|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | | Mathematics Test  Sample Space and Probability |  | |
|  | | Name |  | |
| **Answer all questions in the spaces provided on this test paper by**  **Writing the answer in the box or on the lines provided.**  **or**  **Shading in the bubble for the correct answer from the four choices provided.**  **Show any working out on the test paper.** | | | |
|  | Questions 1 – 5 refer to an experiment where Alan rolls a normal six sided die and records the result. | | |
| 1. | List the sample space for the experiment. | | |
| 2. | What is the probability that the die will show the number 3 on the upper face? | | |
| 3. | The probability that it will show a number less than 5 on the upper face is: | | |
| 4. | The probability that it will show a multiple of 3 on the upper face is: | | |
| 5. | What is the probability that the die will show the number 3 or any even number on the upper face? | | |
| 6. | The probability of there being a letter “e” somewhere on a full page of printed text would be close to:  0%  50%  75%  100% | | |
| 7. | A footrace has 14 runners who all have different levels of running ability.  Michael is in the race and has greater running ability than all of the other entrants.  Which of the two statements below is true?  Statement 1 : Every runner has a probability of  of winning the race.  Statement 2 : Michael has a higher probability of winning than any other entrant.  Only Statement 1 is true.  Only Statement 2 is true.  Both Statements are true.  Neither Statement is true. | | |
| 8. | A newspaper article says:  ***“There is almost no chance of a cyclone striking a Tasmanian city.”***  Which decimal might represent this probability?  0.000 001 0.01 0.1 0.5 | | |
| 9. | In a pack of 52 playing cards there are 4 suits each with 13 cards.  The suits are called clubs, diamonds, hearts and spades.  If a single card is drawn from the pack, what is the probability that it is not a spade? | | |
| 10. | Which probability indicates that there is an “even chance” of an event occurring?  0.2 0.4 0.5 0.8 | | |
|  | Questions 11 -15 refer to the following:  Grandma has 40 lollies in her lolly jar.  Twelve of the lollies are fruit chews, ten are jelly beans, eight are chocolates and the rest are mints.  Grandma puts her hand into the jar and picks a lolly at random for her grand-daughter. | | |
| 11. | What are the most likely and least likely type of lolly to be chosen? | | |
| 12. | What is the probability that she chooses a mint? | | |
| 13. | Which two lollies have the same probability of being chosen?  and | | |
| 14. | Her grand-daughter Cat doesn’t like chocolates. What is the probability that Grandma picks a lolly that Cat likes.  0.2 0.25 0.3 0.8 | | |
| 15. | What is the probability that Grandma picks a jelly bean or a chocolate? | | |
|  | Questions 16 -20 refer to the following:  Kathy places the tickets for a raffle in a bucket.  The first hundred tickets are red and are numbered 1 to 100 and the second hundred tickets are green and are also numbered 1 to 100.  Kathy draws out one ticket. | | |
| 16. | The sample space has how many elements?  50 100 200 400 | | |
| 17. | What is the probability that the ticket drawn is red? | | |
| 18. | What is the probability that the ticket drawn has the number 20 on it? | | |
| 19. | What is the probability that the ticket drawn is green with a number less than 21? | | |
| 20. | Kathy’s favourite number is 9. What is the probability that the ticket drawn is a multiple of 9? | | |

|  |  |
| --- | --- |
|  | Questions 21- 24 refer to the table of car colours that Mike collected from the staff car park.  **Colour**  White  **Number o**  Grey  7  9  Black  5  Red  4  One of the cars is picked at random to receive a free car wash. |
| 21. | How many cars were in the car park?  cars |
| 22. | What is the probability that a white car is chosen? |
| 23. | What is the probability that grey or white car is chosen? |
| 24. | The probability of not choosing a red car is |
| 25. | One extra car comes into the car park and it has the effect of changing the probabilities so that there are now two colours that are equally likely to be chosen.  What colour was the car? |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | | Mathematics Test  Sample Space and Probability |  | |
|  | | ANSWERS |  | |
| **Answer all questions in the spaces provided on this test paper by**  **Writing the answer in the box or on the lines provided.**  **or**  **Shading in the bubble for the correct answer from the four choices provided.**  **Show any working out on the test paper.** | | | |
|  | Questions 1 – 5 refer to an experiment where Alan rolls a normal six sided die and records the result. | | |
| 1. | List the sample space for the experiment.  1, 2, 3, 4, 5, 6 | | |
| 2. | What is the probability that the die will show the number 3 on the upper face?  1  6 | | |
| 3. | The probability that it will show a number less than 5 on the upper face is: | | |
| 4. | The probability that it will show a multiple of 3 on the upper face is: | | |
| 5. | What is the probability that the die will show the number 3 or any even number on the upper face?  2  3 | | |
| 6. | The probability of there being a letter “e” somewhere on a full page of printed text would be close to:  0%  50%  75%  100% | | |
| 7. | A footrace has 14 runners who all have different levels of running ability.  Michael is in the race and has greater running ability than all of the other entrants.  Which of the two statements below is true?  Statement 1 : Every runner has a probability of  of winning the race.  Statement 2 : Michael has a higher probability of winning than any other entrant.  Only Statement 1 is true.  Only Statement 2 is true.  Both Statements are true.  Neither Statement is true. | | |
| 8. | A newspaper article says:  ***“There is almost no chance of a cyclone striking a Tasmanian city.”***  Which decimal might represent this probability?  0.000 001 0.01 0.1 0.5 | | |
| 9. | In a pack of 52 playing cards there are 4 suits each with 13 cards.  The suits are called clubs, diamonds, hearts and spades.  If a single card is drawn from the pack, what is the probability that it is not a spade?  3  4 | | |
| 10. | Which probability indicates that there is an “even chance” of an event occurring?  0.2 0.4 0.5 0.8 | | |
|  | Questions 11 -15 refer to the following:  Grandma has 40 lollies in her lolly jar.  Twelve of the lollies are fruit chews, ten are jelly beans, eight are chocolates and the rest are mints.  Grandma puts her hand into the jar and picks a lolly at random for her grand-daughter. | | |
| 11. | What are the most likely and least likely type of lolly to be chosen?  Fruit chews are most likely and chocolates are least likely. | | |
| 12. | What is the probability that she chooses a mint?  1  4 | | |
| 13. | Which two lollies have the same probability of being chosen?  Mints  Jelly Beans  and | | |
| 14. | Her grand-daughter Cat doesn’t like chocolates. What is the probability that Grandma picks a lolly that Cat likes.  0.2 0.25 0.3 0.8 | | |
| 15. | What is the probability that Grandma picks a jelly bean or a chocolate?  9  20 | | |
|  | Questions 16 -20 refer to the following:  Kathy places the tickets for a raffle in a bucket.  The first hundred tickets are red and are numbered 1 to 100 and the second hundred tickets are green and are also numbered 1 to 100.  Kathy draws out one ticket. | | |
| 16. | The sample space has how many elements?  50 100 200 400 | | |
| 17. | What is the probability that the ticket drawn is red?  1  2 | | |
| 18. | What is the probability that the ticket drawn has the number 20 on it?  1  100  1  2 | | |
| 19. | What is the probability that the ticket drawn is green with a number less than 21? | | |
| 20. | Kathy’s favourite number is 9. What is the probability that the ticket drawn is a multiple of 9?  11  100 | | |

|  |  |
| --- | --- |
|  | Questions 21- 24 refer to the table of car colours that Mike collected from the staff car park.  **Colour**  White  **Number o**  Grey  7  9  Black  5  Red  4  One of the cars is picked at random to receive a free car wash. |
| 21. | How many cars were in the car park?  25  cars |
| 22. | What is the probability that a white car is chosen?  9  25 |
| 23. | What is the probability that grey or white car is chosen?  16  25 |
| 24. | The probability of not choosing a red car is |
| 25. | One extra car comes into the car park and it has the effect of changing the probabilities so that there are now two colours that are equally likely to be chosen.  What colour was the car?  Red |