

Name: \_\_\_\_\_

Block: \_\_\_\_\_

## Probability – Heads Up!

Suppose a classmate who invites you to play a game with the following rules approaches you: Each of you takes a turn flipping a coin. You toss your coin first, and he tossed his coins coin second.



He gives you one dollar each time one of the coins lands on tails.

You give him one dollar each time one of the coins lands on heads.

Create a tree diagram for the four possible outcomes.

List all the possible outcomes for this event and what are your winnings for each outcome.

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What are the probabilities for each of these four possible outcomes?

Do you think this is a fair game? Justify your answer.

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Play the game with a partner and record your findings in the table below:

| Name    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---------|---|---|---|---|---|---|---|---|---|----|
|         |   |   |   |   |   |   |   |   |   |    |
|         |   |   |   |   |   |   |   |   |   |    |
| Results |   |   |   |   |   |   |   |   |   |    |

How many Heads – Heads occurred in your game? \_\_\_\_\_

How many Tails – Tails occurred in your game? \_\_\_\_\_

How many Heads – Tails occurred in your game? \_\_\_\_\_

How many Tails – Heads occurred in your game? \_\_\_\_\_

What were the fractional results from the four possible outcomes from playing the game?

How much money did you win or lose? \_\_\_\_\_

How did the actual outcomes differ from the predicted outcomes?

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Now do you believe this game is fair? Justify your answer.

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