

Q-10.13.3.10

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Question: All the jacks, queens and kings are removed from a deck of 52 playing cards. The remaining cards are well shuffled and then one card is drawn at random. Giving ace a value 1 similar value for other cards, find the probability that the card has a value

- 1) 7
- 2) greater than 7
- 3) less than 7

Solution: Number of cards left after removing all jacks, queens and kings(=N)

$$= 52 - 4 \times 3 \quad (1)$$

$$= 40 \quad (2)$$

Random variable	Sample space	Value	Event	Probability
X_1	40	4	the card has value 7 and is of any suit	$\frac{4}{40} = \frac{1}{10}$
X_2	40	12	the card has value greater than 7 and is of any suit	$\frac{12}{40} = \frac{3}{10}$
X_3	40	24	the card has value less than 7 and is of any sui	$\frac{24}{40} = \frac{6}{10}$