



ACHIEVE ACADEMY

GCSE Maths — Higher Tier

Probability Basics · Practice Booklet

NAME:

CLASS:

DATE:

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Probability Basics

Total marks available: 97

● Probability Basics

Q1

[2 marks]

Two independent events A and B have $P(A) = 3/4$ and $P(B) = 1/3$. Find $P(A \text{ and } B)$.

Q2

[3 marks]

A bag contains 14 counters, 9 of which are white. Two counters are drawn at random, without replacement. Find the probability that both are white. Give your answer as a fraction in its simplest form.

Q3

[3 marks]

A bag contains 8 marbles, 6 of which are yellow. Two marbles are drawn at random, without replacement. Find the probability that both are yellow. Give your answer as a fraction in its simplest form.

Q4

[2 marks]

Two independent events A and B have $P(A) = 1/2$ and $P(B) = 2/3$. Find $P(A \text{ and } B)$.

Q5

[2 marks]

Two independent events A and B have $P(A) = 1/3$ and $P(B) = 2/3$. Find $P(A \text{ and } B)$.

Q6

[2 marks]

Two independent events A and B have $P(A) = 1/4$ and $P(B) = 1/2$. Find $P(A \text{ and } B)$.

Q7

[2 marks]

Two independent events A and B have $P(A) = 3/5$ and $P(B) = 3/5$. Find $P(A \text{ and } B)$.

Q8

[3 marks]

A bag contains 18 tiles, 12 of which are yellow. Two tiles are drawn at random, without replacement. Find the probability that both are yellow. Give your answer as a fraction in its simplest form.

Q9

[2 marks]

Two independent events A and B have $P(A) = 1/2$ and $P(B) = 1/3$. Find $P(A \text{ and } B)$.

Q10

[3 marks]

A bag contains 20 cards, 14 of which are purple. Two cards are drawn at random, without replacement. Find the probability that both are purple. Give your answer as a fraction in its simplest form.

Q11

[3 marks]

The two-way table shows whether 46 students like drama. A boy is chosen at random. Find the probability that he likes drama. Give your answer as a fraction in its simplest form.

	Likes drama	Does not like drama	Total
Boys	16	5	21
Girls	20	5	25
Total	36	10	46

Q12

[3 marks]

The two-way table shows whether 40 students like art. A boy is chosen at random. Find the probability that he likes art. Give your answer as a fraction in its simplest form.

	Likes art	Does not like art	Total
Boys	7	13	20
Girls	5	15	20
Total	12	28	40

Q13

[4 marks]

The probability that a player hits the target in one attempt is $\frac{5}{6}$. The player has 4 independent attempts. Find the probability that the player hits the target at least once. Give your answer as a fraction.

Q14

[3 marks]

The two-way table shows whether 50 students like drama. A boy is chosen at random. Find the probability that he likes drama. Give your answer as a fraction in its simplest form.

	Likes drama	Does not like drama	Total
Boys	16	15	31
Girls	11	8	19
Total	27	23	50

Q15

[4 marks]

The probability that a player hits the target in one attempt is $\frac{4}{5}$. The player has 4 independent attempts. Find the probability that the player hits the target at least once. Give your answer as a fraction.

Q16

[4 marks]

The probability that a player passes a level in one attempt is $\frac{3}{8}$. The player has 3 independent attempts. Find the probability that the player passes a level at least once. Give your answer as a fraction.

Q17

[3 marks]

The two-way table shows whether 40 students like football. A boy is chosen at random. Find the probability that he likes football. Give your answer as a fraction in its simplest form.

	Likes football	Does not like football	Total
Boys	15	10	25
Girls	6	9	15
Total	21	19	40

Q18

[3 marks]

The two-way table shows whether 37 students like chess club. A boy is chosen at random. Find the probability that he likes chess club. Give your answer as a fraction in its simplest form.

	Likes chess club	Does not like chess club	Total
Boys	11	7	18
Girls	5	14	19
Total	16	21	37

Q19

[3 marks]

The two-way table shows whether 34 students like coding club. A boy is chosen at random. Find the probability that he likes coding club. Give your answer as a fraction in its simplest form.

	Likes coding club	Does not like coding club	Total
Boys	12	7	19
Girls	10	5	15
Total	22	12	34

Q20

[3 marks]

The two-way table shows whether 30 students like chess club. A boy is chosen at random. Find the probability that he likes chess club. Give your answer as a fraction in its simplest form.

	Likes chess club	Does not like chess club	Total
Boys	15	4	19
Girls	5	6	11
Total	20	10	30

Q21

[4 marks]

In a class of 21 students, 13 study Drama and 10 study Coding. 4 students study both subjects. A student is chosen at random. Find the probability that they study Drama or Coding (or both). Give your answer as a fraction in its simplest form.

Q22

[4 marks]

In a class of 28 students, 13 study Science and 7 study Maths. 4 students study both subjects. A student is chosen at random. Find the probability that they study Science or Maths (or both). Give your answer as a fraction in its simplest form.

Q23

[4 marks]

In a class of 32 students, 7 study Coding and 18 study Drama. 3 students study both subjects. A student is chosen at random. Find the probability that they study Coding or Drama (or both). Give your answer as a fraction in its simplest form.

Q24

[4 marks]

A bag contains 6 red and 10 blue marbles. Two marbles are drawn at random, without replacement. Find the probability that exactly one is red. Give your answer as a fraction in its simplest form.

Q25

[4 marks]

A bag contains 9 red and 6 blue tiles. Two tiles are drawn at random, without replacement. Find the probability that exactly one is red. Give your answer as a fraction in its simplest form.

Q26

[4 marks]

A bag contains 5 red and 6 blue tiles. Two tiles are drawn at random, without replacement. Find the probability that exactly one is red. Give your answer as a fraction in its simplest form.

Q27

[4 marks]

A bag contains 6 red and 10 blue tiles. Two tiles are drawn at random, without replacement. Find the probability that exactly one is red. Give your answer as a fraction in its simplest form.

Q28

[4 marks]

A bag contains 4 red and 5 blue sweets. Two sweets are drawn at random, without replacement. Find the probability that exactly one is red. Give your answer as a fraction in its simplest form.

Q29

[4 marks]

In a class of 41 students, 18 study Drama and 19 study Art. 6 students study both subjects. A student is chosen at random. Find the probability that they study Drama or Art (or both). Give your answer as a fraction in its simplest form.

Q30

[4 marks]

A bag contains 6 red and 9 blue cards. Two cards are drawn at random, without replacement. Find the probability that exactly one is red. Give your answer as a fraction in its simplest form.