FLIP A COIN

Performance Standard (10A/10C).C

Predict how many times a coin will land heads or tails when it is flipped 50 times accordingly:

- *Mathematical knowledge*: Create and perform a probability experiment; organize, describe, and make predictions from data; record and graph results of a probability experiment.
- *Strategic knowledge*: Use appropriate strategies to conduct each step of the probability experiment and to report the results.
- *Explanation*: Explain completely and clearly what was done and why it was done.

Procedures

1. ***In order to organize, describe and make predictions from existing data (10A) and determine, describe, and apply the probability of events (10C),*** students should experience sufficient learning opportunities to develop the following:
   - Organize, describe, and make predictions from existing data.
   - Represent data using tables and graphs such as tallies and bar graphs.
   - Describe events as likely or unlikely and discuss the degree of likelihood using such words as certain, equally likely, and impossible.
   - Explain probability as a fractional part of a group to a whole group.
   - Make predictions based on the results received from a probability experiment.
   - Create and perform a probability experiment and record the results.
   - Understand that a number from zero to one inclusive can represent the likelihood of an event.
2. Provide each student with a copy of the "Flip a Coin" recording sheet. Have students review and discuss the task to be completed and how the rubric will be used to evaluate it.
3. Ask each student to use a penny, nickel and dime to conduct the experiment as described on the recording sheet:
   - Part A: Predict the number of times a coin will land on heads or tails if it is flipped 50 times. Students should explain why they made the prediction. The explanation needs to include that a coin will land on one side or the other 1 out of 2 or ½ of the time.
   - Part B: Flip each coin 50 times and record whether it landed heads or tails after each coin toss. Students may use slash marks to record the results and total the total number of times it landed heads or tails.
   - Part C: Fill in the number of blocks on the bar chart equivalent to the number of times each coin landed heads; repeat to complete the bar chart for tails.
   - Part D: Compile results of entire class to show more trials come closer to the theoretical probability of 50-50 or 1/2. Also show probability is the same no matter which coin is used. This will dispel the idea that different coins yield different results.
4. Evaluate each student's performance using the rubric as follows and use the guide on the rubric to determine the performance level:
   - 4 = Predictions were realistic (heads and tails should each occur about 25 times); experiment was conducted correctly; data were recorded accurately; recordings and results were explained accurately and fully.
   - 3 = Prediction is realistic, but data collection had minor mistakes; strategy for recording of data was unsure; recordings and results were not fully explained.
   - 2 = Prediction was somewhat unrealistic and data collection had minor errors; , recording strategies were inappropriate; explanations/justifications of the strategies used were unclear or lacked reasons for what was done.
   - 1 = Prediction was unrealistic and data collection had major errors; recording strategies were inappropriate; explanation/justification of the strategies used had major errors or did not match what was actually done.

Examples of Student Work follow

Time Requirements

- One class period

Resources

- One penny, one nickel, and one dime for each student
- Copies of the “Flip a Coin” recording sheet
- Mathematics Rubric

NAME _____ DATE _____

FLIP A COIN

Part A: If a coin is flipped 50 times, how many times will it land on heads? How many times will it land on tails? Write your prediction below. Be sure to explain why you made the prediction.

It will land on heads_____ times and on tails _____ times. I know this because

_____

_____

Part B: Flip each coin 50 times. Record your findings on this paper.

Penny

Heads	
Tails	

Nickel

Heads	
Tails	

Dime

Heads	
Tails	

Part C: Make 2 bar graphs showing the results of your findings.

Heads Flips

Penny																																	
Nickel																																	
Dime																																	

Tails Flips

Penny																																	
Nickel																																	
Dime																																	

Name_____ **Date** 5-3-01

Flip A Coin
Student Recording Sheet

Part A
Students: A flipped coin can land on either heads or tails. If a coin is flipped 50 times, what is the probability it will land on tails?
Write your prediction on the lines below. Be sure to explain why you made the predictions.

25 because 1/2 times it's gonna land on tails so 25/50 its gonna land out of tails

Part B:
Using a penny, a nickel, and a dime, conduct the following experiment. Flip each coin 50 times. Using tally marks correctly, record your findings on this paper.

Penny
Heads 𝍸 𝍸 𝍸

Dime

Heads 25

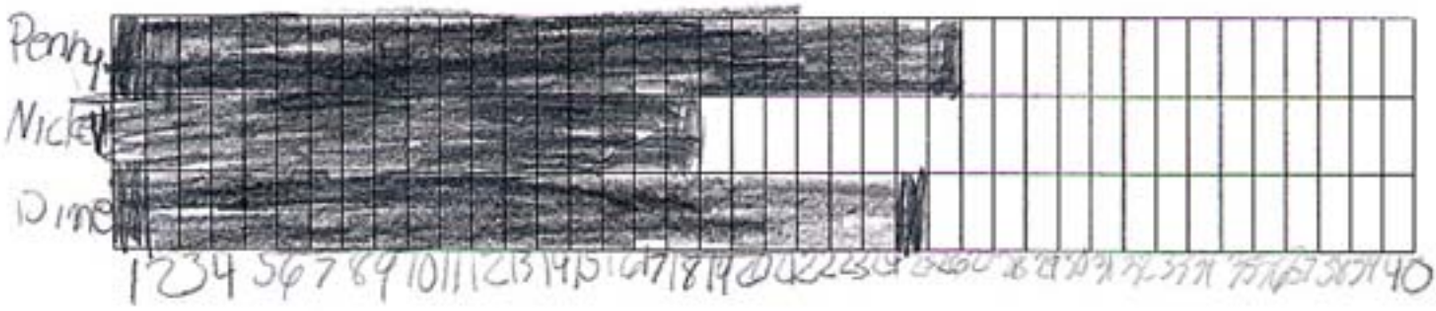
Tails 25

Part C:

Using the data collected, label and make two bar graphs showing the results of your findings.

Heads Flips

Tails Flips



Part D:

Was your original prediction correct? Why or why not?

Yes because it was usually ground 25+25

Name_____ Date 5-3-01

Flip A Coin
Student Recording Sheet

Part A
Students: A flipped coin can land on either heads or tails. If a coin is flipped 50 times, what is the probability it will land on tails?
Write your prediction on the lines below. Be sure to explain why you made the predictions.

I think it would be 25 because half of 50 is 25 so I think it is 25.

Part B:
Using a penny, a nickel, and a dime, conduct the following experiment. Flip each coin 50 times. Using tally marks correctly, record your findings on this paper.

Penny

Heads 𝍸 𝍸 𝍸 𝍸 𝍸 25

Tails 𝍸 𝍸 𝍸 𝍸 𝍸 25

Nickel

Heads 𝍸 𝍸 𝍸 𝍸 |||| 24

Tails 𝍸 𝍸 𝍸 𝍸 𝍸 | 26

Dime

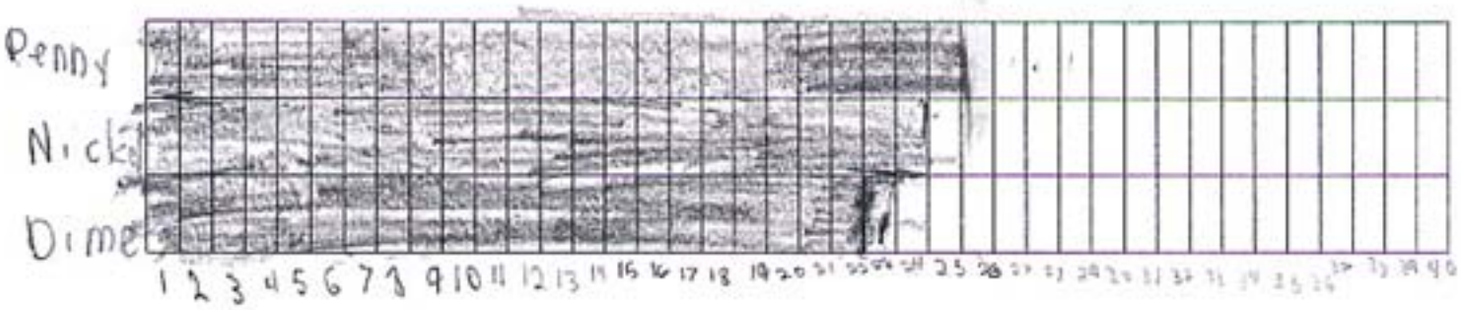
Heads 23

Tails 27

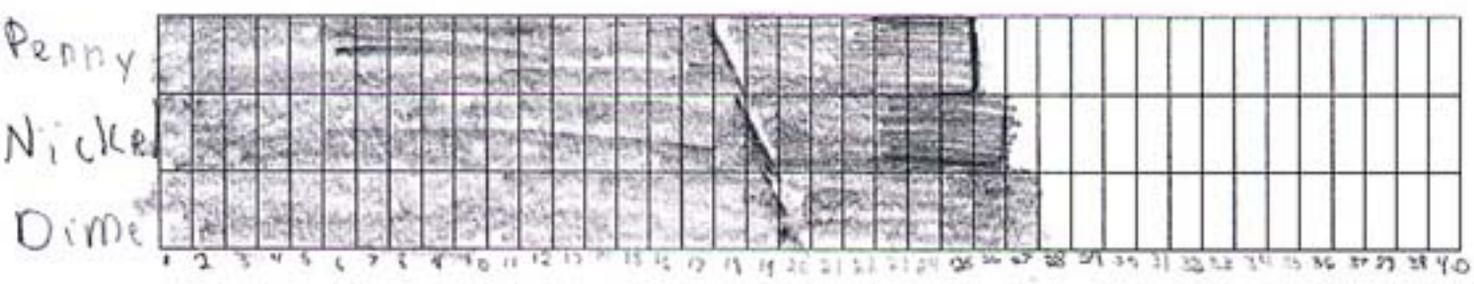
Part C:

Using the data collected, label and make two bar graphs showing the results of your findings.

Heads Flips



Tails Flips



Part D:
Was your original prediction correct? Why or why not?

yes, I was right t now it was going to be around 25 and I got 25, 25, 24, 26, 23, and 27 so I was rigt.