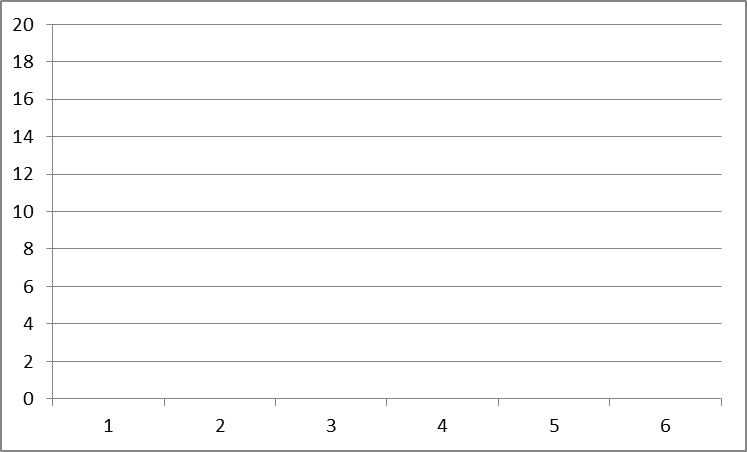
Roll a distribution

# Student Handout

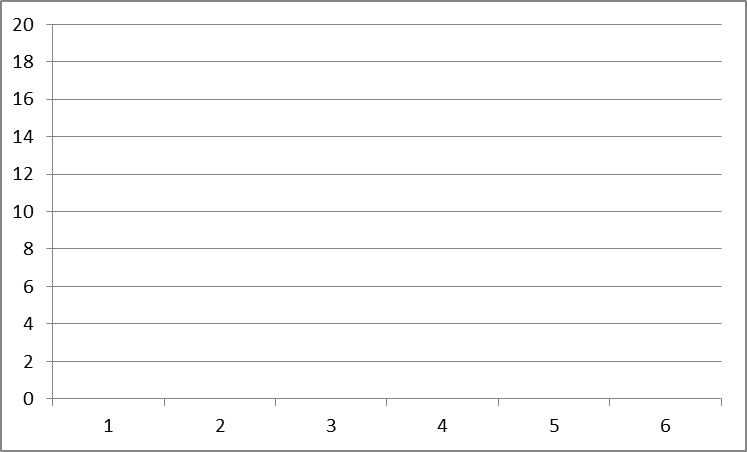
# Exercise A

1. Imagine rolling a 6-sided die 60 times and recording the results in a histogram. What shape will this distribution take? In the space below create your imaginary histogram.



0 1 2 3 4 5 6

1. Now roll your die 60 times and record the actual results in the space provided to create your distribution.



0 1 2 3 4 5 6

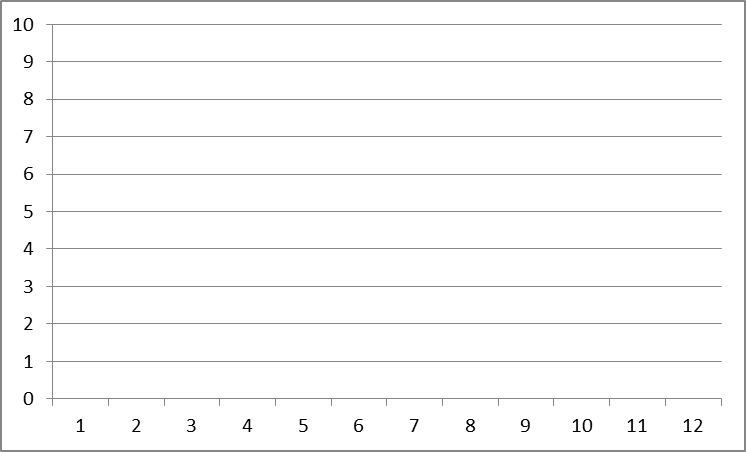
1. Now combine your results with those of your partners to create a more complete picture of the distribution.

0 1 2 3 4 5 6

1. How did the combined histogram compare to the histogram that you made by yourself?
2. How did the combined histogram compare to your imaginary histogram made in problem 1?
3. Calculate the mean of the distribution.
4. Calculate the median of the distribution.

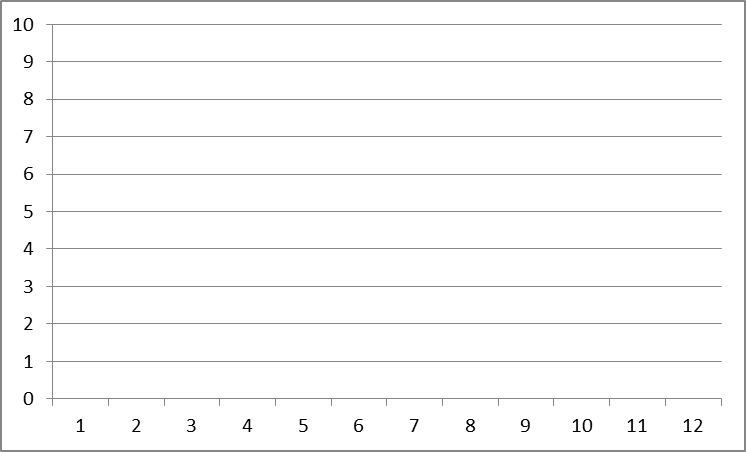
# Exercise B

1. Imagine rolling 2 dice and adding the results together. Example if you roll a 2 and a 1 that sums to 3. If you roll a 5 and a 6 that sums to 11. What shape will this distribution take? In the space below create your imaginary histogram.



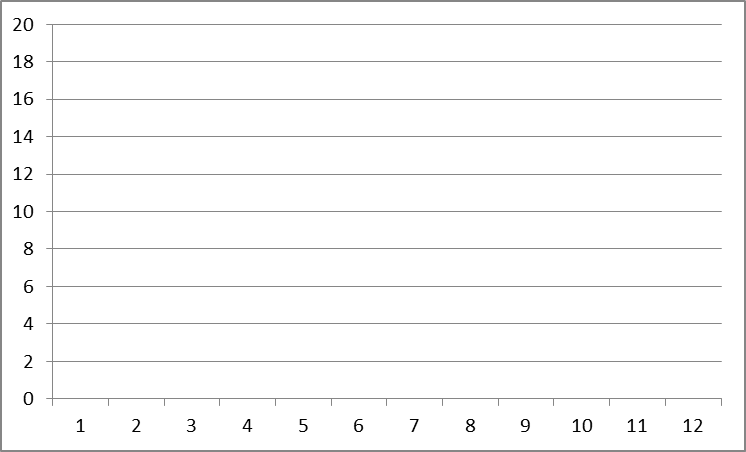
0 1 2 3 4 5 6 7 8 9 10 11 12

1. You will now actually roll 2 dice and add the results of the two die together. Roll the two dice and sum the results 30 times and record each sum in the histogram below.



0 1 2 3 4 5 6 7 8 9 10 11 12

1. Describe the distribution by its shape, the presence of any outliers, the center and the spread.
2. Now combine your results with your partners and create another histogram for the combined data in the space below.



0 1 2 3 4 5 6 7 8 9 10 11 12

1. Describe the distribution by its shape, the presence of any outliers (unusual event(s)), the center and the spread.
2. Calculate the mean of the distribution
3. Calculate the median of the distribution
4. Describe any similarities or differences in the histogram in Exercise A and the histogram in Exercise B

# Exercise C

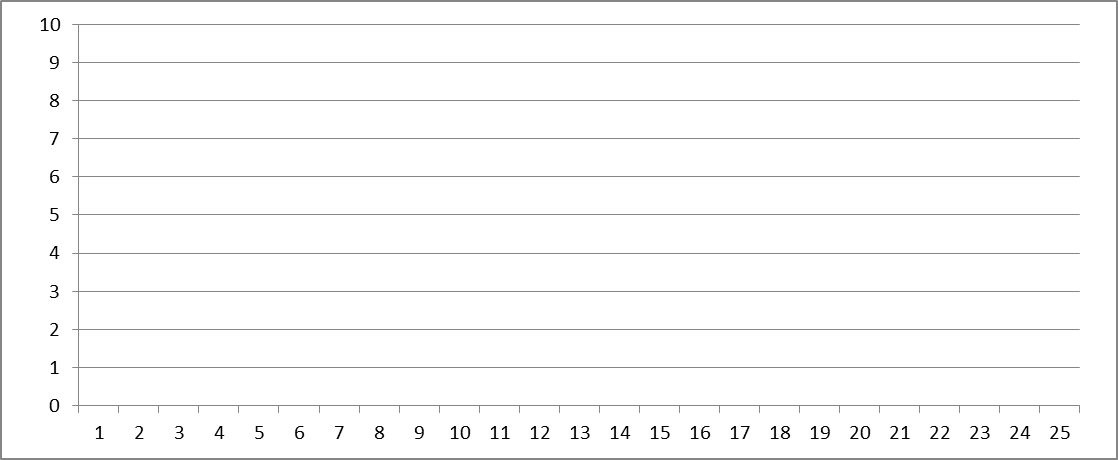
1. Roll a die until you roll a 6. The variable of interest is the number of die rolls necessary until the 6 was rolled. Record the result.
2. Repeat the above process described in #1 above 15 times recording the number of trials necessary in the table below.

|  |  |
| --- | --- |
|  | Number of rolls needed to get a 6 |
| Trial 1 |  |
| Trial 2 |  |
| Trial 3 |  |
| Trial 4 |  |
| Trial 5 |  |
| Trial 6 |  |
| Trial 7 |  |
| Trial 8 |  |
| Trial 9 |  |
| Trial 10 |  |
| Trial 11 |  |
| Trial 12 |  |
| Trial 13 |  |
| Trial 14 |  |
| Trial 15 |  |

1. Now combine your work with your partners to get a more complete picture and record your combined results in the table below.

|  |  |
| --- | --- |
|  | Number of rolls needed to get a 6 |
| Trial 16 |  |
| Trial 17 |  |
| Trial 18 |  |
| Trial 19 |  |
| Trial 20 |  |
| Trial 21 |  |
| Trial 22 |  |
| Trial 23 |  |
| Trial 24 |  |
| Trial 25 |  |
| Trial 26 |  |
| Trial 27 |  |
| Trial 28 |  |
| Trial 29 |  |
| Trial 30 |  |

1. Make a histogram for this combined data with each dot representing the number of die rolls needed to roll a 6.



0 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

1. Calculate the mean of the distribution.
2. Calculate the median of the distribution.
3. Is the mean greater than or less than the median?
4. What effect do you think the shape of the distribution had on the value of the mean in comparison to the median?
5. Compare and contrast the three different histograms you created in Exercise A, Exercise B and Exercise C. How are they alike and how are they different?
6. If you had to use the words Uniform, Mound Shaped, or Right skewed to describe the three distributions which term would you apply to each distribution.
7. Note the value of the mean and the median in the plots from Exercises A and B. How are plots A and B alike but C is different. Why do you think that happened?