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| --- |
| **Teacher Notes:**  This experiment is fairly self-explanatory but does require some set up.  Materials:   * Scrap paper * Timers (if you are BYOD, students could definitely use their phones for this); *you could also time the groups and have them go at the same time, this could possibly reduce confusion!* * Painters tape * “hoops” – I borrowed clean trash cans from fellow teachers, boxes or bins would work just as well   You will need to move desks to make space in your classroom or find a space outside your classroom where students have a length that is unobstructed. You will need to make tape lines at the intervals listed in the table below. I made multiple paths so that multiple students could toss simultaneously. I was able to successfully do it in the space in my classroom.  You will want to be very clear about the rules and expectations with your students. You may need to modify the “rules” section below to meet the needs of your students and your classroom. You also need to be serious about removing students from the activity who are not behaving properly. You will want to have an alternate assignment on standby – a traditional textbook chapter on scatterplots should do just fine!  I allowed students to choose their groups for this activity but you may want to group rule following students with more distractible students.  As with any middle school activity, you probably want to model “proper basketball technique” and the team member jobs.  **For Extension:**  If you have time, you could have students compare their scatterplots with other groups and draw conclusions about the similarities and differences between them.  You could also have students create a digital scatterplot and write the equation of the line of best fit (not in the 8th grade standard). |

../Desktop/Screen%20Shot%202020-01-05%20at%202.14.21%20PM.pngSarah Leahey, 2019

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Basketball Contest Scatter Plot

You will be creating a scatterplot from experimental data that you collect. In a team, you will compete to see how many shots you can make in 15 second intervals from various distances. Each team member will get a chance to throw and the other team members will time, clean up and record the data. Once all data has been recorded, you will create a scatterplot and analyze your results.

**RULES**

* You may ONLY throw paper during the allotted time.
* ALL paper must be cleaned up and recycled at the end of the class period.
* You many ONLY throw paper in the correct direction when it is YOUR turn.

**Prediction**

Do you predict a positive correlation, negative correlation or no correlation between distance and number of successful shots? Explain why.

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**The Experiment**

Assign one team member to shoot first, one team member to time, one to record data and one to retrieve the paper to start. After each round, each person will do a different job.

*Procedure*

* The shooter will step up to the closest line to the “hoop”. When the timer says go, the shooter will shoot as many balls as possible into the “hoop”. As the shooter is tossing, the recorder will count the number of shots that are SUCCESSFUL and record that information in the chart. The paper retriever will grab the paper balls that do not make it and return them for the shooter to be able to continue. When 15 seconds are up, the timer will say “STOP” and the shooter will IMMEDIATELY stop shooting. The paper retriever will then retrieve ALL paper balls (even those that made it) and return them to the starting position.
* This exact process will repeat **four more times with the SAME SHOOTER**. Each time the shooter will move back one line on the floor and repeat the process. Each time is only 15 seconds long.
* Once the first shooter has completed all 5 distances, each person will rotate jobs and a new shooter will repeat the process. Each time, be sure to record the data CAREFULLY on your chart.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Distance | Shooter 1: | Shooter 2: | Shooter 3: | Shooter 4: |
| 3 feet |  |  |  |  |
| 6 feet |  |  |  |  |
| 9 feet |  |  |  |  |
| 12 feet |  |  |  |  |
| 15 feet |  |  |  |  |

Using the data in your table, create a scatterplot. Please be sure to carefully label the **title**, the **x-axis** (distance) and the **y-axis** (number of successful shots). When finished with your points, please draw a line of best fit through the middle of your data.

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