

The Numbers That Count

Explore the fascinating math behind the statistics of basketball greats.

You're a pro at knowing how physics, biology, or even chemistry factor into basketball. But have you thought about how important math is to the sport? Head to the internet to do some research and find out the special role math plays!

HERE'S WHAT YOU'LL NEED:

- An internet-enabled computer or tablet
- Post-It Notes
- Paper and pencil
- Calculator or calculator app
- 2017-18 OKC Thunder home game schedule, printable

(included on last page)



**SCIENCE
MUSEUM!**
OKLAHOMA

WARMUPS

One of the major building blocks for understanding statistics is the use of the math trio, mean, median, and mode. Today, we're going to tackle **mean**. Mean is the average of a set of numbers. To determine a mean, you add up all of the numbers in the set, and then divide that sum by the amount of numbers there are.

Give this mathematical skill a try! Listed below you'll find the total points that Russell Westbrook scored in each season he's been a professional basketball player. Using your knowledge on how to find a mean, find his average total points scored throughout his career (thus far). To save time, you can compute this total with a calculator or calculator app on a computer, but doing it by hand provides a great challenge, too!

RUSSELL WESTBROOK

Regular Season Total Points

2008-09	1256
2009-10	1322
2010-11	1793
2011-12	1558
2012-13	1903
2013-14	1002
2014-15	1886
2015-16	1878
2016-17	2558
2017-18	2028

Are you surprised by the mean of his regular season total points? Do you notice a trend or pattern in his total points as the seasons progress? Sometimes players have lower scoring seasons due to injuries or other external factors. If you notice that Westbrook had an unusually low season in your trend, try Googling to see if there is an explanation for it. Based on the information you've gathered by working out this math equation, why do you think statistics in sports might be important?



GAME TIME

Now it's time to work with your entire class and research some more statistics. The goal of this challenge is to research how many points Westbrook scored in each home game from last season and then to compile a chart to look at the dispersal of information.

PRO TIP: Print off the last page of this activity guide! It has little strips with every home game at the 'Peake for the '17-'18 season. Cut all the strips apart, fold them in half, and mix them all together in a bag.

Get started by drawing one of the home game slips from the bag. This is the game you're responsible for researching! Each of your classmates should draw one game to research as well. Once you have your game, hop onto your computer or tablet and head straight to Google. To find the information that you need (Westbrook's total points scored for your chosen home game), simply type OKC Thunder, the team they played, and the entire date into the search bar. For example, if you drew the Thunder v. Cavaliers game, you'd type **Tuesday February 13 2018 OKC Thunder Cleveland Cavaliers** into Google. Using Google's statistic result that is listed first on the page, find how many points Westbrook scored in your assigned game.

After you and all of your classmates have completed your research and gathered your data, it's time to make a chart as a visual representation of the distribution of his points scored per game. On the whiteboard, draw a horizontal line to start creating your graph. (In case you confuse horizontal and vertical lines, remember that horizontal lines go the same direction as the horizon!) Write a number line underneath to represent the range of his points scored in per game.

PRO TIP: Since it'd take way too much time (and space on the whiteboard!) to write the numbers 1-50, try writing groups of five, starting with 0-5, 6-10, and so forth.

Once you have your chart created, it's time to input the data that you and your classmates have collected! Have every student place one sticky note (or small piece of paper or piece of tape) on the graph in the appropriate space to represent the number of points they found that Westbrook scored in their game.



ANALYZE THE REPLAY

What happened?


What did you notice about the dispersal of data based on the sticky note graph you made? Did there seem to be a trend in amount of points Westbrook scored in any given game? How do you think coaches might use information from these statistics?

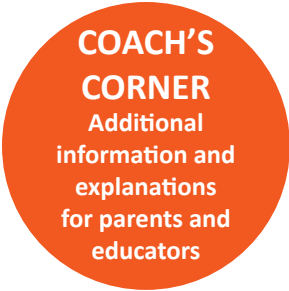


OVERTIME

Let's take it further

Want to take this study of statistics even further? Based on your knowledge of Googling game stats, try collecting data to look for similar patterns in Westbrook's rebounds, assists, or steals from the home games of last season. Is there a relationship between rebounds and points? How about between assists and points?





Why are statistics so important to sports beyond giving fans something fun to chat about? There are a couple different reasons for their importance. Statistics in a sport are a metric of measuring certain qualities of a team or player. They give quantifiable evidence of who is succeeding, what skills lie with what players, and who you may want on a team, beyond what an “eye test” may make you think when you watch a game. Additionally, statistics are extremely important in building the best possible basketball team. Players who look good on paper are not always the best player for the betterment of the team, and it’s important for managers and coaches to have a roster with both star players who excel in obvious statistics

as well as players who help their team improve in areas such as perimeter defense and rebounds. Some players, often called “role players,” have specific skills they bring to a team. They might be excellent ball handlers, great defenders, or collect a lot of rebounds. Role players’ main impact on their team is to help their team improve. The particular statistic that relates to this is called Box Plus/Minus, and it’s a metric for evaluating a player’s quality, impact on, and contribution to the team.

OKLAHOMA ACADEMIC STANDARDS - SCIENCE

STANDARD	4 TH GRADE	5 TH GRADE	6 th Grade
NUMBERS AND OPERATIONS			
N.1.2		●	
N.1.3	●		
N.1.4		●	
N.1.5	●		
DATA AND PROBABILITY			
D.1.1		●	●
D.1.3		●	

Thursday, Oct. 19, 2017 New York Knicks	Sunday, Oct. 22, 2017 Minnesota Timberwolves	Wednesday, Oct. 25, 2017 Indiana Pacers
Friday, Nov. 3, 2017 Boston Celtics	Friday, Nov. 10, 2017 Los Angeles Clippers	Sunday, Nov. 12, 2017 Dallas Mavericks
Wednesday, Nov. 15, 2017 Chicago Bulls	Wednesday, Nov. 22, 2017 Golden State Warriors	Friday, Nov. 24, 2017 Detroit Pistons
Friday, Dec. 1, 2017 Minnesota Timberwolves	Sunday, Dec. 3, 2017 San Antonio Spurs	Tuesday, Dec. 5, 2017 Utah Jazz
Monday, Dec. 11, 2017 Charlotte Hornets	Monday, Dec. 18, 2017 Denver Nuggets	Wednesday, Dec. 20, 2017 Utah Jazz
Friday, Dec. 22, 2017 Atlanta Hawks	Monday, Dec. 25, 2017 Houston Rockets	Wednesday, Dec. 27, 2017 Toronto Raptors
Friday, Dec. 29, 2017 Milwaukee Bucks	Sunday, Dec. 31, 2017 Dallas Mavericks	Tuesday, Jan. 9, 2018 Portland Trail Blazers
Monday, Jan. 15, 2018 Sacramento Kings	Wednesday, Jan. 17, 2018 Los Angeles Lakers	Tuesday, Jan. 23, 2018 Brooklyn Nets
Thursday, Jan. 25, 2018 Washington Wizards	Sunday, Jan. 28, 2018 Philadelphia 76ers	Friday, Feb. 2, 2018 New Orleans Pelicans
Sunday, Feb. 4, 2018 Los Angeles Lakers	Sunday, Feb. 11, 2018 Memphis Grizzlies	Tuesday, Feb. 13, 2018 Cleveland Cavaliers
Monday, Feb. 26, 2018 Orlando Magic	Tuesday, March 6, 2018 Houston Rockets	Thursday, March 8, 2018 Phoenix Suns
Saturday, March 10, 2018 San Antonio Spurs	Monday, March 12, 2018 Sacramento Kings	Friday, March 16, 2018 Los Angeles Clippers
Friday, March 23, 2018 Miami Heat	Sunday, March 25, 2018 Portland Trail Blazers	Friday, March 30, 2018 Denver Nuggets
Tuesday, April 3, 2018 Golden State Warriors	Wednesday, April 11, 2018 Memphis Grizzlies	