



SCIENCE
MUSEUM
OKLAHOMA

RUMBLE'S FANTASY BASKETBALL BASH

Some of the most exciting (and sometimes stressful) aspects of being a Thunder fan are seeing players traded to other teams and welcoming new players. Have you ever wondered what it would be like to be a manager and be responsible for making difficult and strategic transfer choices? This activity allows you to utilize math and critical thinking skills to manage a team of your very own players!

Pro tip: This activity can be done at home or in a classroom. It can be done by an individual student, a small student group, or a family.

HERE'S WHAT YOU WILL NEED:

- Calculator
- Paper and Pencil
- Fantasy roster of players (included at the end of this document)

WARM-UPS

Put on your manager cap! For this activity, you are going to be in charge of a brand new team! Since the lineup of human NBA players can change so often, Rumble decided to step in for this activity and help. He's invited 13 of his fellow native Oklahoma animal friends (some of whose species are state symbols, just like his bison family members) to hang out on the court with him for a while. They all enjoy playing basketball just as much as he does, and bring a variety of different skills to the game. Watch out, because they're all extremely competitive, too!

When NBA managers plan for trade times, they're thinking about three main objectives: the money they have budgeted for players' salaries, the number of spots on the team they need to fill, and the production of the team. The budget and the number of open spots on your team are pretty self-explanatory, but what is meant by the production of your team? This is a term to express the predicted game-play you (as a manager) can expect from your players based on their own personal statistics.

Statistics are a set of data and numbers that are collected about a specific event and or subject. In the attached roster, you have the averages per game over an entire season for the 14 imaginary players. You're going to choose your players based on whether you can afford their salaries and whether you like the look of their statistics.

You have three spots open, but you probably don't want to just get three players who are all great at scoring points. By looking at the statistics of the pretend players, you will likely get an idea of what kind of player they are. If a player has a lot of **assists**, then that player is likely good at finding someone open with a good shot at the basket. If a player has a lot of **rebounds**, your team may have the ball a lot more often than the other team. If a player has a lot of **steals**, that means that your team will be good at getting the ball and disrupting the other team's ability to score. Not all statistics are so positive, though! If a player has a lot of **turnovers** (unfortunately, not the delicious fruit-filled pastry) that means the other team is getting the ball when your team was attempting to score.



GAME TIME

Now that you understand some of the strategy of choosing players for your team, it's time to start spending some money and building your team. You're going to build a team of three players, and you have \$10,000 to spend on players' salaries. Though basketball is traditionally played with five players (like seen in the NBA), you're going to start with a somewhat smaller team—just three players. You'll use the chart at the end of this challenge to analyze and guide your decisions.

Pro tip: Notice those little letters right next to the players' names? Those are the positions they play on the team! While not required to consider when building your team, if you're a super Thunder fan, you can strategize by considering players' positions, too!

Guard	G
Forward	F
Center	C

Now that you've strategized and budgeted and picked your three players, you get to figure out how successful they are as a team! You're going to use a scoring rubric to determine whether your fantasy team took the championship or not. Begin by adding up all the points scored by your three players. This number is your starting score, and you'll add or subtract from that in the next steps.

Pro tip: If any of your sums are decimals, round them up to the nearest whole number.

Next, add the total assists for your three players. If it's 15 or less, give yourself 4 points; if it's between 16 and 20, you get 10 points; and if your team's total assists add up to greater than 20, you get 16 points.

15 assists or less	4 points
16 to 20	10 points
21 or more	16 points

Now it's on to rebounds! If you have 10 or less, add 6 points. If you have 11 to 16, you get 8 points, 17-22 will get you 10 points, and 23 rebounds or more adds 12 points.

10 rebounds or less	6 points
11 to 16	8 points
17 to 22	10 points
23 or more	12 points

Steals are next! Add up your team's steals, and then add that number to your score.

Lastly, turnovers. Take a look at your three players' turnovers and add them up. If total turnovers are 3 or less, add 2 points to your score. If they're greater than 3 but less than 7, subtract 2 points. If your total turnovers are between 7 and 10, subtract 6 points. If your turnovers total greater than 10, take away 10 points from your score.

3 turnovers or less	Add 2 points
4 to 6	Subtract 2 points
7 to 10	Subtract 6 points
11 or more	Subtract 10 points



ANALYZE THE REPLAY

**What
happened?**

Explain your process for picking the players to complete your team. You can explain in-person to your fellow classmates, over a video call, or even just write down your reasons. What did you decide to prioritize in your team—points scoring, defensive play, or a little of both? How did you spend your budget? Were you left with any surplus at the end?

How about your team's score—how did you fare? Were you happy with their proposed performance? If you could change any members of your team, would you?

Compare your team building strategy with your classmates or family members. How did your team scores compare to theirs?

OVERTIME

Let's take it further

Basketball is a competitive sport, and these athletes don't just compete against their own personal best. These players—and the whole team—compete against other players and other teams. Some players and teams match up really well against certain teams, but not as much against others.

Try playing imaginary 3-on-3 basketball games with your friends and the teams they create, and see which team comes out on top! Use the statistical information you know about your players to compete with what they know about theirs! Use the same rubric to score your team as you did in the Game Time portion of this activity, with a few additional rules when it comes to rebounds.

If your rebounds total:	Subtract this from your opponent
10 or less	3 points
11 to 16	6 points
17 to 22	8 points
23 or more	10 points

Once you've both completed these extra calculations, which team came out on top—yours or your classmate's?

You can also try making a 5-person team, like you'd see in an NBA game. You'd need a larger budget for two extra men, so work within a limit of \$15,000. Try coming up with your own game theory, too. For instance, typically in 5-on-5 basketball, there are three different roles players fill—two guards, two forwards, and a center. However, teams sometimes get creative with their lineups or even go so far as to ignore this traditional format entirely! What sort of lineup could you create with your five players, and based on their strengths, why might breaking tradition work to your advantage?



COACH'S CORNER

Additional information and explanations for parents and educators

This month's activity featured a fantasy basketball style challenge for students to put their critical thinking, logic, and math skills (along with a little imagination thrown in) to use. Many people take great joy in playing fantasy league sports on a regular basis, whether it be basketball, football, or baseball. One main difference between the challenges presented to students in this activity and the fantasy leagues adults play in is that this imaginary roster had extremely limited sets of data based on averages of players throughout an entire season. Real fantasy sports challenges are based on data continuously gathered from sets of games that happen in real time.

Some statistics show information that is both positive and an area of concern. A **field goal**, or **FG**, is any shot a player makes from anywhere on the court other than when shooting a free throw. A player would want to have a lot of these, but they will not make all the shots they attempt. For this reason, field goals are often compared to **field goals attempted**, or **FGA**, to create a field goal percentage, **FG%**. It makes sense that a player, coach, and manager would all want the FG% to be high, but if the player's FGA is low then a high FG% wouldn't necessarily result in many points scored. For the statistics of Rumble and his friends, there's only FGA and FG%, because knowing how many times a player attempts to score and the percentage that they actually do is helpful information when choosing players.

OKLAHOMA ACADEMIC STANDARDS

STANDARDS	3 rd Grade	4 th Grade	5 th Grade	6 th Grade	7 th Grade
3.N.1.1 Number & Operations	●				
3.N.2.5 Number & Operations	●				
3.A.2.2 Algebraic Reasoning & Algebra	●				
4.A.2.2. Algebraic Reasoning & Algebra		●			
5.A.1.1 Algebraic Reasoning & Algebra			●		
6.N.4.4 Number & Operations				●	
7.A.2.2. Algebraic Reasoning & Algebra					●

FANTASY ROSTER OF PLAYERS

Player Name	Salary	Games Played	Points Scored	Assists	Rebounds	Steals	Turnovers	Field Goal Attempted	Field Goal %
Rumble the bison G	\$4,300	80	23.5	10.4	7.8	2	4.3	18.1	45.4
Seth the scissor-tailed flycatcher C	\$1,400	77	4.9	0.6	4.2	0.9	0.6	3.6	58.7
Monty the black swallowtail butterfly G	\$2,000	70	4.8	0.7	3.6	0.8	0.5	3.9	49.6
Pyotr the prairie dog F	\$4,500	76	25.3	6.8	7.4	1.4	3.3	18.6	52
Slick the nine-banded armadillo F	\$2,500	55	9.3	0.8	4.7	0.5	0.9	7	50.9
Woody the Woodhouse's toad G	\$4,200	82	21	6.2	4.6	1.2	2.7	16.6	43.4
Sandy the snapping turtle C	\$2,400	76	10.2	7	7.9	2	2.4	8.6	41.8
Wilbur the wild turkey F	\$1,100	78	5.4	0.6	2.6	0.4	0.5	4.0	46.9
Marv the raccoon F	\$3,200	76	23.9	5.5	6.2	1.9	2.1	16.5	45.5
Rex the collared lizard F	\$3,100	53	19.1	2.4	7.4	0.7	1.5	14.5	46.7
Harry the OK Colonial Spanish horse G	\$4,600	79	29.3	6.6	4.5	1.8	3	18.3	46.8
Burt the Mexican free-tailed bat G	\$3,400	74	19	4.6	4.1	1.1	2.7	16	45.6
Hector the red tail hawk C	\$2,000	80	11.3	1.1	7.7	1.1	1.8	8.2	57.1
Billy the bullfrog F	\$2,900	77	16.0	2.4	9.9	0.8	1.8	12.7	41.9