Linear Combination of Random Variables – 2022 GCE Statistics Further Math A Y542

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A company uses two drivers for deliveries.

Driver A charges a fixed rate of £80 per day plus £2 per mile travelled on that day.

Driver B charges a fixed rate of £120 per day plus £1.50 per mile travelled on that day.

On each working day the total distance, in miles, travelled by each driver is a random variable with the distribution N(83, 360).

(a) Find the probability that driver A charges the company less than £235.00 for a randomly chosen day's deliveries. **[4]**

(b) Find the probability that the total charge to the company of three randomly chosen days' deliveries by driver A is at least £300 more than the total charge of two randomly chosen days' deliveries by driver B. **[6]**