

Wink, Blink, and Stare

Name(s): _____

The game Wink, Blink, and Stare is played by drawing a chip randomly (without looking) from the bag, returning the chip to the bag, shaking it, and drawing again. The bag contains two chips, one with a dot (•) and one with a dash (-).

Wink wins if a dot and a dash are drawn, Blink wins if two dashes are drawn, and Stare wins if two dots are drawn.

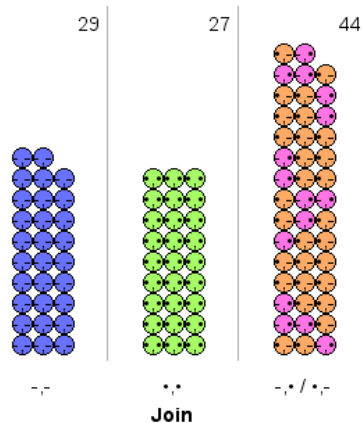
1. List all of the possible ways to draw the two chips from the bag.
2. Is the Wink, Blink, and Stare game fair? Explain.
3. Play Wink, Blink, and Stare. Record the results for each draw (• or -) in the first row of the table below. Then write down the winner.
4. Play the game 11 more times and record the results.

Trial #	First Draw	Second Draw	Winner
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

5. Record the total number of times each event won in your 12 trials.

Winning Event	Total Number of Wins
Wink	
Blink	
Stare	

6. Open a new TinkerPlots document.
7. Drag a sampler from the object shelf into the document.
8. Set up the sampler so it models Wink, Blink, and Stare. For sampler elements, use a dash (-) and an asterisk (*). (Your sampler will probably start with three elements. Click the - button beneath the sampler to delete one element. Click the label of an element to enter a new label.)
9. Set Draw to 2 and click the **RUN** button to run the sampler. The computer will play five games and show the results in a table.
10. Now play the game 100 times. To do this, change Repeat to 100. You can collect the results more quickly by increasing the speed using the **Run Speed** slider next to the **RUN** button.
11. Drag a plot into the document. Select the *Join* attribute in the results table and click the **Label** button in the upper plot toolbar. This will add a label to the plot icons, showing whether they are Wink, Blink, or Stare.
12. Make a plot similar to the one shown here that shows how often each event occurred. Record your results in the table.

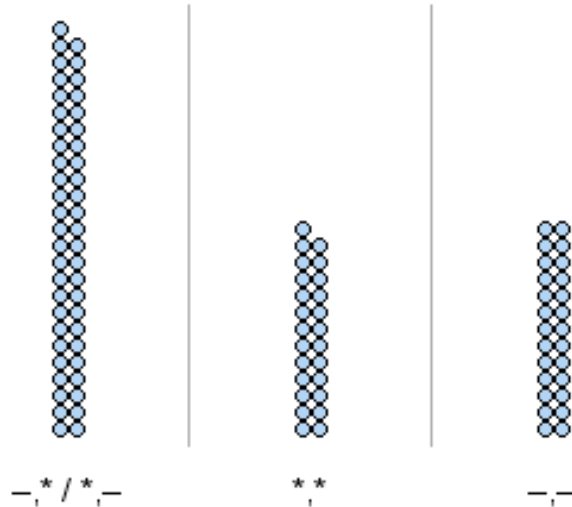


Event	Number of Times 1st Run
Wink	
Blink	
Stare	

13. Click the **RUN** button to run the sampler four more times. Remember that running the sampler once models playing the game 100 times. Record the results of each run. Observe how your plot changes each time.

Event	Number of Times 2nd Run	Number of Times 3rd Run	Number of Times 4th Run	Number of Times 5th Run
Wink				
Blink				
Stare				

14. This graph shows the results you might expect to get after playing the game 100 times. The Wink bar is twice the height of the Blink and Stare bars because about half the results are Winks, one quarter are Blinks, and one quarter are Stares.

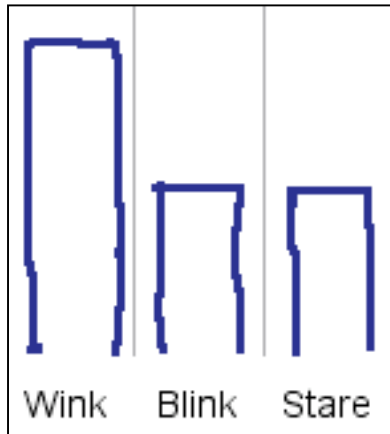


15. Use TinkerPlots to collect 100 more results, then make a plot that looks similar to the one above. Click the **Order** button to order the results and change the **Icon Type** to **Fuse Rectangular**.

On the next page, you see one way of representing what we expect to get if we play the game 100 times. In the *1st Run* box, sketch what you actually got.

16. Repeat this four more times and make sketches of your results in the other four boxes.

What You Expect
100 Games



What You Get
100 Games

1st Run	<table border="1"> <tbody> <tr> <td data-bbox="1195 346 1312 646">Wink</td> <td data-bbox="1312 346 1393 646">Blink</td> <td data-bbox="1393 346 1485 646">Stare</td> </tr> </tbody> </table>	Wink	Blink	Stare
Wink	Blink	Stare		
2nd Run	<table border="1"> <tbody> <tr> <td data-bbox="1195 646 1312 947">Wink</td> <td data-bbox="1312 646 1393 947">Blink</td> <td data-bbox="1393 646 1485 947">Stare</td> </tr> </tbody> </table>	Wink	Blink	Stare
Wink	Blink	Stare		
3rd Run	<table border="1"> <tbody> <tr> <td data-bbox="1195 947 1312 1247">Wink</td> <td data-bbox="1312 947 1393 1247">Blink</td> <td data-bbox="1393 947 1485 1247">Stare</td> </tr> </tbody> </table>	Wink	Blink	Stare
Wink	Blink	Stare		
4th Run	<table border="1"> <tbody> <tr> <td data-bbox="1195 1247 1312 1547">Wink</td> <td data-bbox="1312 1247 1393 1547">Blink</td> <td data-bbox="1393 1247 1485 1547">Stare</td> </tr> </tbody> </table>	Wink	Blink	Stare
Wink	Blink	Stare		
5th Run	<table border="1"> <tbody> <tr> <td data-bbox="1195 1547 1312 1829">Wink</td> <td data-bbox="1312 1547 1393 1829">Blink</td> <td data-bbox="1393 1547 1485 1829">Stare</td> </tr> </tbody> </table>	Wink	Blink	Stare
Wink	Blink	Stare		

Wink, Blink, and Stare (continued)

What You Expect 2500 Games

Wink	Blink	Stare

17. Sketch the results you expect when you play the game 2500 times in the *What You Expect* box above.
18. In your sampler, change Repeat to 2500 and click **RUN**. Be sure your Run Speed is set to "Fast." Sketch your results in the *1st Run* box at right.
19. Repeat Step 18 four times and sketch your results in the boxes.

Student Worksheet

What You Get 2500 Games

1st Run	Wink	Blink	Stare
2nd Run	Wink	Blink	Stare
3rd Run	Wink	Blink	Stare
4th Run	Wink	Blink	Stare
5th Run	Wink	Blink	Stare