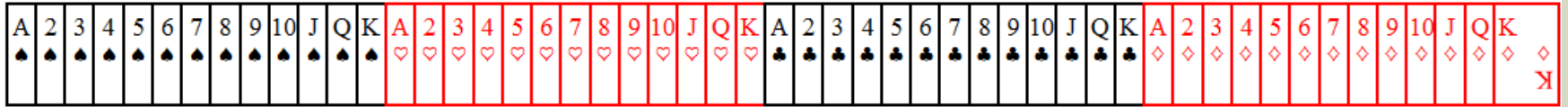
# CHALLENGES

- Students have no point of entry.
- Students struggle to sustain their engagement.
- Students don't feel like their struggle is productive.

# ENTRY FOR ALL

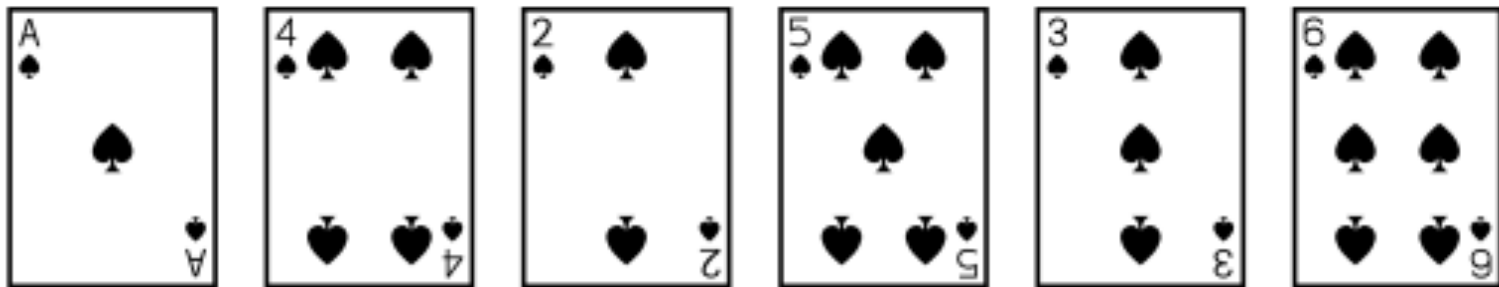
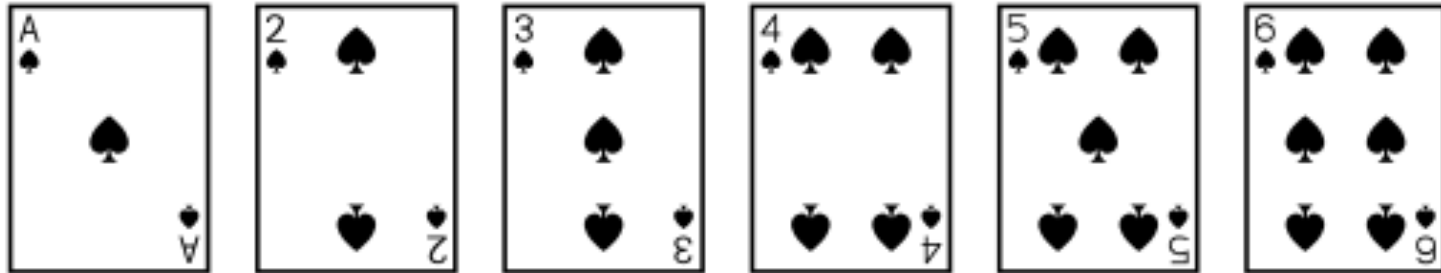
- Student Choice
- Manipulatives
- Individual Thinking Time

# WHAT MAKES A PERFECT SHUFFLE?





# PERFECT SHUFFLES



# YOUR CHOICES . . .



- **CRAWFISH:**

How many shuffles needed for smaller decks?

- **CATFISH:**

Explore the path of the 2 in a smaller deck.

- **ALLIGATOR:**

Explore a deck with 52 cards.



A	2	3	4	5	6	7	8	9	10	J	Q	K	A	2	3	4	5	6	7	8	9	10	J	Q	K	A	2	3	4	5	6	7	8	9	10	J	Q	K	A	2	3	4	5	6	7	8	9	10	J	Q	K		
♠	♠	♠	♠	♠	♠	♠	♠	♠	♠	♠	♠	♠	♥	♥	♥	♥	♥	♥	♥	♥	♥	♥	♥	♥	♥	♥	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣	♣





# SUSTAINED ENGAGEMENT

- REAL TIME FEEDBACK
- PROMOTING INDEPENDENCE

# TEAMWORK RUBRIC

# CIRCLES

## Team #6

Names: Jennifer Nawacete, Mohamed Mohamed, Luis

all your positivity and hard work!  
I know I (Mohamed) and I work hard and that's because I'm a great student!  
MS. Kearney

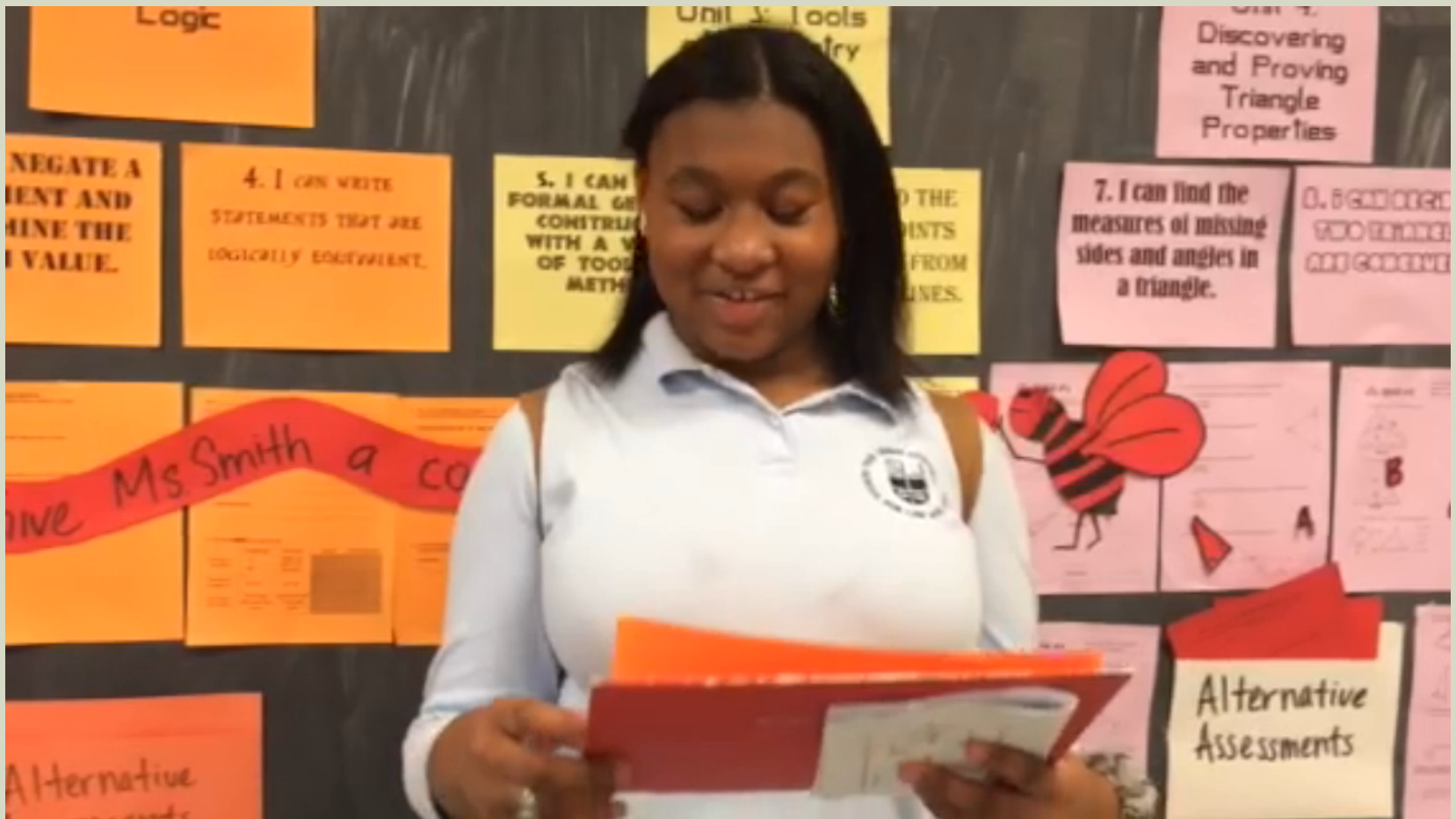
TEAMWORK RUBRIC		
<b>Set Up:</b> Students only talk to people in their team. All talk is about mathematical ideas.	<b>Cooperation:</b> Everyone's ideas are heard. Everyone helps.	<b>Math Thinking:</b> Everyone demands to understand. If you listen to the team, you hear people explaining their thinking.

Team Goal by the end of Friday day:		Friday, March 8
Monday, March 11	Tuesday, March 12	
$\pi$ (pi) 3.14159265359	Take yellow sticky notes and stay on task. Jennifer & Mohamed finished 4 work (at the same place)	
Monday, March 18	Tuesday, March 19	
Fix #4 before moving on. Also, I really love how you work together but make sure all the work is shown on <u>everyone's</u> packet!	you could have done	

Fix #4 before moving on.  
Also, I really love how well you work together but make sure all the work is shown on everyone's packet!

curious  
and in a  
hope  
bully  
Mohamed

# KALANI



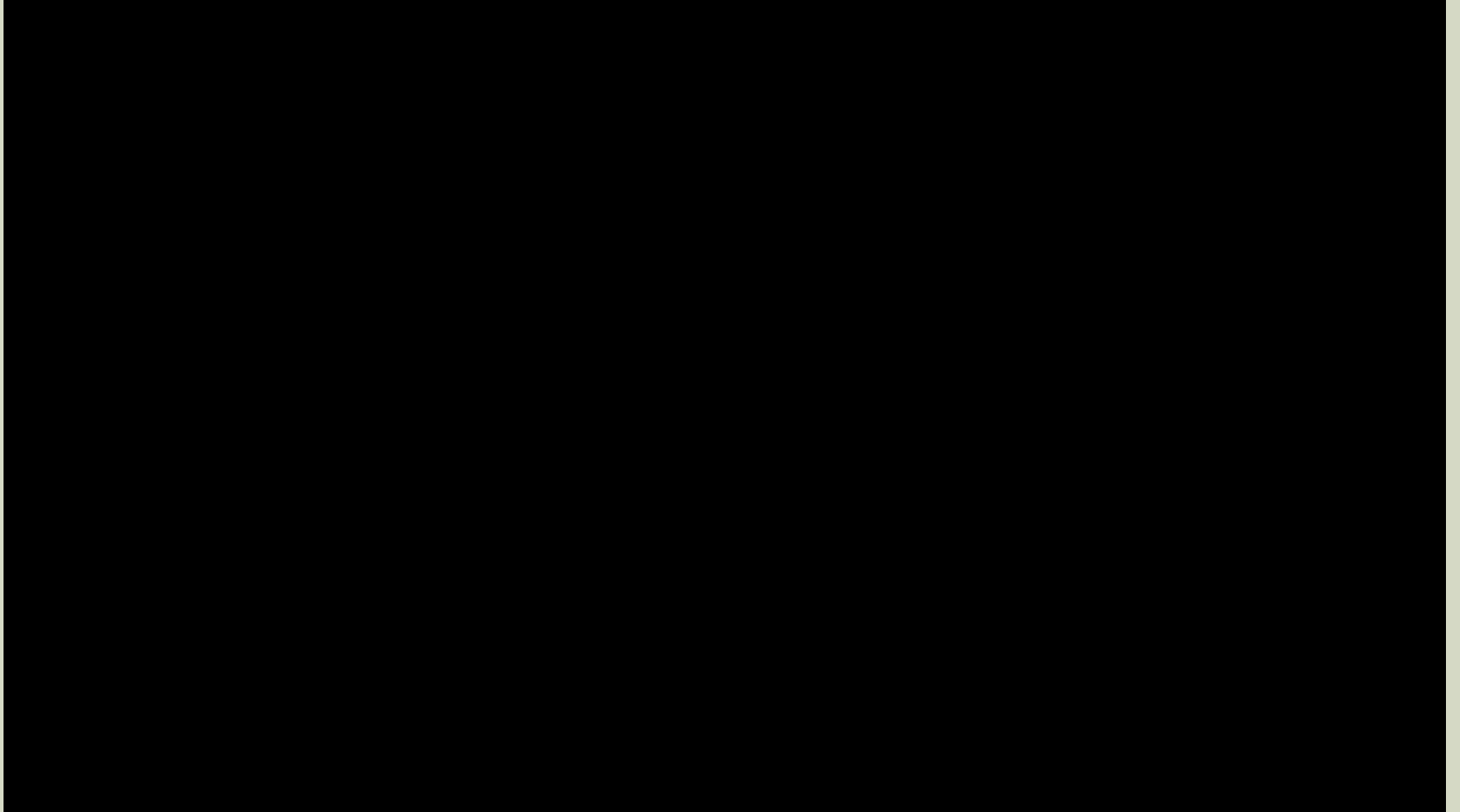
# LIVE "TWEETING" OF QUOTES AND OBSERVATIONS

Response	Help
Team 1	"Wait - how did you get that?" "Is everyone ready to go on? using multiple strategies"
Team 2	great debate about what strategy to use

Team 3 "I dunno - Kimberley, what do you think?" **talk outside the group**  
group is persisting, even though first strategy did not work.

Team 4	"Does everyone understand what it's asking?"
Team 5	lovely tone - very supportive <b>talk on other topics</b> "If that's the case, then could we use the other answer choices . . ."
Team 6	"I don't get what you said - can you explain again?" "Why did you multiply there?"

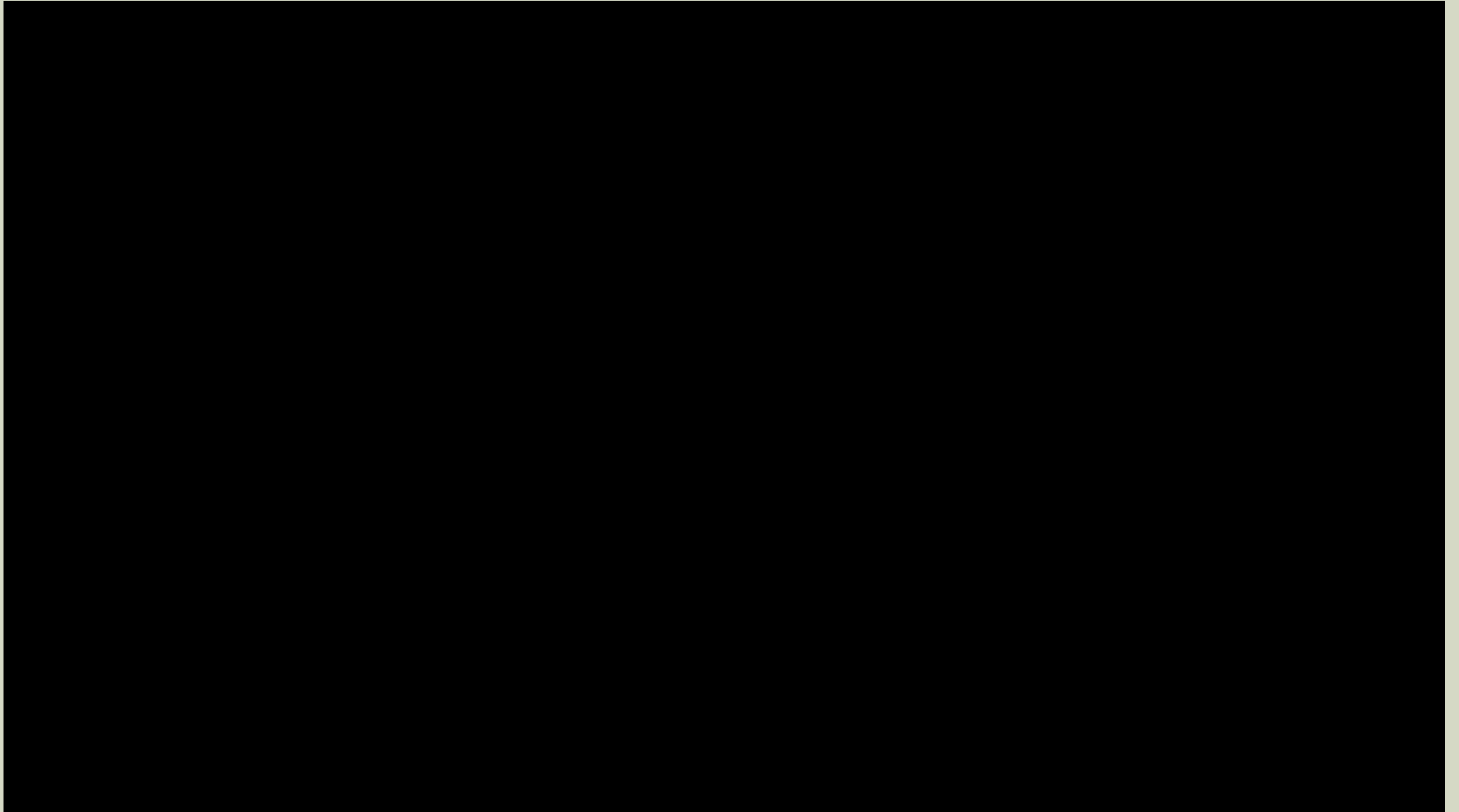
# RAYSHON AND JAYCIA



# QUESTION CARDS

**YOU CAN ASK MS. SMITH  
ONE QUESTION.**

# JANEL & TIMETHEUS





# PRODUCTIVE STRUGGLE

- SHOUT OUTS ABOUT PROCESS
- SELF REFLECTION

# SELF REFLECTIONS

Name Timothy Braithwaite

## EXIT SLIP: MAKING A PLAN FOR SUCCESS!

What I will do if I get stuck on a multiple choice question:

I would cancel out the answers that do not apply and then find out the very best answer.

What I will do if I get stuck on a free response question:

Then, I will take a second to <sup>recognize</sup> realize ~~that~~ my smartness and answer the question.

**Name**

**Email**

**What is one strategy that you hope to try in your classroom to encourage perseverance in problem solving?**

# THANK YOU!

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Shout outs to Math for America, Darryl Yong, PCMI, & Rhonda Bondie for teaching us many of these strategies!

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