RICH MATHEMATICAL TASK BOOKLET

# PROBABILITY

YEAR 3

## Teacher Booklet

## Task 1 (whole class option)

For dinner, Tali is ordering a pizza with cheese.

She can either have a classic base, thin & crispy base, or deep pan base.

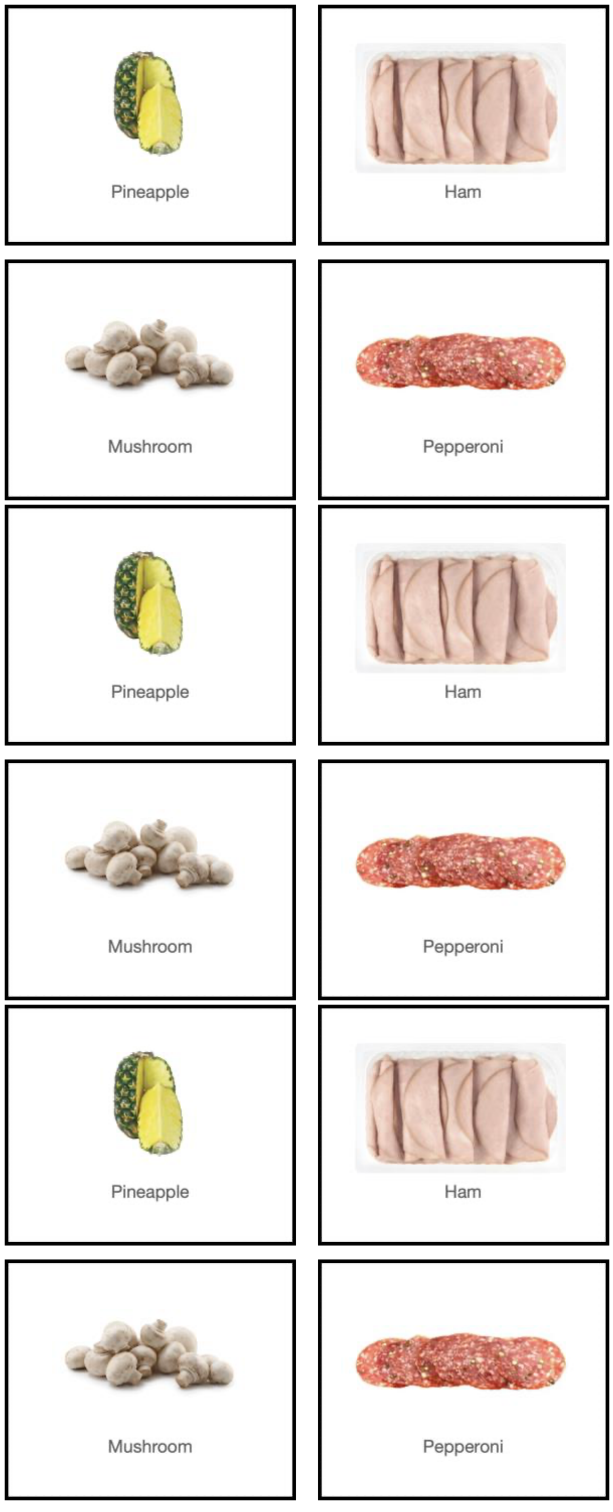
The options for her pizza toppings are:

1. Pineapple
2. Ham
3. Mushroom
4. Pepperoni

Can you show the different pizza combinations that Tali might choose?

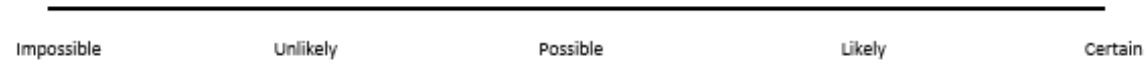
How many different combinations are there?

# Task 1 (Images)



## Task 1 (independent)

Here is a probability continuum:




Here is a list of things that you could have for breakfast. Think about what you eat and put them on the continuum.

| | | | |
|---|---|---|---|
| Milk | Banana | Weetbix | Pizza |
| Socks | Rice | Bread | Candy floss |
| Cereal | Mango | Eggs | Broccoli |

Add three more things to the continuum.

Compare your continuum with a classmate. Is it the same or different?

## Task 2

Xiāng is choosing toppings for her baobing

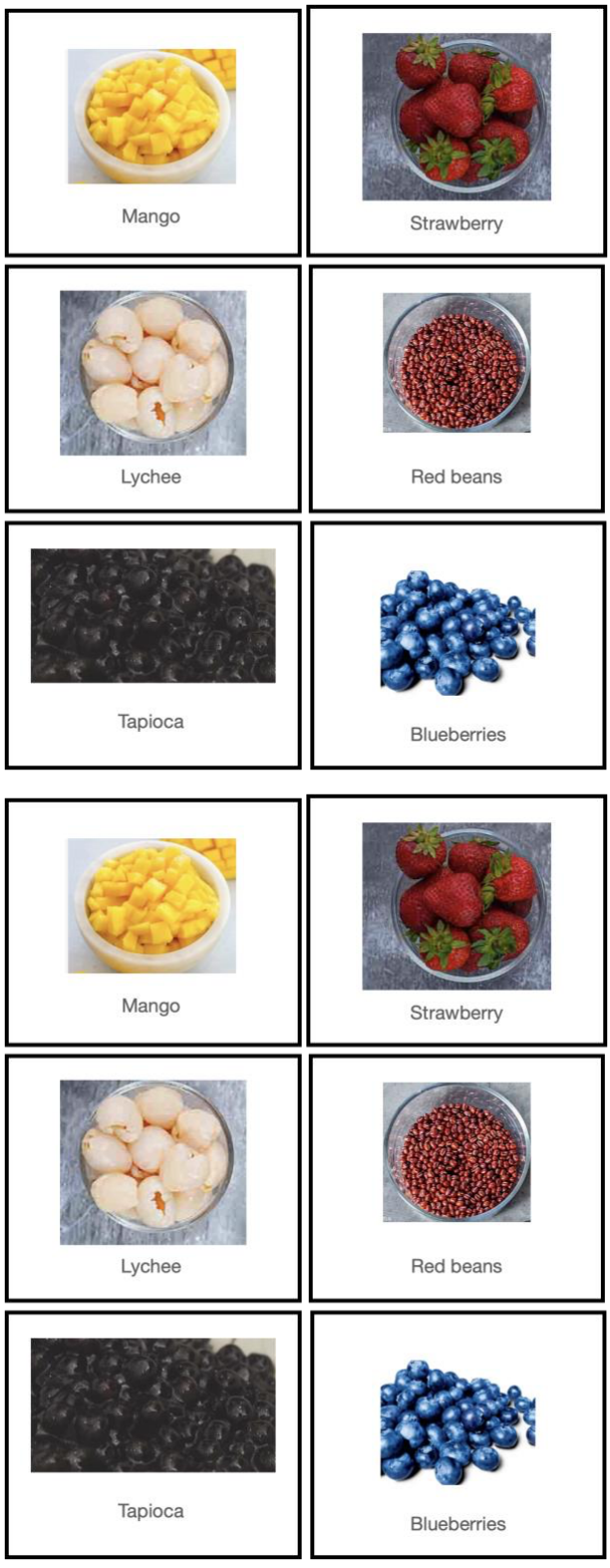
She can choose two toppings from the following list:

Mango, strawberry, lychee, tapioca, red beans, blueberry.

What are the different topping combinations that Xiāng could choose?

How many different combinations are there?

# Task 2 (images).



## Task 2 (independent)

Wiri has to choose two things for his lunch. The things to eat are:

Sandwich

Apple

Muffin

Banana

Pie

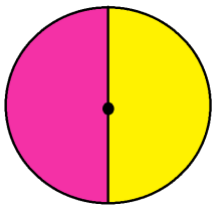
Can you show the different combinations that Wiri might choose?

How many different combinations are there?

## Task 3

Leilani and her brother Iosefa are making spinners to play a game.

Leilani has made a spinner that looks like this:



She says that if it lands on pink, she will win and if it lands on yellow then Iosefa will win.

Is Leilani's game fair?

Spin the spinner twenty times and record what happens.

Iosefa has made a spinner that looks like this:

He says that if it lands on pink then Leilani can win otherwise he wins.

Is Iosefa's game fair?

Spin the spinner twenty times and record what happens.

## Task 3 (independent)

Design some spinners and make the rules for the game of chance.

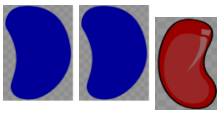
Make one spinner and rules that are fair and two players would have an equal chance to win.

Make one spinner and rules that are unfair and one player would be have more chance to win.

Test both the spinners and games and record what happens when you do multiple trials.

## Task 4

Lin and Abdul were playing a game of beanz. They put one red bean and two blue beans in a bag.



Without looking, Lin picked a bean out of the bag and then Abdul picked one out.

If the two beans picked out were the same colour, Lin won the game.

If they picked out two differently coloured beans, then Abdul was the winner.

Is this a fair game?

Explain your answer.

Use the beans and bags and test the game by trialling picking out the beans 30 times. Record your results.

Make statements about what you notice.

## Task 4 (independent)

Beanz challenge games

Hemi is deciding which beanz challenge game would have an equal chance for him to win.

The first challenge has a bag with the following beans inside:

Hemi wins if he picks a blue bean without looking.

Is this fair? Why or why not?

Use the beans and test the game 20 games and record the results.

Make statements about what you found.

The second challenge has a bag with the following beans inside:

Hemi wins if he picks a yellow bean.

Is this fair? Why or why not?

Use the beans and test the game 20 games and record the results.

Make statements about what you found.

Can you design a beanz challenge where Hemi would have an equal chance of winning?

## Task 5

Moana and Tangi are playing a dice game.

If an even number is rolled on the dice then Moana wins.

If a three is rolled on the dice then Tangi wins.

Who is more likely to win the game? Why?

Use the dice to play the game and do 30 trials and record the results. Represent the results on a column graph.

Was your prediction correct?

## Task 5 (independent)

Lily and Noah are playing a dice game. They roll a dice.

If it lands on 1, 2, or 3 then Lily wins.

If it lands on 4, 5, or 6 then Noah wins.

Is the game fair? Why or why not?

Use the dice and roll it 40 times and record the results.

What do you notice?

Represent your results using a column graph.

## Task 6

Sunny and Jacoba have designed a dice game. They roll two dice together.

If they roll a double then Player 1 wins, otherwise Player 2 wins. If you win, you take a counter and the first to 20 counters wins the game.

Is it easier for Player 1 to win or Player 2?

Work out the combinations and test your prediction using the dice and counters. Who got to 20 first?

Sunny thinks that to make the game fairer that Player 1 should get four counters each time doubles are rolled.

Do you think this is fairer?

Test your prediction using the dice and counters and play five rounds.

Record the results. Who got to 20 first the most times?

Is the first game fairer or Sunny's idea?

## Task 6

Work with a buddy or by yourself to design a game with the dice that has an equal chance for people to win.

Write the rules for the game and then use repeated trials to test whether the game is fair. Record the outcomes of the trials and represent these.

Make statements about the game that you have designed.

Work with a buddy or by yourself to design a game with the dice that is unfair and gives one player a greater chance to win.

Write the rules for the game and then use repeated trials to test whether the game is unfair. Record the outcomes of the trials and represent these.

Make statements about the game that you have designed.

## Task 7

Luci and Mary have made up a dice game. To play, you each choose six different numbers between 1 to 12. You then roll two dice together and add up the total. You can mark the box for the total on the table:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |
| 7 | | | | | | | | |
| 8 | | | | | | | | |
| 9 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |

The winner is the first to reach the end of the box.

Play the game a few times and see what you notice.

Are there numbers that seem to win more? Why do you think this is?