# FRAPPYs

Utilizing Free Response

**AP P**roblems (**Y**ay!)

as Formative Assessments

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### LEARNING TARGETS

#### Session Goal:

Introduce the FRAPPY process as a formative assessment tool to:

- ✓ Strengthen student understanding,
- $\checkmark$  Develop communication skills, and
- ✓ Provide AP Exam preparation.

✓ I can describe a quality statistical response.

 I can utilize AP Free Response Problems as formative assessments to develop statistical understanding and effective communication skills.

### Part 1:

✓ Statistical Thinking
 ✓ AP Free Response Questions
 ✓ Lessons Learned from the Reading



#### **REASONING AND SENSE MAKING**

"Reasoning and Sense Making are the foundations for the processes of mathematics...

...teachers must judiciously select tasks that require students to figure things out for themselves and ask probing questions."



"Assessment that focuses primarily on students' abilities to...perform basic statistical computations will lead students to believe that reasoning and sense making are not important...We must ask students to explain their thinking."

### FREE RESPONSE QUESTIONS

"Statistics is a discipline in which clear and complete communication is an essential skill.

The free-response questions require students to use their analytical, organizational, and communication skills to formulate cogent answers."

Students must...

# FREE RESPONSE QUESTIONS Conceptual

Relate two or more different content Understanding areas...as they formulate a complete response or solution to a statistics problem.

them to determine how they will **Communication** organize and present each response.



clear

## Part 2:

 ✓ What is Formative Assessment?
 ✓ Strategies of Assessment for Learning

 $\checkmark The Purpose of the FRAPPY$ 

### WHAT IS FORMATIVE ASSESSMENT?

How do we increase Conceptual Understanding and Communication Skills {ie. Statistical Proficiency}?

Formative Assessment Formal and informal \_\_\_\_\_ teachers AND students use to gather evidence for the \_\_\_\_\_

Stiggins, R., (2006) Classroom Assessment for Learning.



### ...NOT ROCKET SCIENCE

To improve, students must: ☑Know what good work looks like ☑Compare their work to that standard



The POWER is in the <u>INTENTIONAL</u>, <u>STUDENT-INVOLVED</u> use of FRAPPYs as <u>LEARNING TOOLS</u>!

### THE PURPOSE OF THE FRAPPY

Important Note #1: We over-TEST our kids.



Important Note #2: AP Statistics is NOT a test-preparation course.

The primary intent of the FRAPPY process is NOT to prepare for the AP exam or assign grades...

...its purpose is to help develop students' conceptual understanding and communication skills.

Part 3: The FRAPPY Process ✓Step 1 ✓Step 2 ✓Step 3 ✓Step 4 ✓When Should I FRAPPY?

## THE FRAPPY PROCESS

Probl	(Free Response AF Problem				
	Two parents have such halfs a two competition was in a given at an elementary school fair. To play the genes, numbers will answer to hanch Prog-Prog tasks from the comparise on that the halk had within a E-continuous much A target for will all down thing all the model of the hads of where it met figures below AP point on the target line are equidatest from the hanched picture.				
	Inad Scie				
	location				
	a set on the neuron returns on the control to base on the set of paral. The parents the sectors much do the sectors in a control to base of the parents hands to base the compare haloss building additional ones. Usdare identical conditions, the parents hands 40 Fing Fong balls from such compare and messares the distance that the ball travels believe baseling Distances to the neurosc continents are papeled in the distance balance.				
	125 100 105 140 148 150 155				
Scoring:	Catapak B 125 130 135 140 148 150 155 Distance (in-continuents)				
EPI	(a) Comment on size initiations and any differences in the two distributions of distances traveled by the talk isochold from compart A and compart B.				
EPI	(b) If the panets watt to reasoning the probability of have give Pang bills list within the band, which of the ison complete, it was it is would be shown in an abuse the other $\beta$ have $\beta$ panet.				
BPI	(c) Using the comput that you chose in part (d), how many continenters from the origet line should this comput be placed? Equin why you chose this detaces.				
Total:/4					

The FRAPPY Process
"Free Response AP Problem, Yay!"

- I Problem 1 Class Period
- **M**Intent of Question
- Sample Responses
- **M**Rubric Discussion
- Score and Reflect

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1		
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1		
1		
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1		



### WHAT DOES GOOD LOOK LIKE? STEP 2

Discuss
<ul> <li>View sa response</li> <li>Availab</li> <li>NCTM a</li> <li>How we</li> </ul>
Determi Minima Develo Substa

- Intent of Question
- mple student es
- ole at AP Central
- Assessment Sampler ould YOU score these?
- ne what constitutes. al
- ping ntial
- Complete









#### RESOURCES

CollegeBoard

- Past Free Response Question and Student Samples http://apcentral.collegeboard.com/apc/members/ exam/exam\_information/8357.html

- StatsMonkey Resource Clearinghouse, FRAPPYs http://web.mac.com/statsmonkey/



- Pearson Assessment Training Institute http://www.assessmentinst.com/

- NCTM Focus in High School Mathematics, Assessment Handbook http://www.nctm.org/

### **CONCLUDING THOUGHTS**

"Innovations that include strengthening the practice of formative assessment produce significant and often substantial learning gains."

Black & Wiliam, "Inside the Black Box: Raising Standards Through Classroom Assessment."