

Topic test 5**Probability**

- Time allowed: 45 minutes.
- Part A: 20 multiple-choice questions (40 marks)
- Part B: 10 free-response questions (60 marks)

Name: _____

Part A**20 multiple-choice questions****2 marks each: 40 marks****Circle the correct answer.**

- 1 How many different outcomes are possible when a coin is tossed?

A 6	B 4
C 1	D 2
- 2 How many hearts cards are there in a normal deck of cards?

A 12	B 13
C 10	D 52
- 3 What is the probability of a baby being born on a weekday rather than on a weekend?

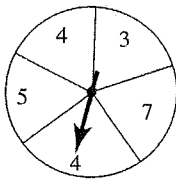
A $\frac{2}{3}$	B $\frac{2}{7}$
C $\frac{3}{5}$	D $\frac{5}{7}$
- 4 Which term best describes the chance of rolling an odd number on a die?

A impossible	B improbable
C even chance	D likely
- 5 The probability that it will rain this weekend is 33%. What is the probability that it will not rain?

A 66%	B 77%
C 33%	D 67%
- 6 The probability of a 'certain' event is:

A 1	B -1
C 0	D 10
- 7 On this spinner, what is the probability of spinning a 3 or 4?

A 0.3	B 0.7
C 0.5	D 0.6


- 8 On the above spinner, what is the probability of spinning a number greater than 6?

A $\frac{1}{6}$	B $\frac{2}{5}$
C $\frac{1}{4}$	D $\frac{1}{5}$
- 9 The set of all possible outcomes of a situation is called the:

A experiment	B complementary event
C sample space	D likelihood
- 10 What is the probability that a person chosen at random has a birthday in a month beginning with J?

A $\frac{1}{12}$	B $\frac{1}{31}$
C $\frac{1}{6}$	D $\frac{1}{4}$
- 11 What is the *complementary event* to drawing a red card from a deck of cards?

A drawing a hearts or spades card	B drawing a hearts or diamonds card
C drawing a clubs or diamonds card	D drawing a clubs or spades card
- 12 The lowest possible value of a probability is:

A -1	B 0
C 0.1	D 1
- 13 Five students — Henry, Irene, Jack, Kathy and Lisa write their names on separate cards. One card is chosen at random. What is the probability that a boy's name is chosen?

A $\frac{2}{5}$	B $\frac{2}{3}$
C $\frac{1}{3}$	D $\frac{3}{5}$
- 14 One ticket is drawn out at random from a box of blue, orange, green, red and yellow raffle tickets. The chance of drawing a blue ticket is $\frac{16}{75}$. The chance of drawing an orange ticket is $\frac{28}{75}$. What is the probability of drawing out a blue or orange ticket?

A $\frac{4}{25}$	B $\frac{44}{75}$
C $\frac{22}{75}$	D $\frac{2}{25}$
- 15 What is the probability that the ticket drawn in Question 14 is not blue or orange?

A $\frac{47}{75}$	B $\frac{59}{75}$
C $\frac{31}{75}$	D $\frac{56}{75}$

Topic test 5: Probability *continued*

- 16** If the box in Question 14 actually contains 300 tickets, how many would you expect to be orange?
A 11 B 37
C 84 D 112
- 17** Which term is different to the other three?
A probable B almost certain
C unlikely D good chance
- 18** There are 400 raffle tickets in a competition. Jenny buys 8 tickets. What is the probability that she wins first prize?
A 0.2 B 0.005
C 0.02 D 0.0025
- 19** What is the probability Jenny doesn't win first prize?
A 0.9825 B 0.98
C 0.95 D 0.9975
- 20** The sum of the probability of an event occurring and the probability of the same event not occurring is equal to:
A $\frac{1}{2}$ B 0
C 2 D 1
- 22** (8 marks) A jar contains 8 red lollies, 10 green lollies, 6 yellow lollies and 6 white lollies. One lolly is chosen at random from the jar. Calculate as a simple fraction the probability that the chosen lolly is:
a green
b red or green
c blue
d not white
- 23** (10 marks)
a List all possible outcomes when a die is rolled.
b Find the probability of rolling:
i a 3?
ii an event number?
iii a number greater than 1?
iv a composite number?

Part B

10 free-response questions

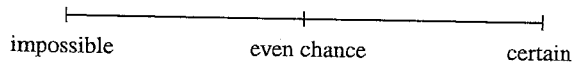
60 marks

Show working where appropriate.

- 21** (6 marks) Rate each of the following events as being: **unlikely**, **likely**, **certain**, **impossible** or **even chance**.
a A double 6 comes up when you roll two dice.
b You driving a car in 10 years time.
c There were cars on the Sydney Harbour Bridge this morning.
- 24** (8 marks) A card is selected at random from a normal deck of 52 cards. What is the probability of selecting:
a a hearts card?
b a red 7?
c an Ace card?
d a black picture card (J, K, Q)?

Topic test 5: Probability *continued*

25 (5 marks) Use the given letters to mark the positions of the events below on the scale:



- E. There will be an e-mail for you today.
- V. You will eat vegetables today.
- A. There will be a car accident in Sydney today.
- T. You will be 180 cm tall tomorrow.
- C. You will catch a cold within 6 months

26 (2 marks) Give an example of an event that might have a probability close to 10%.

27 (6 marks)

a For traffic lights, list all of the possible outcomes.

b Explain why each outcome is not equally likely.

c What is the complementary event to the traffic lights showing green?

28 (8 marks) A sock drawer contains 16 white socks, 8 grey socks, 6 brown socks and 6 green socks. One sock is chosen from the drawer without looking.

a What is the most likely colour of this sock?

b What event is *complementary* to choosing a grey sock?

c What is the probability that the sock is brown?

d What is the probability that the sock is not brown?

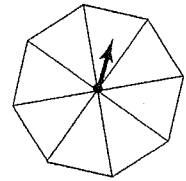
29 (3 marks) Place the letters D , K , N and T on the sections of this spinner if the following probabilities are true for one spin of it:

$$P(D) = 0.125$$

$$P(K) = 0.375$$

$$P(N) = 0.25$$

$$P(T) = 0.25$$



30 (4 marks) In my town, the chance of a day in April being sunny is 90%.

a How many days are there in April?

b On how many days would you expect it to be sunny in April?

END OF TEST.

Use the rest of this column and the back for extra working space.

Topic test 5

Probability

ANSWERS

- Time allowed: 45 minutes.
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- Part B: 10 free-response questions (60 marks)

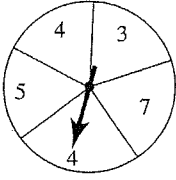
Name: 1 1

Part A

20 multiple-choice questions

2 marks each: 40 marks

Circle the correct answer.

- 1 How many different outcomes are possible when a coin is tossed?
 A 6
 B 4
 C 1
D 2
- 2 How many hearts cards are there in a normal deck of cards?
 A 12
 B 13
 C 10
 D 52
- 3 What is the probability of a baby being born on a weekday rather than on a weekend?
 A $\frac{2}{3}$
 B $\frac{2}{7}$
 C $\frac{3}{5}$
D $\frac{5}{7}$
- 4 Which term best describes the chance of rolling an odd number on a die?
 A impossible
 B improbable
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C even chance
- 5 The probability that it will rain this weekend is 33%. What is the probability that it will not rain?
 A 66%
 B 77%
 C 33%
 D 67%
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- 6 The probability of a 'certain' event is:
 A 1
 B -1
 C 0
 D 10
A 1
- 7 On this spinner, what is the probability of spinning a 3 or 4?
 A 0.3
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- 8 On the above spinner, what is the probability of spinning a number greater than 6?
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 B $\frac{2}{5}$
 C $\frac{1}{4}$
 D $\frac{1}{5}$
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 B drawing a hearts or diamonds card
 C drawing a clubs or diamonds card
 D drawing a clubs or spades card
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- 12 The lowest possible value of a probability is:
 A -1
 B 0
 C 0.1
 D 1
B 0
- 13 Five students — Henry, Irene, Jack, Kathy and Lisa write their names on separate cards. One card is chosen at random. What is the probability that a boy's name is chosen?
 A $\frac{2}{5}$
 B $\frac{2}{3}$
 C $\frac{1}{3}$
 D $\frac{3}{5}$
A $\frac{2}{5}$
- 14 One ticket is drawn out at random from a box of blue, orange, green, red and yellow raffle tickets. The chance of drawing a blue ticket is $\frac{16}{75}$. The chance of drawing an orange ticket is $\frac{28}{75}$. What is the probability of drawing out a blue or orange ticket?
 A $\frac{4}{25}$
 B $\frac{44}{75}$
 C $\frac{22}{75}$
 D $\frac{2}{25}$
B $\frac{44}{75}$
- 15 What is the probability that the ticket drawn in Question 14 is not blue or orange?
 A $\frac{47}{75}$
 B $\frac{59}{75}$
 C $\frac{31}{75}$
 D $\frac{56}{75}$
C $\frac{31}{75}$

Topic test 5: Probability continued

16 If the box in Question 14 actually contains 300 tickets, how many would you expect to be orange?

- A 11 B 37
C 84 **D 112**

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20 The sum of the probability of an event occurring and the probability of the same event not occurring is equal to:

- A $\frac{1}{2}$ B 0
C 2 **D 1**

Part B

10 free-response questions

60 marks

Show working where appropriate.

21 (6 marks) Rate each of the following events as being: **unlikely, likely, certain, impossible** or **even chance**.

a A double 6 comes up when you roll two dice.

unlikely ($\frac{1}{36}$)

b You driving a car in 10 years time.

likely ??

c There were cars on the Sydney Harbour Bridge this morning.

certain

22 (8 marks) A jar contains 8 red lollies, 10 green lollies, 6 yellow lollies and 6 white lollies. One lolly is chosen at random from the jar. Calculate as a simple fraction the probability that the chosen lolly is:

a green $\frac{10}{30} = \frac{1}{3}$

b red or green $\frac{18}{30} = \frac{3}{5}$

c blue 0

d not white $\frac{24}{30} = \frac{4}{5}$

23 (10 marks)

a List all possible outcomes when a die is rolled. 1, 2, 3, 4, 5, 6

b Find the probability of rolling:

i a 3? $\frac{1}{6}$

ii an even number? $\frac{1}{2}$

iii a number greater than 1? $\frac{5}{6}$

iv a composite number? $\frac{2}{6} = \frac{1}{3}$

24 (8 marks) A card is selected at random from a normal deck of 52 cards. What is the probability of selecting:

a a hearts card? $\frac{13}{52} = \frac{1}{4}$

b a red 7? $\frac{2}{52} = \frac{1}{26}$

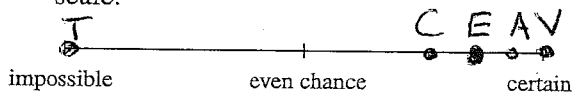
c an Ace card? $\frac{4}{52} = \frac{1}{13}$

d a black picture card (J, K, Q)?

$\frac{6}{52} = \frac{3}{26}$

Topic test 5: Probability continued

- 25 (5 marks) Use the given letters to mark the positions of the events below on the scale:



- E. There will be an e-mail for you today.
 V. You will eat vegetables today.
 A. There will be a car accident in Sydney today.
 T. You will be 180 cm tall tomorrow.
 C. You will catch a cold within 6 months

- 26 (2 marks) Give an example of an event that might have a probability close to 10%.

Choose from nos 1-100 raffle tickets. Probability of getting no 10 or less = 10%

- 27 (6 marks)

- a For traffic lights, list all of the possible outcomes.

Green
 Orange (Amber)
 Red

- b Explain why each outcome is not equally likely.

Green and red are showing longer than amber - not equally likely.

- c What is the complementary event to the traffic lights showing green?

Traffic lights showing amber or red.

- 28 (8 marks) A sock drawer contains 16 white socks, 8 grey socks, 6 brown socks and 6 green socks. One sock is chosen from the drawer without looking.

- a What is the most likely colour of this sock?

white

- b What event is complementary to choosing a grey sock?

Choosing a white, brown or green sock.

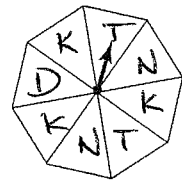
- c What is the probability that the sock is brown?

$$P(\text{Brown}) = \frac{6}{36} = \frac{1}{6}$$

- d What is the probability that the sock is not brown?

$$P(\text{not brown}) = 1 - P(\text{Brown}) = 1 - \frac{1}{6} = \frac{5}{6}$$

- 29 (3 marks) Place the letters D, K, N and T on the sections of this spinner if the following probabilities are true for one spin of it:



$$P(D) = 0.125$$

$$P(K) = 0.375$$

$$P(N) = 0.25$$

$$P(T) = 0.25$$

- 30 (4 marks) In my town, the chance of a day in April being sunny is 90%.

- a How many days are there in April?

30

- b On how many days would you expect it to be sunny in April?

$$90\% \text{ of } 30 = 27 \text{ days.}$$

END OF TEST.

Use the rest of this column and the back for extra working space.