

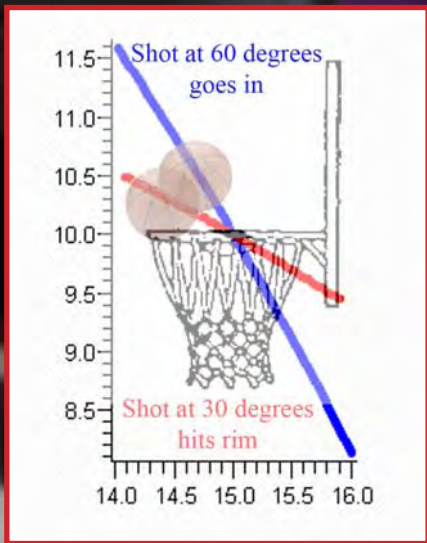
Mathematics Awareness Month - April 2010

Mathematics and Sports

Can a jump shot be made with an initial angle of 30 degrees?

Mathematics can answer this question and many others.

www.mathaware.org



$$x(t) = 23.5426 \cos(30^\circ)t$$
$$y(t) = -16t^2 + 23.5426 \sin(30^\circ)t$$

$$Df(t) = \sqrt{(x(t) - 14.25)^2 + (y(t))^2}$$

$$Df_{\min} \text{ occurs when } (Df)'(t) = 0$$
$$t \approx 0.7073$$

$$Df_{\min} \approx Df(0.7073) \approx 0.36 \text{ ft} \approx 4.37 \text{ in}$$

Photo: Allen Einstein/Getty Images | Graphic produced by Howard Penn