

**1. Nov/2022/Paper\_9709\_61/No.4**

Each month a company sells  $X$  kg of brown sugar and  $Y$  kg of white sugar, where  $X$  and  $Y$  have the independent distributions  $N(2500, 120^2)$  and  $N(3700, 130^2)$  respectively.

- (a) Find the mean and standard deviation of the total amount of sugar that the company sells in 3 randomly chosen months. [3]

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The company makes a profit of \$1.50 per kilogram of brown sugar sold and makes a loss of \$0.20 per kilogram of white sugar sold.

- (b) Find the probability that, in a randomly chosen month, the total profit is less than \$3000. [5]

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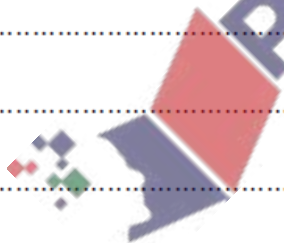
The masses, in grams, of small and large bags of flour have the distributions  $N(510, 100)$  and  $N(1015, 324)$  respectively. André selects 4 small bags of flour and 2 large bags of flour at random.

- (a) Find the probability that the total mass of these 6 bags of flour is less than 4130 g. [5]



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- (b) Find the probability that the total mass of the 4 small bags is more than the total mass of the 2 large bags. [5]



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