|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year  10 | | | Mathematics Test  Two and Three Stage Chance Events | |  |
|  | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | Write all working and answers in the spaces provided on this test paper.  Calculators are allowed for this section. | | | | |
| 1. |  | In a board game, two normal six sided dice are rolled for each move. | | | |
|  | (a)  2 marks | Complete the table below to show the sample space for each roll of the two dice.     |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  | 1 | 2 | 3 | 4 | 5 | 6 | | 1 | 1, 1 | 1, 2 | 1, 3 |  |  |  | | 2 | 2, 1 | 2, 2 |  |  |  |  | | 3 | 3, 1 |  |  |  |  |  | | 4 |  |  |  |  |  |  | | 5 |  |  |  |  |  |  | | 6 |  |  |  |  |  |  | | | | |
| (b)  1 mark | What is the probability of rolling a double (both numbers are the same)?  ....................................................................................................................................................    .................................................................................................................................................... | | | |
| (c)  1 mark | What is the probability that the two numbers have a difference of 2 (e.g. 3 and 5)?  ....................................................................................................................................................    .................................................................................................................................................... | | | |
|  | (d)  1 mark | What is the probability that the two numbers have a product greater than15 (e.g. 3 and 6 have a product of 18)?  ....................................................................................................................................................    .................................................................................................................................................... | | | |

|  |  |  |
| --- | --- | --- |
| 2. |  | A bag contains 4 numbered disks with the digits 1, 3, 5 and 7 on them. Three of the disks are drawn from the bag and placed in a line to form a three digit number. |
|  | a)  2 marks | In the space below, draw a tree diagram to show all the possible numbers formed when the three disks are drawn from the bag. |
| b)  1 mark | What is the probability that the number formed ends in 35?  ....................................................................................................................................................    .................................................................................................................................................... |
| c)  1 mark | What is the probability that the number formed is divisible by 3?  ....................................................................................................................................................    .................................................................................................................................................... |
|  | d)  1 mark | What is the probability that the number formed is greater than 351?  ....................................................................................................................................................    .................................................................................................................................................... |

|  |  |  |
| --- | --- | --- |
| 3. |  | There are three people sitting in a doctor’s waiting room; Andy, Belle and Candice. The receptionist randomly chooses who goes in to see the doctor next. |
|  | (a)  2 marks | Draw a tree diagram to show the possible orders in which the three can be called in to see the doctor. |
| (b)  1 mark | What is the probability that Andy and Belle will be the first two called in?  ....................................................................................................................................................    .................................................................................................................................................... |
| (c)  1 mark | What is the probability that Candice will be the second or third person called in?  ....................................................................................................................................................    .................................................................................................................................................... |
|  | (d)  1 mark | If Andy is called in first, what is the probability that Candice will be the second person called in?  ....................................................................................................................................................    .................................................................................................................................................... |

|  |  |  |
| --- | --- | --- |
| 4. |  | Penny is dealing cards out from a normal 52 card pack. |
|  | a)    1 mark  1 mark | She deals out a card and notes what it is, then replaces it, shuffles the deck and deals a second card.   1. What is the probability that both cards are aces?   .............................................................................................................................................    ...............................................................................................................................................   1. What is the probability that neither of the cards are hearts?   .............................................................................................................................................    ............................................................................................................................................... |
| b)    1 mark  1 mark  1 mark | She deals out a card and then deals a second without replacing the first.   1. What is the probability that both cards are red cards?   .............................................................................................................................................    ...............................................................................................................................................   1. What is the probability that neither of the cards are hearts?   .............................................................................................................................................    ...............................................................................................................................................   1. Given that the first card she deals is an Ace, what is the probability that the two cards dealt are of the same suit?   .............................................................................................................................................    ............................................................................................................................................... |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. |  | A survey was conducted of 120 people, asking whether they like a product called Uberfood or not. The results are shown in the two way table.     |  |  |  |  | | --- | --- | --- | --- | |  | Male | Female | Total | | Like Uberfood | 10 | 40 | 55 | | Don’t like Uberfood | 40 | 30 | 65 | | Total | 50 | 70 | 120 | |
|  | (a)  1 mark | If one person were chosen at random from the group, what is the probability that they liked Uberfood?  ....................................................................................................................................................    .................................................................................................................................................... |
| (b)  1 mark | If a male were chosen from the group, what is the probability that he liked Uberfood?  ....................................................................................................................................................    .................................................................................................................................................... |
| (c)  1 mark | If a person who liked Uberfood was chosen at random, what is the probability that the person was a male?  ....................................................................................................................................................    .................................................................................................................................................... |
|  | (d)  1 mark | If one person were chosen at random from the group, what is the probability that it was a female who liked Uberfood?  ....................................................................................................................................................    .................................................................................................................................................... |
|  | (e)  1 mark | If two people were chosen at random, what is the probability that they both liked Uberfood?  ....................................................................................................................................................    .................................................................................................................................................... |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Year  10 | | | Mathematics Test  Two and Three Stage Chance Events | | ANSWERS |
|  | Name : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | Write all working and answers in the spaces provided on this test paper.  Calculators are allowed for this section. | | | | |
| 1. |  | In a board game, two normal six sided dice are rolled for each move. | | | |
|  | (a)  2 marks | Complete the table below to show the sample space for each roll of the two dice.     |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  | 1 | 2 | 3 | 4 | 5 | 6 | | 1 | 1, 1 | 1, 2 | 1, 3 | 1, 4 | 1, 5 | 1,6 | | 2 | 2, 1 | 2, 2 | 2,3 | 2, 4 | 2, 5 | 2, 6 | | 3 | 3, 1 | 3, 2 | 3, 3 | 3, 4 | 3, 5 | 3, 6 | | 4 | 4, 1 | 4, 2 | 4, 3 | 4, 4 | 4, 5 | 4, 6 | | 5 | 5, 1 | 5, 2 | 5, 3 | 5, 4 | 5, 5 | 5, 6 | | 6 | 6, 1 | 6, 2 | 6, 3 | 6, 4 | 6, 5 | 6, 6 | | | | |
| (b)  1 mark | What is the probability of rolling a double (both numbers are the same)? | | | |
| (c)  1 mark | What is the probability that the two numbers have a difference of 2 (e.g. 3 and 5)? | | | |
|  | (d)  1 mark | What is the probability that the two numbers have a product greater than15 (e.g. 3 and 6 have a product of 18)? | | | |

|  |  |  |
| --- | --- | --- |
| 2. |  | A bag contains 4 numbered disks with the digits 1, 3, 5 and 7 on them. Three of the disks are drawn from the bag and placed in a line to form a three digit number. |
|  | a)  2 marks | In the space below, draw a tree diagram to show all the possible numbers formed when the three disks are drawn from the bag.   |  |  |  |  | | --- | --- | --- | --- | | 135 | 315 | 513 | 713 | | 137 | 317 | 517 | 715 | | 153 | 351 | 531 | 731 | | 157 | 357 | 537 | 735 | | 173 | 371 | 571 | 751 | | 175 | 375 | 573 | 753 | |
| b)  1 mark | What is the probability that the number formed ends in 35? |
| c)  1 mark | What is the probability that the number formed is divisible by 3? |
|  | d)  1 mark | What is the probability that the number formed is greater than 351? |

|  |  |  |
| --- | --- | --- |
| 3. |  | There are three people sitting in a doctor’s waiting room; Andy, Belle and Candice. The receptionist randomly chooses who goes in to see the doctor next. |
|  | (a)  2 marks | Draw a tree diagram to show the possible orders in which the three can be called in to see the doctor.  ABC  ACB  BAC    BCA  CAB  CBA |
| (b)  1 mark | What is the probability that Andy and Belle will be the first two called in? |
| (c)  1 mark | What is the probability that Candice will be the second or third person called in? |
|  | (d)  1 mark | If Andy is called in first, what is the probability that Candice will be the second person called in? |

|  |  |  |
| --- | --- | --- |
| 4. |  | Penny is dealing cards out from a normal 52 card pack. |
|  | a)    1 mark  1 mark | She deals out a card and notes what it is, then replaces it, shuffles the deck and deals a second card.   1. What is the probability that both cards are aces?      1. What is the probability that neither of the cards are hearts? |
| b)    1 mark  1 mark  1 mark | She deals out a card and then deals a second without replacing the first.   1. What is the probability that both cards are red cards?      1. What is the probability that neither of the cards are hearts?      1. Given that the first card she deals is a Spade, what is the probability that the two cards dealt are of the same suit? |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. |  | A survey was conducted of 120 people, asking whether they like a product called Uberfood or not. The results are shown in the two way table.     |  |  |  |  | | --- | --- | --- | --- | |  | Male | Female | Total | | Like Uberfood | 10 | 45 | 55 | | Don’t like Uberfood | 40 | 25 | 65 | | Total | 50 | 70 | 120 | |
|  | (a)  1 mark | If one person were chosen at random from the group, what is the probability that they liked Uberfood?  . |
| (b)  1 mark | If a male were chosen from the group, what is the probability that he liked Uberfood? |
| (c)  1 mark | If a person who liked Uberfood was chosen at random, what is the probability that the person was a male? |
|  | (d)  1 mark | If one person were chosen at random from the group, what is the probability that it was a female who liked Uberfood?  . |
|  | (e)  1 mark | If two people were chosen at random, what is the probability that they both liked Uberfood? |