4.46 (a) The height should be 1, since the area under
2
the curve must be 1. The density curve is at the right.   1   i a a 0 i a a 6
(b) *P(y* ≤ 1) = 1. *(e) P(O.5* < v < 1.3) =   0   0.5   1   1.5   2
2
0.4. **(d)** *P(y* ≥ 0.8) = 0.6.

0*5@Oa3) - *p(Z* > 8.7) -'- 0. **(b)** *P(@* < 0.25) ' *P(Z* < **4.48 (a)** *P(b* ≥ 0-5) = *P(Z* ≥ 0.023 -   -

-2.17) = 0.0150. **(c)** P(O.25 ≤ fi ≤ 0.35) ,P(-2-17 ≤ *Z* ≤ 2.17) = 0.9700.

4.52 The missing probability is 0.99058 (so that the sum is 1). This gives mean earnings *Ax* = $303.3525.

4.60 The total mean is 40 + 5 + 25 = 70 minutes.

afi2fst + CFSZ **4.66** Since the two times are independent, the total variance is   or,2.tai @
econd @ 22 + 12 = 5, So ot.,al = *V5*- -- 2.236 minutes.

4.69 (a) Randomly selected students would presumably be unrelated. **(b) itf-. = lif -** *A* .. = 120 - 105 = 15. **arf@.** **= af2 + U.1 = 2S2 +** 352 = 2009, so **uf-. --** 44.82. (e) Knowing only the mean and standard deviation, we cannot find that probability (unless we assume that the distribution is normal). Many different distributions can have the same mean and standard deviation.

4.72 (a) ***AT*** **=** *Ax* + ***Ay*** **=** *2Ax* = $606.705. aT = la@7 + **a,2 = 12o,;2 =** $13, 728.57.

2
this new definition of *Z: Az* = *Ax* = $303.3525 (unchanged). UZ   2 = iarx $4853.78 (smaller by a factor of 1/,12-).
V(4:UX 2

4.102 y = -70+ *1 X:* We need b   so that cry = *bux* = I - Since p,,,bx = *(i* +*but* 211   2f)
a + 210 (1400) = (i + 70, we need a = - 70 to rnake p), = 0.

4.104 (a) uz = *0.5ttx* + **0.5gy =** 0.065. (T2 = **0.52c2 +** ***0.52a2*** **=** 0.020225, so z   x   y
az '0. 1422. **(b)** For a given choice of *a,,u;,* = *aux* + (I - ***ct)py*** **=** 9.02 + **O.Oga** and *az* = @ a@@i' + (*l@*- ***a)*** *2@ai'* = . 25 - 0.00

5.2 (a) No: There is no fixed number of observations. **(b)** A binomial distribuwn is reasonable here; a "large city" will have a population over 1000 (10 times as big as the sample). **(c)** In a "Pick 3" game, Joe's chance of winning the lottery is the same every week, so assuming that a year consists of 52 weeks (observations), this would be binomial.

5.4 (a) The population is three times larger than the sample; it should be at least 10 times larger. **(b)** *np* = (500)(0.002) = I is too small; it should be at least 10.

5.12 If the university's claim is true, X-the number of athletes in our sample who graduated-would have a binomial distribution with n = 20 and p = 0.80. **(a)** *P(X* = I 1) = 0.0074. **(b)** *P(X* < I 1) = O'.01(0.

5.20 (a),u := (1500,)(0.7) = 1050andcT = *V-31-5* -- 17.7482. **(b)** *P(X* ≥ 1000) = 0.9976 (0-9978 withcontinuity correction). (e) *P(X* > 1200) < O.OW05 (it's vet-N, sniall). **(d)** With **ii** **=** *1700*, *P(X* > 1200) is about 0.28 **oi-** O..19.