Questions 17-23 are based on the following:

AudioShades (by Shirin) are hearing aids re-imagined as sun-glasses. Re-framing a product associated with the stigma of aging (traditional hearing aids) to one associated with fashion (AudioShades) is anticipated to substantially improve market sales. Each unit of *AudioShades* is a *pair* (just as in the case of a *pair* of eye-glasses).

Let the random variable X represent the projected number of sales (of Audioshades) expressed in thousands, so that $X=10$ represents 10 thousand pairs sold. The probability model for X is shown below.

Table 1. Probability model for RV X. Possibilities in first row (in Thousands) and associated probabilities in second row

10	20	40	80	160
0.1	0.4	0.2	0.15	0.15

Q16. One can confirm that Table 1 represents a proper probability model by noting that ...

a) ... each listed possibility has been assigned a non-zero probability
b) ... the probabilities summed across all possibilities equal 1
c) ... each of the possibilities are independent of one another
d) ... the two complementary events are actually disjoint
e) ... the probabilities monotonically increase and then decrease.

Q17. The *expected value* of X is (in thousands)

a) 62
b) 106
c) 1, 8, 8, 12, 24
d) 26.5
e) 53

Q18. The variance of X (in thousands^2) is

a) 2481
b) 2976
c) 3720
d) 9924
e) 620.25

We are interested in the *gross revenue (GR)* (i.e., before costs) that results with a sales-price per pair of $300. (If X was fixed at 1000 sales the *GR* would be 300 thousand dollars.) Given Table 1's probability model for X, please calculate the following for *GR*.

Q19. *GR*'s *expected value* (in *thousands of dollars*):

a) 353
b) 15900
c) 18600
d) 7950
e) 31800

Q20. The ***coefficient of variation*** for Gross revenue (*GR*) is:

a) 0.003
b) 16.278
c) 1.064
d) 0.94
e) 1.607

Q21. The minimum *gross revenue* (in *thousands of dollars*) will be ?

a) 0
b) 15900
c) 3000
d) 18600
e) 1500