Brennan Schmidt

Mar 16 (47) A basketball player has 1/2 chance of making 1 pt free throw. A 1/3 chance of 2 pt shot, 1/5 chance of 3 pt. In a game he makes 10 1-pt attempts, 21 2-pt attempts, 5 3-pt attempts

X = total number of pts he scores. Find E(X), var(X), sd(X)

A = number of 1 point shot successes
B = " " 2 point "
C = " " 3 point "

$X = A + 2B + 3C$

$E(X) = E(A) + 2E(B) + 3E(C) = 10(1/2) + 2(21)(1/3) + 3(5)(1/5) = 5 + 14 + 3 = 22$

$var(A) = 10(1/2)(1/2) = 2.5$

$var(B) = 21(1/3)(2/3) = 42/9 = 14/3$

$var(2B) = 4var(B) = 56/3$

$var(C) = 5(1/5)(4/5) = 4/5$

$var(3C) = 9var(C) = 36/5$

$var(X) = 2.5 + 56/3 + 36/5 = 28.3\overline{6} = 851/30$

$sd(X) = \sqrt{851/30}$