

Building Classroom Culture and Norms



I am learning to look for patterns when counting and writing numbers.



I know I have learned it when I can explain patterns I see on a number chart.



If you write out the numbers from 1 to 12, how many times will you write the digit 1?



If you write out the numbers from 1 to 100, how many times will you write the digit 7?

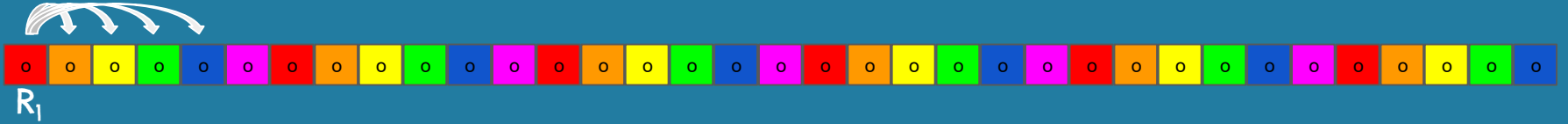
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

People	Handshakes
1	0
2	1
3	3
4	6
5	10
6	15
7	
8	
9	
10	

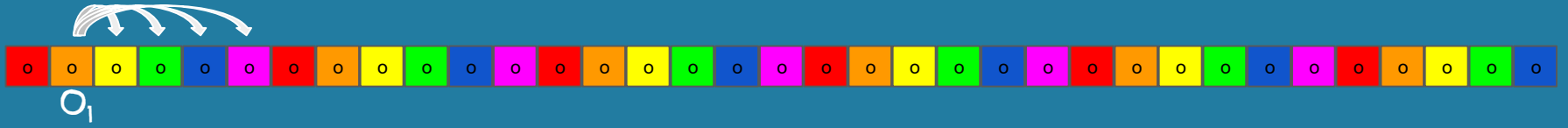
People	Handshakes
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

People	Handshakes
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	



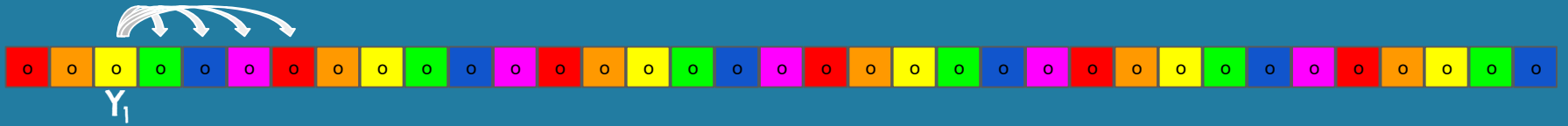
The first person shakes hands with 34 people.

34



The next person shakes hands with 33 people.

$$34 + 33 + \dots$$



The next person shakes hands with 32 people.

$$34 + 33 + 32 + \dots$$



Each person shakes hands with 34 other people.

$$35 \times 34$$

$R_1 + O_1$ is the same thing as $O_1 + R_1$. Therefore, we have double-counted each handshake. To correct for this overcounting, divide (35×34) by 2.

$$\frac{35 \times 34}{2}$$

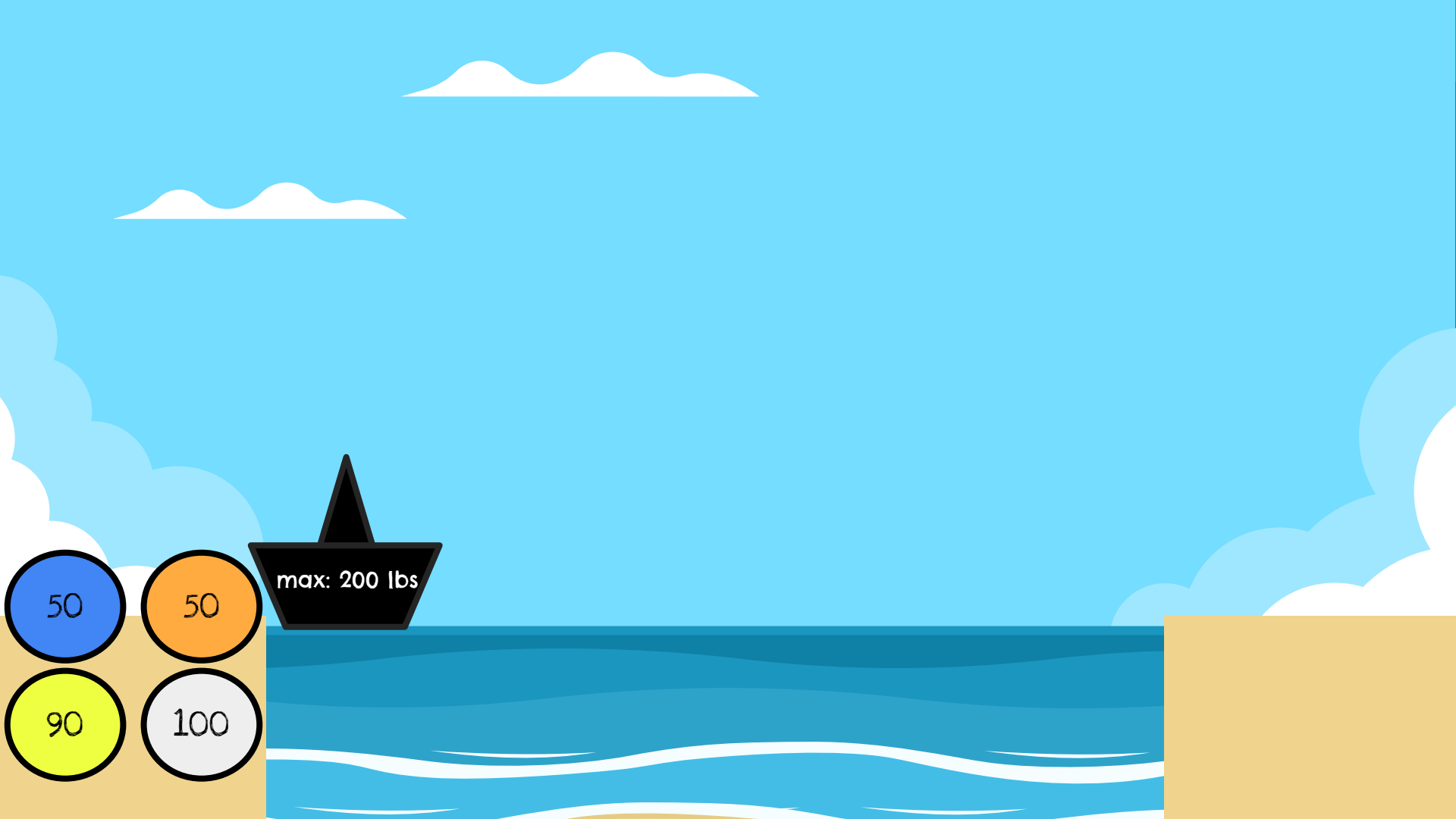
Four kids weighing 50, 50, 90, and 100 pounds want to cross a river. They must take a boat that cannot hold more than 100 pounds. The boat cannot paddle itself across the river. What is the smallest number of times the boat must cross the river to get all four kids safely to the other side?

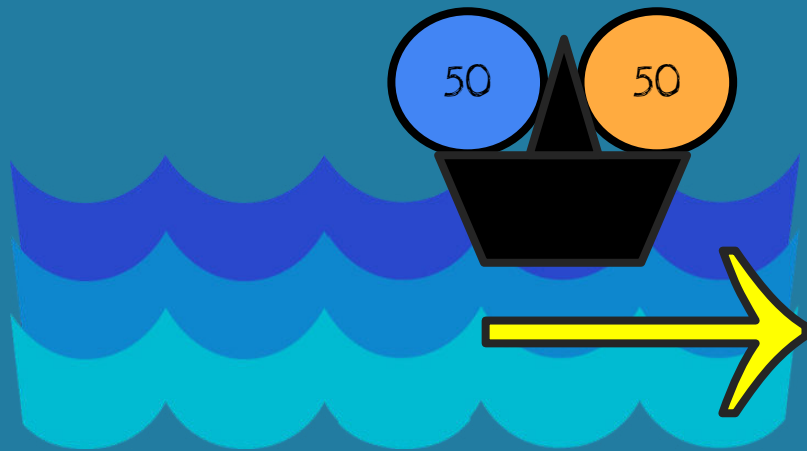
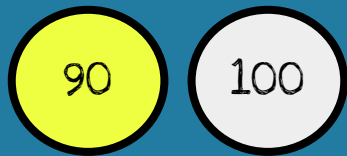
50

50

90

100



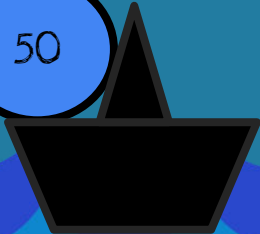


90

100



50



50

90

50



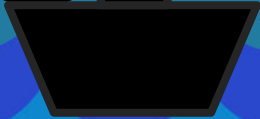
50

90

50

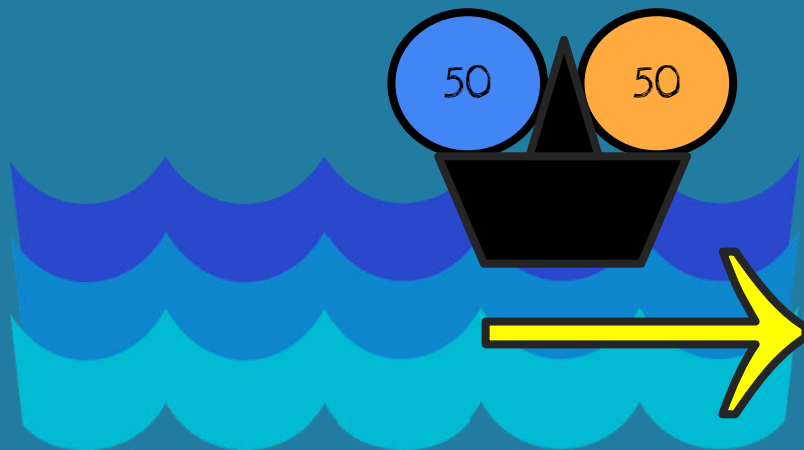


50



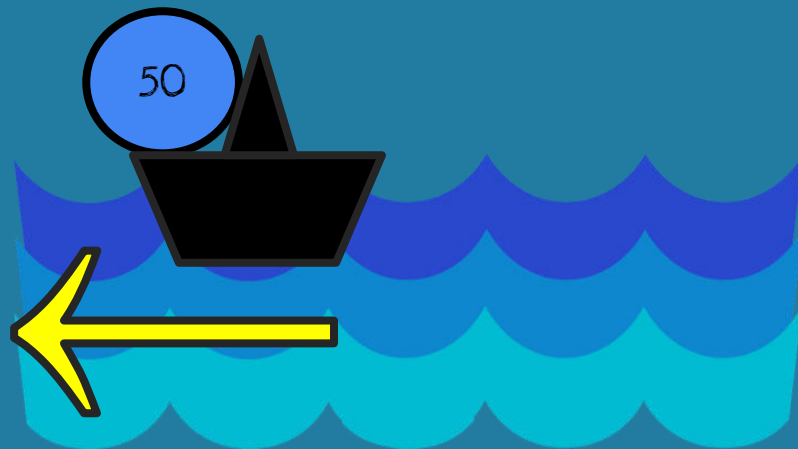
100

90



100

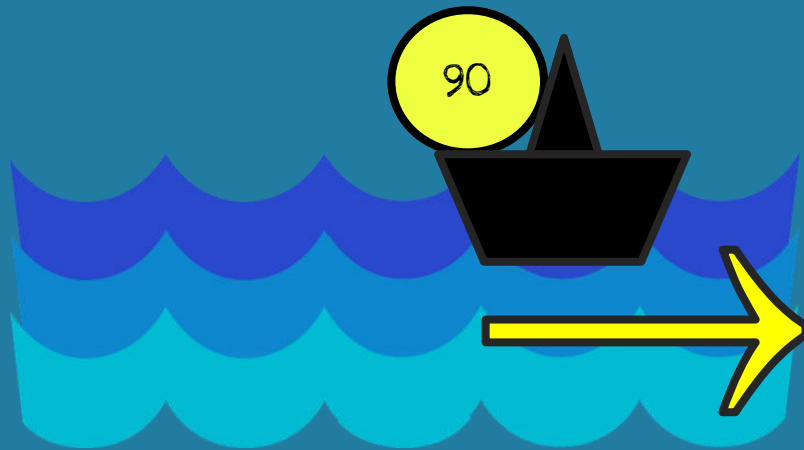
90



100

50

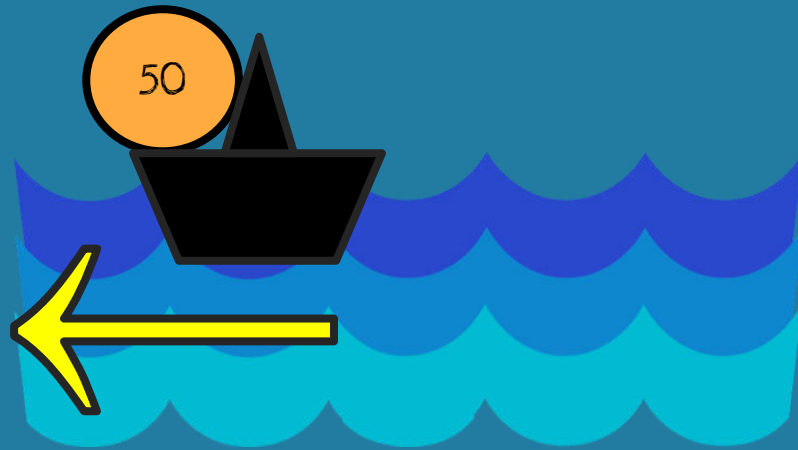
50



100

50

50



100

90

