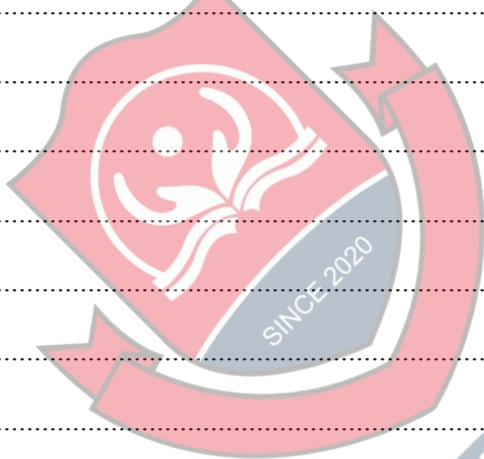


- (a) Find the probability that Rajesh is successful for the first time on his 7th attempt. [1]

- (b)** Find the probability that Rajesh is successful for the first time before his 6th attempt. [2]



- (c) Find the probability that Rajesh is successful for the second time on his 10th attempt. [2]



- 2** Seva has a coin which is biased so that when it is thrown the probability of obtaining a head is $\frac{1}{3}$. He also has a bag containing 4 red marbles and 5 blue marbles.

Seva throws the coin. If he obtains a head, he selects one marble from the bag at random. If he obtains a tail, he selects two marbles from the bag at random and without replacement.

- (a) Find the probability that Seva selects at least one red marble. [3]

- (b) Find the probability that Seva obtains a head given that he selects no red marbles. [2]

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- (a) Find the percentage of oranges that are classified as large. [3]



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(b) Find the greatest possible weight of a small orange.

[3]



- 4 The back-to-back stem-and-leaf diagram shows the annual salaries of 19 employees at each of two companies, Petral and Ravon.

Petal							Ravon				
			3	0	0	30	2	6			
9	9	8	2	2	1	31	1	5			
			5	5	4	32	0	0	2		
			7	5	3	33	0	4	8	9	
				1	0	34	1	1	3	4	6
						35	3				
					8	36	7	9			

Key: 2 | 31 | 5 means \$31 200 for a Petral employee and \$31 500 for a Ravon employee.

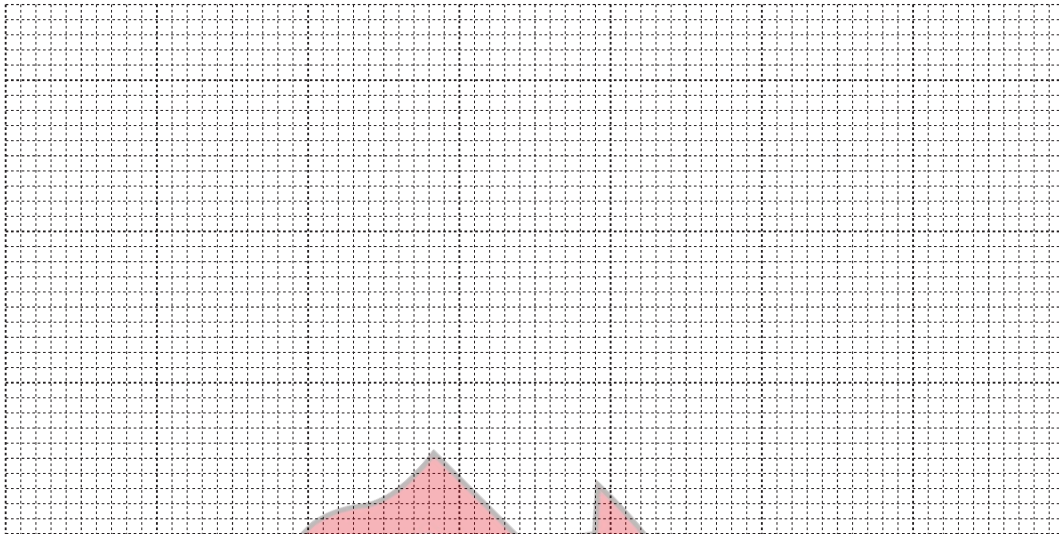
- (a) Find the median and the interquartile range of the salaries of the Petral employees. [3]



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The median salary of the Ravon employees is \$33 800, the lower quartile is \$32 000 and the upper quartile is \$34 400.

- (b) Represent the data shown in the back-to-back stem-and-leaf diagram by a pair of box-and-whisker plots in a single diagram. [3]



- (c) Comment on whether the mean or the median would be a better representation of the data for the employees at Petral. [1]

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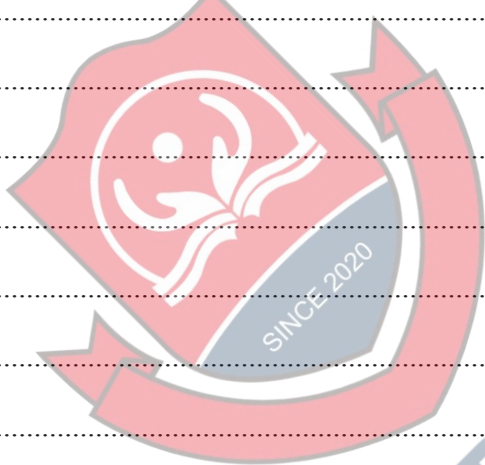
- 5 Jasmine has one \$5 coin, two \$2 coins and two \$1 coins. She selects two of these coins at random. The random variable X is the total value, in dollars, of these two coins.

(a) Show that $P(X = 7) = 0.2$.

[1]

(b) Draw up the probability distribution table for X .

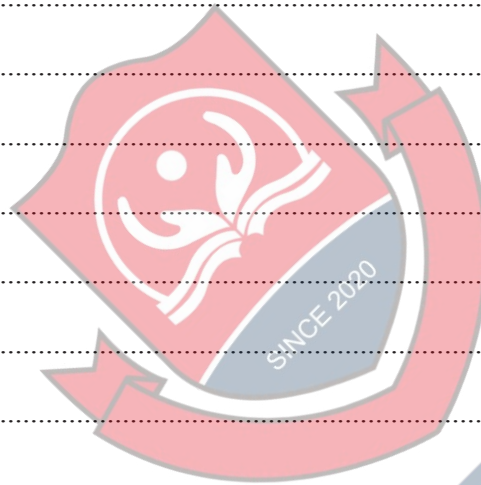
[3]



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(c) Find the value of $\text{Var}(X)$.

[3]

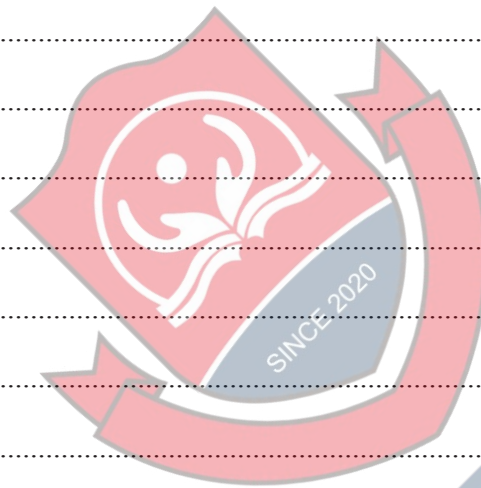


6 The residents of Mahjing were asked to classify their local bus service:

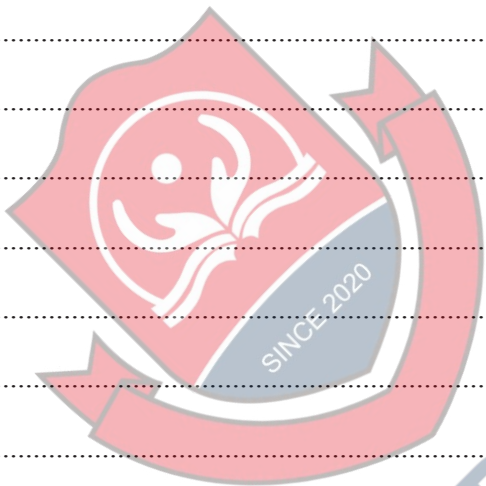
- 25% of residents classified their service as good.
- 60% of residents classified their service as satisfactory.
- 15% of residents classified their service as poor.

(a) A random sample of 110 residents of Mahjing is chosen.

Use a suitable approximation to find the probability that fewer than 22 residents classified their bus service as good. [5]



- (b) For a random sample of 10 residents of Mahjng, find the probability that fewer than 8 classified their bus service as good or satisfactory. [3]



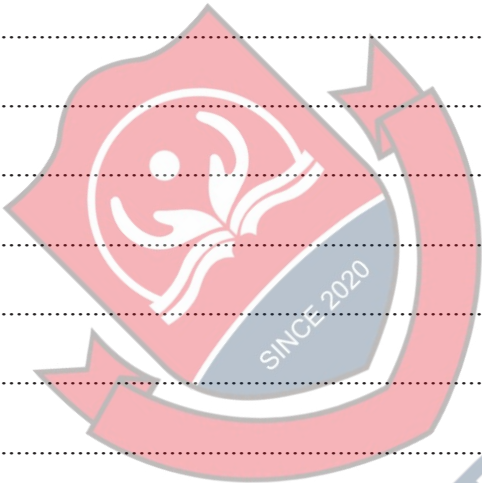
- (c) Three residents of Mahjing are selected at random.

Find the probability that one resident classified the bus service as good, one as satisfactory and one as poor. [2]

[illegible]

- 7 (a) How many different arrangements are there of the 10 letters in the word REGENERATE? [1]

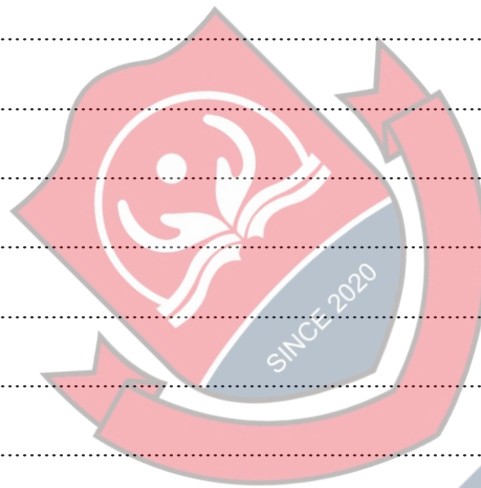
- (b) How many different arrangements are there of the 10 letters in the word REGENERATE in which the 4 Es are together and the 2 Rs have exactly 3 letters in between them? [4]



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Additional page

If you use the following lined page to complete the answer(s) to any question(s), the question number(s) must be clearly shown.



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