

DO YOU HAVE ESP? PROBABILITY ACTIVITY

NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

PERIOD: \_\_\_\_\_

Today you will be exploring different concepts of probability. To do this, you and your partner will test each other for ESP, analyzing and comparing your experimental probabilities with the theoretical probabilities.

**The Activity:**

1. How many trials out of the 20 total trials do you think someone **with** ESP will guess correctly? Why?

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2. With your partner, decide who will be tested first for ESP and who will be doing the testing.

**The person being tested:** Turn your back to the tester and close your eyes.

**The tester:** Mix the cards well (make sure your partner is not peeking) and pull a card from the stack. Ask your partner to guess the shape on the card by *reading your mind* and record the results (without saying if the guess is correct or not) in the table below. Replace the card in the stack, repeat the process 20 times, and then switch roles.

	<i># Correct (Tally)</i>	<i># Incorrect (Tally)</i>	<i>Total Guesses</i>
1 <sup>ST</sup> Person			20
2 <sup>ND</sup> Person			20

3. According to your data, what are the resulting experimental probabilities that each person will guess correctly or incorrectly?

	<i>Experimental Probability of being Correct</i>	<i>Experimental Probability of being Incorrect</i>
1 <sup>ST</sup> Person		
2 <sup>ND</sup> Person		

4. If you or your partner is just guessing, what is the theoretical probability that you would guess correctly or incorrectly in one trial?

<i>Theoretical Probability of guessing Correctly</i>	<i>Theoretical Probability of guessing Incorrectly</i>

5. Based on your understanding of independent events, use the formula you learned in class to calculate whether 2 trials (e.g.  $P(\text{Correct} \cap \text{Correct})$ ) are independent.

6. If you or your partner is just guessing, what is the probability that you would guess correctly/incorrectly for all 20 trials if you are using 3 cards? 4 cards? **(Leave your answers as fractions with exponents. Don't use your calculator.)**

	<i>Probability of 20 Correct Guesses</i>	<i>Probability of 20 Incorrect Guesses</i>
3 cards		
4 cards		

7. If you and your partner were tested again with 75 trials, how many would you anticipate being correct/incorrect based on your *experimental results*? (It may be necessary to round your answer.)

	<i># Correct out of 75</i>	<i># Incorrect out of 75</i>
Person 1		
Person 2		

8. Based on your answer to question 1, do you or your partner have ESP? Explain.

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9. Assuming that someone is said to have ESP if they can guess correctly 28 out of 50 trials, do either you or your partner have ESP? Please explain.

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## DO YOU HAVE ESP? PROBABILITY ACTIVITY

NAME: Resource Key

DATE: \_\_\_\_\_

PERIOD: \_\_\_\_\_

Today you will be exploring different concepts of probability. To do this, you and your partner will test each other for ESP, analyzing and comparing your experimental probabilities with the theoretical probabilities.

### The Activity:

1. How many trials out of the 20 total trials do you think someone **with** ESP will guess correctly? Why?

I THINK SOMEONE WITH ESP WILL GUESS 8 OUT OF 20 CORRECTLY BECAUSE IT WOULD BE HARD TO GUESS 40% OF THEM CORRECT.

2. With your partner, decide who will be tested first for ESP and who will be doing the testing.

**The person being tested:** Turn your back to the tester and close your eyes.

**The tester:** Mix the cards well (make sure your partner is not peeking) and pull a card from the stack. Ask your partner to guess the shape on the card by *reading your mind* and record the results (without saying if the guess is correct or not) in the table below. Replace the card in the stack, repeat the process 20 times, and then switch roles.

	<i># Correct (Tally)</i>	<i># Incorrect (Tally)</i>	<i>Total Guesses</i>
1 <sup>ST</sup> Person	5	15	20
2 <sup>ND</sup> Person	13	7	20

3. According to your data, what are the resulting experimental probabilities that each person will guess correctly or incorrectly?

	<i>Experimental Probability of being Correct</i>	<i>Experimental Probability of being Incorrect</i>
1 <sup>ST</sup> Person	$\frac{5}{20}$	$\frac{15}{20}$
2 <sup>ND</sup> Person	$\frac{13}{20}$	$\frac{7}{20}$





4. If you or your partner is just guessing, what is the theoretical probability that you would guess correctly or incorrectly in one trial?

<i>Theoretical Probability of guessing Correctly</i>	<i>Theoretical Probability of guessing Incorrectly</i>
$\frac{1}{4}$	$\frac{3}{4}$

5. Based on your understanding of independent events, use the formula you learned in class to calculate whether 2 trials (e.g.  $P(\text{Correct} \cap \text{Correct})$ ) are independent.

THE TRIALS ARE INDEPENDENT. THE PROBABILITY OF GETTING THE FIRST TRIAL CORRECT IS  $\frac{1}{4}$  AND THE PROBABILITY OF GUESSING THE SECOND TRIAL CORRECT IS  $\frac{1}{4}$ . SINCE THERE ARE 16 POSSIBLE COMBINATIONS OF GUESSES FOR TWO TRIALS AND ONLY ONE OF THE COMBINATIONS IS CORRECT, THE PROBABILITY OF GUESSING CORRECTLY ON BOTH THE FIRST AND SECOND TRIAL IS  $\frac{1}{16} = \frac{1}{4} * \frac{1}{4}$ . SO THE TRIALS ARE INDEPENDENT.

6. If you or your partner is just guessing, what is the probability that you would guess correctly/incorrectly for all 20 trials if you are using 3 cards? 4 cards? (Leave your answers as fractions with exponents. Don't use your calculator.)

	<i>Probability of 20 Correct Guesses</i>	<i>Probability of 20 Incorrect Guesses</i>
3 cards		
4 cards		

7. If you and your partner were tested again with 75 trials, how many would you anticipate being correct/incorrect based on your *experimental results*? (It may be necessary to round your answer.)

	<i># Correct out of 75</i>	<i># Incorrect out of 75</i>
Person 1	18 or 19	56 or 57
Person 2	48 or 49	26 or 27

8. Based on your answer to question 1, do you or your partner have ESP? Explain.

ACCORDING TO MY ANSWER IN QUESTION 1, SOMEONE WITH ESP SHOULD GET AT LEAST 8 OUT OF 20 CORRECT. PERSON 1 ONLY GUESSED 8 CORRECT SO HE DOESN'T HAVE ESP. PERSON 2 GUESSED 13 CORRECT SO HE HAS ESP!

9. Assuming that someone is said to have ESP if they can guess correctly 28 out of 50 trials, do either you or your partner have ESP? Please explain.

PERSON 1 WOULD HAVE ONLY GUESSED EITHER 12 OR 13 CORRECT SO HE DOESN'T HAVE ESP. PERSON 2 WOULD GUESS 32 OR 33 CORRECT SO HE HAS ESP!

