**Warm Up 6.2 Transforming Random Variables**

1. *El Dorado Community College*

El Dorado Community College considers a student to be full-time if he or she is taking between 12 and 18 units. The number of units *X* that a randomly selected El Dorado Community College full-time student is taking in the fall semester has the following distribution.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Number of Units (*X*) | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| Probability | 0.25 | 0.10 | 0.05 | 0.30 | 0.10 | 0.05 | 0.15 |

* 1. Calculate and interpret the mean and standard deviation of *X*.
	2. At El Dorado Community College, the tuition for full-time students is $50 per unit.

So, if *T* = tuition charge for a randomly selected full-time student, *T* = 50*X*.

Calculate the mean and standard deviation of *T*.

* 1. In addition to tuition charges, each full-time student at El Dorado Community College is assessed student fees of $100 per semester. If *C* = overall cost for a randomly selected full-time student, *C* = 100 + *T*.

Calculate the mean and standard deviation of *C*.

1. Let *B* = the amount spent on books in the fall semester for a randomly selected full-time student at El Dorado Community College. Suppose thatand . Recall from earlier that *C* = overall cost for tuition and fees for a randomly selected full-time student at EDCC and  = 832.50 and  = 103. Find the mean and *standard deviation* of the cost of tuition, fees and books (*C* + *B*) for a randomly selected full-time student at El Dorado Community College.

1. At the main campus of EDCC, full time students pay $50 per unit. At the downtown campus, full time students pay $55 per unit. Earlier we defined X= the number of units for a randomly selected full-time student at the main campus. Let Y = the number of units for a randomly selected full-time student at the downtown campus. X and Y are independent.

$$μ\_{x}=14.65 σ\_{x}=2.06 and μ\_{Y}=15 σ\_{Y}=2.3 $$

* 1. From earlier, T = amount collected from a randomly selected full time student at the main campus. Let U = amount collected from a randomly selected full time student at the downtown campus. Find the mean and standard deviation of T and U.
	2. Suppose we randomly select one full time student from each of the two campuses. What are the mean and standard deviation of the difference in tuition charges (T – U)? Interpret each of these.