Binomial Practice Problem

Useful formulas:

standard deviation of binomial distribution: **sqrt(p * (1 – p))** # p is proportion of successes

standard error of counts for a binomial sample: **sqrt(N) * std_dev**

standard error of proportion for a binomial sample: **std_dev / sqrt(N)**

z = (x - mean) / std_dev # use the standard error for std_dev to obtain sampling error

pnorm(z) -> proportion of normal distribution less than z

Assume that NBA players make 75% of their free throws. Over a month, one player makes 22 of 36 free throws. Would you say that this player is generally poor at making free throws? Or just had a bad (unlucky) month?

1. For 36 throws, what is the expected number of successful free throws for an NBA player?

2. For an expected proportion of 0.75, what is the expected standard deviation?

3. For 36 throws, what is the standard error for number of successful free throws? What is the standard error for the proportion?

4. With an expected mean of 27 successful free throws (out of 36) and the standard error calculated from above, what is the z score of completing 22 of 36 free throws?

5. What is the probability (proportion in a normal curve) of having a z score this low?

6. Do you think the player just had a bad month?