

7TH GRADE

POWER



PROBLEMS

Statistics & Probability

Name:

The student council is doing a fundraiser and raised \$3,000 that they have decided to spend on a school project. They have decided to create a budget to determine how the 7th grade should spend the money.

Give an example of a project the council could create and how they would spend the money.

Name:

Three students were given 100 cards each with their names on them. After 3 rounds of drawing, the student who drew their name the most percent of times, the student who drew their name the least percent of times, and the student who drew their name 17%, 20%. Explain why there is a difference in the salaries.

Name:

The lists below give the scores on the final math exam by the students in two different math classes.

Mr. Smith's Class:	70	80	82	85	88
	90	99	100	100	100
Mrs. Hill's Class:	82	84	85	85	85
	88	90	92	92	93

Which class do you think did better on the exam? Give statistics to support your answer.



POWER
PROBLEM
7.SP.3

WHAT ARE POWER PROBLEMS?



PURPOSEFUL - These problems are meant to keep students focused, while strengthening initiative and perseverance.



OPPORTUNITIES - These prompts can be used in a variety of ways. P.O.W.E.R problems can be used to introduce a lesson, spiral review, or as formative assessments.

WITH



ENGAGEMENT - Problems are real word applicable and designed to hook students with interest and presentation. Complexity of problems promotes problem solving skills.



RIGOR - Tasks are specifically designed to challenge students and assess conceptual understanding of curriculum versus procedural understanding. Students will need to apply more than just a "formula."

WHY USE POWER PROBLEMS?

BUILD STAMINA WITHIN
YOUR STUDENTS



MORE THAN JUST A COOKIE CUTTER TEXTBOOK APPROACH

- P.O.W.E.R problems are designed to challenge your students with their open ended presentation. Majority of problems that come from textbooks and workbooks assess procedural understanding of curriculum. Some textbooks even provide step by step instructions where the textbook is thinking for the students and taking away that "productive struggle" for children. When we rob students of that event, we rob them of their ability to reason, problem solve, and see beyond a standard algorithm. P.O.W.E.R problems are meant to show students that there are different ways to answer one question in math. With these tasks students take ownership and are part of the problem solving process versus filling in blanks in a textbook.

SAMPLE QUESTIONS:

Name: _____



POWER
PROBLEM
7.SP.2

Three students were playing a game of cards each with their own fair deck.

After 3 rounds the students counted the percent of times, they received an Ace.

The resulting percentages were 14%, 17%, 20%. Explain why there is a difference in the sample proportions?

SAMPLE

Name: _____



POWER
PROBLEM
7.SP.3

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HOW TO USE POWER PROBLEMS

YOUR KIDS. YOUR
CHOICE. FLEXIBILITY.



TO INTRODUCE A LESSON - P.O.W.E.R problems can be used to introduce a new skill. In this case your students will experience a "productive struggle." Their problem solving skills and prior knowledge will kick in. Often times most of my students will have the incorrect answer or no answer at all. I then have someone explain their method/reasoning and allow my students to critique their peer's answer. This makes for great accountable talk discussions. If I see that most students do not have an answer I will assist the class in getting to a specific point and then allow them to finish independently.



SPIRAL REVIEW - Avoid your students forgetting standards by using P.O.W.E.R problems to spiral review previously taught lessons.



FORMATIVE ASSESSMENTS - You can use these problems to assess mastery and levels of understanding.