

# **PRE TEST KEY**

**Salmon Fishing: Investigations into Probability**

A 6<sup>th</sup> grade module

in the

**Math in a Cultural Context\***

**UNIVERSITY OF ALASKA FAIRBANKS**

<b>Student Name:</b>	<b>PRE TEST KEY</b>
<b>Grade:</b>	
<b>Teacher:</b>	
<b>School:</b>	
<b>Location of School:</b>	
<b>Date:</b>	

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**Total Score:**

**Total points possible: 46**

1. Draw a line to match the word to its definition. (4 pts. total)

WORD	DEFINITION
Experimental Probability	The set of possible outcomes from a single trial of an experiment.
Equally Likely	One or more outcomes of an experiment.
Sample Space	Used to predict what might happen after a number of trials.
Event	All events have the same chance of happening.

(4 pts. total)

2. Circle the events that are certain, or have a 100% chance of happening.

a. Roll a six-sided die and get either 1,2,3,4,5,6. (circle = 1pt.)

b. Weather forecast predicts 100% rain for tomorrow. (do not circle = 1 pt.)

c. Flip a coin and get a head or tail. (circle = 1pt.)

d. Flip a coin twice and get a head. (do not circle = 1 pt.)

4 pts. total are given if items a and c are the only ones circled and b and d are not circled)

3. Dora has a coin that is blue on one side and yellow on the other. If she flips the coin twice, what are all the different results she can get? List all possible results below. You can use “B” for blue and “Y” for yellow.

**For finding the sample space: BB, YY, BY, YB (4 pts.)**

**(each of the four outcomes in the sample space is worth 1 pt.)**

4. Two coins are each flipped once. Mary wins if the coins match and Sam wins if the coins do not match. Which of the following statements are true or false. Circle your answer.

a. Sam is more likely to win.

True

False

b. Mary is more likely to win.

True

False

c. Mary and Sam have the same chances of winning.

True

False

d. Sam can never win.

True

False

**(1 pt. each = 4 pts. total)**

5. The chance of snow tomorrow in Fairbanks is 35%. What is the chance that it will not snow tomorrow?

Write your answer here: 65 or 65% chance of not snowing. (1 pt.)

6. Peter could not decide whether to walk or catch the bus to school.

To decide, he wants to flip a coin 10 times. If more heads come up, then he will walk to school and if more tails come up, he will catch the bus.

Peter flipped the coin 10 times, and it landed heads up every time.

a. Is this possible? Circle the correct answer.

YES

NO

(1 pt.)

b. Write the explanation for your answer in the space below.

Each flip can either be a head or a tail side. In this case, it showed a head all 10 times. This may be unlikely, but it is possible. (1 pt.)

(2 pts. total)

7. A six-sided dice is rolled. Find the probability that:

a. The number rolled is 2.

Write your answer here: 1/6 (1 pt.)

b. The number rolled is greater than 4.

Write your answer here: 2/6 or 1/3 (1 pt.)

c. The number rolled is less than 5.

Write your answer here: 4/6 or 2/3 (1 pt.)

**(3 pts. total)**

8. If two dice were rolled over and over again, what sum would you expect to occur most often?

a. Write your answer here: 7 (1 pt.)

b. How do you know? Write your explanation below:

There are more ways (combinations) of getting a 7 than any other sum (1 pt.)

**(2 pts. total)**

9. There are 4 red marbles, 6 blue marbles, and 5 green marbles in a bag. Find the probability for each of the following events, if only ONE marble is drawn from the bag.

a.  $P(\text{red marble}) = \underline{4/15}$  (1 pt.)

b.  $P(\text{blue marble}) = \underline{6/15 \text{ or } 2/5}$  (1 pt.)

c.  $P(\text{not green}) = \underline{10/15 \text{ or } 2/3}$  (1 pt.)

d.  $P(\text{yellow marble}) = \underline{0}$  (1 pt.)

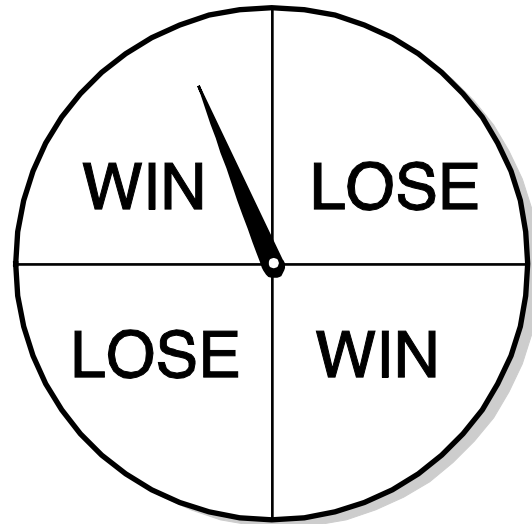
(1 pt. each = 4 pts. total)

**Note: Advanced students may choose to use percentages (%) instead.**

10. For the probability project, two of the students in Grade 6 created games of chance using spinners.



Jack's spinner



Jill's spinner

Circle the TRUE statement(s):

- a. You would be more likely to win the game if you used Jack's spinner. (do not circle = 0pt.)
- b. You would be less likely to win the game if you used Jack's spinner. (do not circle = 0pt.)
- c. The possibility of winning the game would be the same with either spinner. (circle = 1pt.)
- d. You would be more likely to win the game if you used Jill's spinner (do not circle = 0pt.)

(1 pt. total –only given if item c is the only one circled)

11. Two classes in Grade 6 (6A and 6B) went fishing during the weekend. Class 6A caught 12 king salmon and 12 red salmon.

Class 6B caught 8 king salmon, 4 red salmon, and 4 chum salmon.

a. Draw a spinner to illustrate the salmon that Class 6A caught.

Drawing a spinner with two equal regions (1pt.),

One region labeled kings (1pt.)

One region labeled reds (1pt.)

(3 pts. total)

b. Draw a spinner to illustrate the salmon that Class 6B caught.

Drawing a spinner that has one region equal to one half of the circle and two other regions each equal to one-fourth of the circle (1pt.)

The largest region labeled kings (1pt.)

One of the smallest regions labeled reds (1pt.)

One of the smallest regions labeled chums (1pt.)

(4 pts. total)

12. Becky's little brother took the labels off of 2 cans of king salmon, 3 cans of red salmon, 1 can of chum salmon, and 4 cans of pink salmon. If Becky chooses one of the cans for lunch, what is the probability that she will choose a can of king salmon?

a. Write your answer here: 2/10 or 1/5 (1 pt.)

b. Write the explanation for your answer in the space below:

Because there are 10 cans total, and 2 of them are king salmon, the fraction would be 2/10, or when reduced 1/5. (1 pt.)

**(2 pts. total)**

13. Suppose you have a brand new, unopened box of 100 chocolate candies. Suppose the label on the box tells you that  $P(\text{white chocolate candies}) = 2/5$ , and  $P(\text{dark chocolate candies}) = 3/5$ .

a. How many white chocolates are there in your box?

Write your answer here: White = 40 (2 pts.)

b. How many dark chocolates are there in your box?

Write your answer here: Dark = 60 (2 pts.)

**(4 pts. total)**

14. Students in Mrs. Walker’s class made up a game that uses two flat sticks. Each stick is blank on one side and red on the other.

This is how the game is played:

- Each player tosses the two sticks
- If the sticks both come up blank, the player gets 0 points
- If the sticks come up one red and one blank, the player gets 1 point
- If the sticks come up both red, the player gets 1 point
- The first student to get 10 points wins.

a. Is the scoring for this game fair? Circle True or False.

True

False

False (1 pt.)

b. Explain your answer:

There is not an equal likelihood of getting two reds vs. getting one red and one blank; also it is just as likely to get two blanks as two reds. Or, a student might make a table that shows the sample space (see example below—note this is not the only way)—to demonstrate that the scoring is not fair. (1 pt.)

Stick 1	Stick 2
Red	Red,
Blank	Blank
Red	Blank
Blank	Red

c. If false, show what a fair scoring should be.

1 point blank red or red blank

2 points for blank blank or red red

This is because the red/red and blank/blank combinations are each only half as likely as red blank or blank red so should receive twice as many points.

(2 pt. total) Note: 1 point each for getting the point value correct for each color combination)