

**BACCALAURÉAT GÉNÉRAL ET TECHNOLOGIQUE
ÉPREUVE SPÉCIFIQUE DES SECTIONS EUROPÉENNES
MATHÉMATIQUES – ANGLAIS**

SUJET 1 – BASKETBALL AND MATHEMATICS

Thème : Probabilities

Ce sujet comporte 1 page. L'usage de la calculatrice est autorisé

At first glance, basketball and math seemingly have little in common. While basketball is hugely popular in American schools, math has a considerably smaller fan following. However, a closer look at the sport reveals that there is a considerable amount of math in basketball. Pointing out how math is used in basketball is a great way to get your kids more excited about angles and percentages, while helping them realize how important math is in everyday life. The math in basketball involves a wide range of math topics. Kids can practice geometry, percentages and even basic mathematical operations while playing or watching a game of basketball. Understanding arcs will help determine how best to shoot the ball. Basketball players understand that throwing the ball right at the basket will not help it go into the hoop. On the other hand, shooting the ball in an arc will increase its chances of falling through the hoop. Getting the arc right is important to ensure that the ball does not fall in the wrong place.



Excerpt from mathblaster: <http://www.mathblaster.com/coolmath/articles/basketball-and-math>

1. Dégager les idées essentielles du texte ci-dessus.

After a foul, a basketball player shoots two free throws from the free-throw line. He has a fifty/fifty chance to make his first throw. If he makes his first throw, the probability for the player to make his second throw is 0.8. If he misses his first throw, the probability to make his second throw is equal to 0.4.

Event A is "the player makes his first throw".

Event B is "the player makes his second throw".

(to make a free throw = réussir un lancer franc)

Questions mathématiques (you can draw a tree diagram in order to help you)

1. What is the probability that the player misses his second throw given that he made his first one?
2. What is the probability for the player to make the two throws?
3. Can you work out $p(B)$, the probability that the player makes his second throw ?
4. Can you work out $p(A|B)$, the probability that the player made his first throw given that he made his second one ?