Name: _____ Date: _____

Falling Hoops: The Physics of Dude Perfect

Reading level 13 · 1401 words

A video released in May 2023 showed a basketball dropped about 856 feet into a hoop 18 inches across. The rim was about 1/570 of the height of the drop, a very small target. By this book's arithmetic, a ball with no air in its way would fall that far in about 7.3 seconds. It would reach about 71.5 meters per second, near 160 miles per hour. Dude Perfect, five friends who met as roommates at Texas A&M University, built a channel on shots like this one. The questions here are simple: how is such a shot planned, what does physics allow, and how should a record claim be counted?

The group began unofficially in 2008, when roommates put up a backyard hoop and bet each other sandwiches over hard shots while a fellow student filmed them. They posted a video in April 2009. In September 2009, one of them stood on the third deck of Kyle Field and called his shot the world's longest, and that video went viral. A 2017 Texas Monthly profile, which reported 20 million subscribers by then, saw a method behind the play. The writer said the videos "require a great deal of preparation and discipline on the front end to pull off." This book treats that preparation as an engineering problem.

A thrown ball is a projectile, which means an object subject only to gravity, and its path is shaped like a parabola. Horizontal and vertical motion are independent, but they share the same time. Near Earth, a falling object gains 9.8 meters per second every second. The distance it falls equals half that acceleration times the time squared. In a vacuum, mass, size and shape do not matter. By this book's arithmetic, a ball simply dropped 533 feet would fall for about 5.8 seconds, and one dropped 856 feet for about 7.3. A ball dropped 216 feet, the height of a 2010 tower shot, would fall for 3.7 seconds. That real shot was thrown sideways, though, and one writer put its flight near five seconds.

Time is not the only problem, because the rim is also small. An 18-inch hoop and a ball about 9.5 inches wide leave room only if the ball comes in steeply. A 2010 Washington Post analysis reported 4.25 inches of free space on every side for a ball coming straight down. It found about 2.5 inches at 55 degrees and about 1.5 inches at 45 degrees. It added that raising the launch height raises the entry angle, which allows more free space. It cited physicist Peter Brancazio's book on the shooter's advantage in using as little force as possible. A drop from a tower comes close to that straight-down case, although the resort said this ball banked off the backboard.

The geometry still demands accuracy. A ball falling for 7.3 seconds must stay within 4.25 inches, or 0.108 meters, of the center. By this book's arithmetic, that allows a sideways drift of at most about 1.5 centimeters per second, and a longer real fall makes the limit smaller. That

estimate ignores the backboard and any bounce. A 2017 physics preprint by Irina Barzykina offers another view of accuracy. It models a free throw's success as a smile-shaped region in angle-velocity space and finds that the best release depends on each player's own error pattern. Its model was tested with simulations and with a series of free throws at one school. Reports say the Las Vegas ball swerved on the way down.

Air changes the numbers. In air, a falling object stops speeding up when drag equals its weight. Then no net force acts on it, and it falls at a constant speed called terminal velocity. Drag depends on a drag coefficient, the density of the air, the object's speed and its frontal area. A real 856-foot fall therefore takes longer than 7.3 seconds, and its top speed is lower than 71.5 meters per second. By this book's estimate for a basketball, terminal speed is near 22 meters per second, about 50 miles per hour, so the real fall is roughly twice 7.3 seconds. The no-air figures here are lower bounds. NASA's Glenn Research Center adds that Galileo's idea of equal falling applies only in a vacuum, where there is no air resistance.

Preparation shows up in the reports as repeated, adjusted tries. In March 2012, the group's first shot from a blimp, on Saturday, March 24, produced almost unusable video. The crew shot the final version the next Tuesday, over several passes with slightly different approach and height, and one member could not say how many shots they took. In Las Vegas, the resort said the group needed 22 hours over three days, and staff met regularly on logistics and safety protocols. One report said the ball went in during the last hour of filming. Until 2014, the friends held other jobs and filmed after work.

Records add a witness and a definition. In 2016, a Guinness adjudicator watched basketball attempts at Texas Christian University on March 30 and 31, and titles included a farthest bounce shot of 27.79 meters (91 feet 2 inches), a title Guinness said no one had claimed before. Thunderstorms postponed the height attempt, so the team moved to Oklahoma City, where on April 28, 2016, a shot from 162.458 meters (533 feet) beat the old mark by 35.95 meters. Smaller titles follow the same method. For a pea-blowing record on the show Overtime, Tyler Toney said the group "picked the most spherical pea we could find," and Guinness reported in May 2018 that Coby Cotton's blow of 8.8 meters beat the judge's target of 24 feet 7.6 inches.

On a 2019 episode of The Dude Perfect Show, a Swiss-ball distance title of 88.39 meters (290 feet) came on the third attempt. The same episode brought a title for pushing 61 thumbtacks into a cork board in one minute. In 2017, Guinness described 14 football attempts at the same university as the basketball ones, 11 of them never tried before. Day one of that football shoot gave nine new titles, and day two added five. Each case shows a plan that expects failures and then changes one variable at a time: the equipment, the approach, the height, the day. In the blimp story, the weather decided the day. In the Oklahoma City story, it decided the city.

Every record claim has an expiry date. Guinness reported in November 2016 that another team's 180.968-meter (593.73-foot) shot at a Swiss dam had passed the group's 162.458 meters. Before the Las Vegas shot, a news report gave Guinness's listed height as about 660 feet, which is 201.4 meters. In May 2023, reports said the group was waiting for Guinness to confirm the 856-foot drop. As of November 2026, Guinness's page for that record still named a 2018 shot of 201.4 meters. Totals depend on what is counted. Guinness reported in May 2018 that the group held 25 titles, 14 in football and 11 in basketball, and Texas A&M's magazine said more than 30 in September 2025.

Audience figures need the same care. Texas Monthly reported 20 million subscribers and more than 3 billion views in August 2017, and the Dallas Morning News reported over 16 billion views and 60 million subscribers in March 2024. An online encyclopedia listed 62.7 million subscribers and 21.66 billion views on September 27, 2026. By this book's arithmetic, that is about 6 million new subscribers a year from 2017 to 2024 and about 1 million a year since, a rough guide because each figure is from a different day. The group's other channels are a separate count, with 2.07 million subscribers in January 2026. Counting is a skill too: a figure means little without the day it was taken and what it includes.

The work is housed in Frisco, Texas. In 2017, a 25,000-square-foot warehouse held a basketball court, a putting green and a wall of framed Guinness certificates. In March 2024, the vice president of post-production said three editors shared a 10-by-10-foot space, and the vice president of production said a new space would give production, editing and social media their own areas. The headquarters shown in early 2025 has a full-size court with extra moving hoops on the wall for trick-shot challenges. It is a set built around one repeated problem: how to put a 9.5-inch ball through an 18-inch ring.

Questions

1. What happens when drag equals a falling object's weight?

A. It falls at a constant speed
B. It stops in the air
C. It speeds up faster

2. Why does a steep drop leave more room around the rim?

A. The hoop is wider up high
B. The ball is lighter
C. The ball meets more open ring

3. In "Every record claim has an expiry date," what does expiry date suggest?

A. A claim must be shouted
B. A claim may stop being true
C. A claim is secret

4. What did the 2016 Guinness adjudicator do at the university in Fort Worth?

A. Taught the group to shoot
B. Watched basketball attempts
C. Built a hoop

5. Why does the book say a quick calculation gives only a lower bound on the fall time?

A. The ball gets heavier
B. Gravity turns off
C. Air slows the real fall

6. What did Guinness report in May 2018 about the group's titles?

A. It held 25, in football and basketball
B. It held none
C. It held exactly 14 in all

Words to know

parabola: curved path
adjudicator: official judge
drag: air resistance
projectile: thrown object
variable: changing factor

Answer key: Falling Hoops: The Physics of Dude Perfect

1. A. It falls at a constant speed
2. C. The ball meets more open ring
3. B. A claim may stop being true
4. B. Watched basketball attempts
5. C. Air slows the real fall
6. A. It held 25, in football and basketball