



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

✓1/4

Q1 · ● Developing · 2 marks

METHOD

$$P(A \text{ and } B) = \frac{3}{4} \times \frac{1}{3} = \frac{1}{4}$$

✓36/91

Q2 · ● Developing · 3 marks

METHOD

$$P(\text{both white}) = \frac{9}{14} \times \frac{8}{13} = \frac{36}{91}$$

✓15/28

Q3 · ● Developing · 3 marks

METHOD

$$P(\text{both yellow}) = \frac{6}{8} \times \frac{5}{7} = \frac{15}{28}$$

✓1/3

Q4 · ● Developing · 2 marks

METHOD

$$P(A \text{ and } B) = \frac{1}{2} \times \frac{2}{3} = \frac{1}{3}$$

✓2/9

Q5 · ● Developing · 2 marks

METHOD

$$P(A \text{ and } B) = \frac{1}{3} \times \frac{2}{3} = \frac{2}{9}$$

✓1/8

Q6 · ● Developing · 2 marks

METHOD

$$P(A \text{ and } B) = \frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$$

✓ 9/25

Q7 · ● Developing · 2 marks

METHOD

$$P(A \text{ and } B) = 3/5 \times 3/5 = 9/25$$

✓ 22/51

Q8 · ● Developing · 3 marks

METHOD

$$P(\text{both yellow}) = 12/18 \times 11/17 = 22/51$$

✓ 1/6

Q9 · ● Developing · 2 marks

METHOD

$$P(A \text{ and } B) = 1/2 \times 1/3 = 1/6$$

✓ 91/190

Q10 · ● Developing · 3 marks

METHOD

$$P(\text{both purple}) = 14/20 \times 13/19 = 91/190$$

✓ 16/21

Q11 · ● Secure · 3 marks

METHOD

$$P(\text{likes | boy}) = 16/21$$

✓ 7/20

Q12 · ● Secure · 3 marks

METHOD

$$P(\text{likes | boy}) = 7/20$$

✓1295/1296

Q13 · ● Secure · 4 marks

METHOD

$$P(\text{none}) = (1/6)^4 = 1/1296$$

$$P(\text{at least one}) = 1 - 1/1296 = 1295/1296$$

✓16/31

Q14 · ● Secure · 3 marks

METHOD

$$P(\text{likes 1 boy}) = 16/31$$

✓624/625

Q15 · ● Secure · 4 marks

METHOD

$$P(\text{none}) = (1/5)^4 = 1/625$$

$$P(\text{at least one}) = 1 - 1/625 = 624/625$$

✓387/512

Q16 · ● Secure · 4 marks

METHOD

$$P(\text{none}) = (5/8)^3 = 125/512$$

$$P(\text{at least one}) = 1 - 125/512 = 387/512$$

✓3/5

Q17 · ● Secure · 3 marks

METHOD

$$P(\text{likes 1 boy}) = 15/25 = 3/5$$

✓11/18

Q18 · ● Secure · 3 marks

METHOD

$$P(\text{likes 1 boy}) = 11/18$$

✓12/19

Q19 · ● Secure · 3 marks

METHOD

$$P(\text{likes | boy}) = 12/19$$

✓15/19

Q20 · ● Secure · 3 marks

METHOD

$$P(\text{likes | boy}) = 15/19$$

✓19/21

Q21 · ● Greater Depth · 4 marks

METHOD

$$\text{Studies at least one} = 9 + 6 + 4 = 19$$

$$P(A \text{ or } B) = 19/21$$

✓4/7

Q22 · ● Greater Depth · 4 marks

METHOD

$$\text{Studies at least one} = 9 + 3 + 4 = 16$$

$$P(A \text{ or } B) = 16/28 = 4/7$$

✓11/16

Q23 · ● Greater Depth · 4 marks

METHOD

$$\text{Studies at least one} = 4 + 15 + 3 = 22$$

$$P(A \text{ or } B) = 22/32 = 11/16$$

✓1/2

Q24 · ● Greater Depth · 4 marks

METHOD

$$P(R \text{ then } B) = 6/16 \times 10/15$$

$$P(B \text{ then } R) = 10/16 \times 6/15$$

$$P(\text{exactly one red}) = \text{sum of both} = 1/2$$

✓18/35

Q25 · ● Greater Depth · 4 marks

METHOD

$$P(R \text{ then } B) = 9/15 \times 6/14$$

$$P(B \text{ then } R) = 6/15 \times 9/14$$

$$P(\text{exactly one red}) = \text{sum of both} = 18/35$$

✓6/11

Q26 · ● Greater Depth · 4 marks

METHOD

$$P(R \text{ then } B) = 5/11 \times 6/10$$

$$P(B \text{ then } R) = 6/11 \times 5/10$$

$$P(\text{exactly one red}) = \text{sum of both} = 6/11$$

✓1/2

Q27 · ● Greater Depth · 4 marks

METHOD

$$P(R \text{ then } B) = 6/16 \times 10/15$$

$$P(B \text{ then } R) = 10/16 \times 6/15$$

$$P(\text{exactly one red}) = \text{sum of both} = 1/2$$

✓5/9

Q28 · ● Greater Depth · 4 marks

METHOD

$$P(R \text{ then } B) = 4/9 \times 5/8$$

$$P(B \text{ then } R) = 5/9 \times 4/8$$

$$P(\text{exactly one red}) = \text{sum of both} = 5/9$$

✓31/41

Q29 · ● Greater Depth · 4 marks

METHOD

Studies at least one = $12 + 13 + 6 = 31$

$P(A \text{ or } B) = 31/41$

✓18/35

Q30 · ● Greater Depth · 4 marks

METHOD

$P(R \text{ then } B) = 6/15 \times 9/14$

$P(B \text{ then } R) = 9/15 \times 6/14$

$P(\text{exactly one red}) = \text{sum of both} = 18/35$