

GCSE ONLINE TUTORING

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GCSE MATHEMATICS FOUNDATION TIER

UNIT 5: PROBABILITY

13 chapters | 156 curated questions | 1-5 marks

Student name: _____

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Contents and publication statement

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Chapter	Topic
1	Probability language, scale and complements
2	Fairness and equally likely outcomes
3	Experimental probability and convergence
4	Expected frequency
5	Systematic listing and the product rule
6	Possibility spaces
7	Frequency trees
8	Two-way tables
9	Venn diagrams and sets
10	The addition rule and mutually exclusive events
11	The multiplication rule and independent events
12	Tree diagrams with replacement
13	Tree diagrams without replacement

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FOUNDATION TIER

UNIT 5 | CHAPTER 1

Probability language, scale and complements

12 curated questions | complete solutions

Chapter focus

Impossible, unlikely, even chance, likely and certain events; complements and coherent probability models

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

Source-use notice

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Chapter 1: Probability language, scale and complements

Q01 | 1 MARK

Write 0 on a probability scale using one of: impossible, unlikely, even chance, likely, certain.

Q02 | 1 MARK

An event has probability $\frac{1}{4}$. Find the probability that it does not happen.

Chapter 1: Probability language, scale and complements

Q03 | 1 MARK

Write $\frac{1}{2}$ on a probability scale using one of: impossible, unlikely, even chance, likely, certain.

Q04 | 1 MARK

An event has probability $\frac{3}{4}$. Find the probability that it does not happen.

Chapter 1: Probability language, scale and complements

Q05 | 1 MARK

Write 1 on a probability scale using one of: impossible, unlikely, even chance, likely, certain.

Q06 | 2 MARKS

An event has probability 0. Find the probability that it does not happen.

Chapter 1: Probability language, scale and complements

Q07 | 2 MARKS

Write $\frac{1}{4}$ on a probability scale using one of: impossible, unlikely, even chance, likely, certain.

Q08 | 2 MARKS

An event has probability $\frac{1}{2}$. Find the probability that it does not happen.

Chapter 1: Probability language, scale and complements

Q09 | 2 MARKS

Write $\frac{3}{4}$ on a probability scale using one of: impossible, unlikely, even chance, likely, certain.

Q10 | 2 MARKS

An event has probability 1. Find the probability that it does not happen.

Chapter 1: Probability language, scale and complements

Q11 | 2 MARKS

Write 0 on a probability scale using one of: impossible, unlikely, even chance, likely, certain. After completing the calculation, give one independent check that supports your result.

Q12 | 2 MARKS

An event has probability $\frac{1}{4}$. Find the probability that it does not happen. After completing the calculation, give one independent check that supports your result.

Worked solutions

Q01 | 1 MARK

impossible.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

$1 - \frac{1}{4} = \frac{3}{4}$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

even chance.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

$1 - \frac{3}{4} = \frac{1}{4}$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

certain.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

$1-0=1$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

unlikely.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

$1 - 1/2 = 1/2$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

likely.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

$1-1=0$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

impossible. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

$1 - \frac{1}{4} = \frac{3}{4}$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

Question	Score / marks	Repair target	Retest date
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FOUNDATION TIER

UNIT 5 | CHAPTER 2

Fairness and equally likely outcomes

12 curated questions | complete solutions

Chapter focus

Theoretical probability, equally likely outcomes and evidence about whether a game is fair

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 2: Fairness and equally likely outcomes

Q01 | 1 MARK

A bag contains 2 red and 3 blue counters. Find $P(\text{red})$.

Q02 | 1 MARK

A fair spinner has 8 equal sections. 3 are red. Is red an even-chance outcome?

Chapter 2: Fairness and equally likely outcomes

Q03 | 1 MARK

A bag contains 4 red and 3 blue counters. Find $P(\text{red})$.

Q04 | 1 MARK

A fair spinner has 10 equal sections. 5 are red. Is red an even-chance outcome?

Chapter 2: Fairness and equally likely outcomes

Q05 | 1 MARK

A bag contains 2 red and 3 blue counters. Find $P(\text{red})$. After completing the calculation, give one independent check that supports your result.

Q06 | 2 MARKS

A fair spinner has 8 equal sections. 3 are red. Is red an even-chance outcome? After completing the calculation, give one independent check that supports your result.

Chapter 2: Fairness and equally likely outcomes

Q07 | 2 MARKS

A bag contains 4 red and 3 blue counters. Find $P(\text{red})$. After completing the calculation, give one independent check that supports your result.

Q08 | 2 MARKS

A fair spinner has 10 equal sections. 5 are red. Is red an even-chance outcome? After completing the calculation, give one independent check that supports your result.

Chapter 2: Fairness and equally likely outcomes

Q09 | 2 MARKS

A bag contains 2 red and 3 blue counters. Find $P(\text{red})$. Identify the key condition you used and explain why it applies here.

Q10 | 2 MARKS

A fair spinner has 8 equal sections. 3 are red. Is red an even-chance outcome? Identify the key condition you used and explain why it applies here.

Chapter 2: Fairness and equally likely outcomes

Q11 | 2 MARKS

A bag contains 4 red and 3 blue counters. Find $P(\text{red})$. Identify the key condition you used and explain why it applies here.

Q12 | 2 MARKS

A fair spinner has 10 equal sections. 5 are red. Is red an even-chance outcome? Identify the key condition you used and explain why it applies here.

Worked solutions

Q01 | 1 MARK

Total=5; $P(\text{red})=2/5=2/5$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

$P(\text{red})=3/8$. It is not an even chance.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

Total=7; $P(\text{red})=4/7=4/7$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

$P(\text{red})=5/10$. It is an even chance.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

Total=5; $P(\text{red})=2/5=2/5$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

$P(\text{red})=3/8$. It is not an even chance. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

Total=7; $P(\text{red})=4/7=4/7$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

$P(\text{red})=5/10$. It is an even chance. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

Total=5; $P(\text{red})=2/5=2/5$. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

$P(\text{red})=3/8$. It is not an even chance. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

Total=7; $P(\text{red})=4/7=4/7$. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

$P(\text{red})=5/10$. It is an even chance. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

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Question	Score / marks	Repair target	Retest date
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3			
4			
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7			
8			
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10			
11			
12			

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FOUNDATION TIER

UNIT 5 | CHAPTER 3

Experimental probability and convergence

12 curated questions | complete solutions

Chapter focus

Relative frequency, repeated trials and the reliability of estimates

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 3: Experimental probability and convergence

Q01 | 1 MARK

An event occurs 10 times in 40 trials. Find its relative frequency.

Q02 | 1 MARK

Which is normally the more reliable estimate: 13 successes in 50 trials or 26 successes in 100 trials?

Chapter 3: Experimental probability and convergence

Q03 | 1 MARK

An event occurs 16 times in 60 trials. Find its relative frequency.

Q04 | 1 MARK

Which is normally the more reliable estimate: 19 successes in 70 trials or 38 successes in 140 trials?

Chapter 3: Experimental probability and convergence

Q05 | 1 MARK

An event occurs 22 times in 80 trials. Find its relative frequency.

Q06 | 2 MARKS

Which is normally the more reliable estimate: 25 successes in 90 trials or 50 successes in 180 trials?

Chapter 3: Experimental probability and convergence

Q07 | 2 MARKS

An event occurs 28 times in 100 trials. Find its relative frequency.

Q08 | 2 MARKS

Which is normally the more reliable estimate: 31 successes in 110 trials or 62 successes in 220 trials?

Chapter 3: Experimental probability and convergence

Q09 | 2 MARKS

An event occurs 34 times in 120 trials. Find its relative frequency.

Q10 | 2 MARKS

Which is normally the more reliable estimate: 37 successes in 130 trials or 74 successes in 260 trials?

Chapter 3: Experimental probability and convergence

Q11 | 2 MARKS

An event occurs 40 times in 140 trials. Find its relative frequency.

Q12 | 2 MARKS

Which is normally the more reliable estimate: 43 successes in 150 trials or 86 successes in 300 trials?

Worked solutions

Q01 | 1 MARK

$10/40=1/4$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

The second: it uses 100 trials.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$16/60=4/15$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

The second: it uses 140 trials.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$22/80=11/40$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

The second: it uses 180 trials.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$28/100=7/25$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

The second: it uses 220 trials.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$34/120=17/60$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

The second: it uses 260 trials.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$40/140=2/7$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

The second: it uses 300 trials.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

Question	Score / marks	Repair target	Retest date
1			
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4			
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6			
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8			
9			
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11			
12			

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FOUNDATION TIER

UNIT 5 | CHAPTER 4

Expected frequency

12 curated questions | complete solutions

Chapter focus

Using probability to predict an expected number of outcomes and interpreting variation

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 4: Expected frequency

Q01 | 1 MARK

An outcome has probability $\frac{1}{5}$. Find its expected frequency in 50 trials.

Q02 | 1 MARK

A model predicts 11 successes. Must exactly 11 occur?

Chapter 4: Expected frequency

Q03 | 1 MARK

An outcome has probability $\frac{3}{5}$. Find its expected frequency in 70 trials.

Q04 | 1 MARK

A model predicts 13 successes. Must exactly 13 occur?

Chapter 4: Expected frequency

Q05 | 1 MARK

An outcome has probability $\frac{1}{5}$. Find its expected frequency in 90 trials.

Q06 | 2 MARKS

A model predicts 15 successes. Must exactly 15 occur?

Chapter 4: Expected frequency

Q07 | 2 MARKS

An outcome has probability $\frac{3}{5}$. Find its expected frequency in 110 trials.

Q08 | 2 MARKS

A model predicts 17 successes. Must exactly 17 occur?

Chapter 4: Expected frequency

Q09 | 2 MARKS

An outcome has probability $\frac{1}{5}$. Find its expected frequency in 130 trials.

Q10 | 2 MARKS

A model predicts 19 successes. Must exactly 19 occur?

Chapter 4: Expected frequency

Q11 | 2 MARKS

An outcome has probability $\frac{3}{5}$. Find its expected frequency in 150 trials.

Q12 | 2 MARKS

A model predicts 21 successes. Must exactly 21 occur?

Worked solutions

Q01 | 1 MARK

$50 \times 1/5 = 10$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

No. Expected frequency is a long-run prediction, not a guarantee.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$70 \times 3/5 = 42$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

No. Expected frequency is a long-run prediction, not a guarantee.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$90 \times 1/5 = 18$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

No. Expected frequency is a long-run prediction, not a guarantee.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$110 \times 3/5 = 66$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

No. Expected frequency is a long-run prediction, not a guarantee.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$130 \times 1/5 = 26$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

No. Expected frequency is a long-run prediction, not a guarantee.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$150 \times 3/5 = 90$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

No. Expected frequency is a long-run prediction, not a guarantee.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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12			

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FOUNDATION TIER

UNIT 5 | CHAPTER 5

Systematic listing and the product rule

12 curated questions | complete solutions

Chapter focus

Ordered outcomes, organised lists and counting without omissions or repetitions

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 5: Systematic listing and the product rule

Q01 | 1 MARK

A meal has 2 starters and 3 mains. How many starter-main choices are possible?

Q02 | 1 MARK

List all ordered outcomes when a coin is tossed and a spinner numbered 1 to 4 is spun.

Chapter 5: Systematic listing and the product rule

Q03 | 1 MARK

A meal has 4 starters and 5 mains. How many starter-main choices are possible?

Q04 | 1 MARK

List all ordered outcomes when a coin is tossed and a spinner numbered 1 to 3 is spun.

Chapter 5: Systematic listing and the product rule

Q05 | 1 MARK

A meal has 2 starters and 4 mains. How many starter-main choices are possible?

Q06 | 2 MARKS

List all ordered outcomes when a coin is tossed and a spinner numbered 1 to 5 is spun.

Chapter 5: Systematic listing and the product rule

Q07 | 2 MARKS

A meal has 4 starters and 3 mains. How many starter-main choices are possible?

Q08 | 2 MARKS

List all ordered outcomes when a coin is tossed and a spinner numbered 1 to 4 is spun. After completing the calculation, give one independent check that supports your result.

Chapter 5: Systematic listing and the product rule

Q09 | 2 MARKS

A meal has 2 starters and 5 mains. How many starter-main choices are possible?

Q10 | 2 MARKS

List all ordered outcomes when a coin is tossed and a spinner numbered 1 to 3 is spun. After completing the calculation, give one independent check that supports your result.

Chapter 5: Systematic listing and the product rule

Q11 | 2 MARKS

A meal has 4 starters and 4 mains. How many starter-main choices are possible?

Q12 | 2 MARKS

List all ordered outcomes when a coin is tossed and a spinner numbered 1 to 5 is spun. After completing the calculation, give one independent check that supports your result.

Worked solutions

Q01 | 1 MARK

$2 \times 3 = 6$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

H1, H2, H3, H4, T1, T2, T3, T4.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$4 \times 5 = 20$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

H1, H2, H3, T1, T2, T3.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$2 \times 4 = 8$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

H1, H2, H3, H4, H5, T1, T2, T3, T4, T5.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$4 \times 3 = 12$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

H1, H2, H3, H4, T1, T2, T3, T4. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$2 \times 5 = 10$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

H1, H2, H3, T1, T2, T3. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$4 \times 4 = 16$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

H1, H2, H3, H4, H5, T1, T2, T3, T4, T5. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

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1			
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FOUNDATION TIER

UNIT 5 | CHAPTER 6

Possibility spaces

12 curated questions | complete solutions

Chapter focus

Two-stage sample-space grids, totals, products and equally likely outcomes

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 6: Possibility spaces

Q01 | 1 MARK

Two fair 4-sided spinners are spun. How many equally likely ordered outcomes are there?

Q02 | 1 MARK

Two fair 5-sided spinners numbered 1 to 5 are spun. Find $P(\text{total}=3)$.

Chapter 6: Possibility spaces

Q03 | 1 MARK

Two fair 6-sided spinners are spun. How many equally likely ordered outcomes are there?

Q04 | 1 MARK

Two fair 4-sided spinners numbered 1 to 4 are spun. Find $P(\text{total}=5)$.

Chapter 6: Possibility spaces

Q05 | 1 MARK

Two fair 5-sided spinners are spun. How many equally likely ordered outcomes are there?

Q06 | 2 MARKS

Two fair 6-sided spinners numbered 1 to 6 are spun. Find $P(\text{total}=7)$.

Chapter 6: Possibility spaces

Q07 | 2 MARKS

Two fair 4-sided spinners are spun. How many equally likely ordered outcomes are there? After completing the calculation, give one independent check that supports your result.

Q08 | 2 MARKS

Two fair 5-sided spinners numbered 1 to 5 are spun. Find $P(\text{total}=9)$.

Chapter 6: Possibility spaces

Q09 | 2 MARKS

Two fair 6-sided spinners are spun. How many equally likely ordered outcomes are there? After completing the calculation, give one independent check that supports your result.

Q10 | 2 MARKS

Two fair 4-sided spinners numbered 1 to 4 are spun. Find $P(\text{total}=4)$.

Chapter 6: Possibility spaces

Q11 | 2 MARKS

Two fair 5-sided spinners are spun. How many equally likely ordered outcomes are there? After completing the calculation, give one independent check that supports your result.

Q12 | 2 MARKS

Two fair 6-sided spinners numbered 1 to 6 are spun. Find $P(\text{total}=2)$.

Worked solutions

Q01 | 1 MARK

$4 \times 4 = 16$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

2 favourable outcomes from 25, so $2/25$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$6 \times 6 = 36$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

4 favourable outcomes from 16, so $1/4$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$5 \times 5 = 25$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

6 favourable outcomes from 36, so $1/6$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$4 \times 4 = 16$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

2 favourable outcomes from 25, so $2/25$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$6 \times 6 = 36$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

3 favourable outcomes from 16, so $3/16$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$5 \times 5 = 25$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

1 favourable outcomes from 36, so $1/36$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

Question	Score / marks	Repair target	Retest date
1			
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FOUNDATION TIER

UNIT 5 | CHAPTER 7

Frequency trees

12 curated questions | complete solutions

Chapter focus

Completing successive classifications and extracting probabilities from frequencies

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 7: Frequency trees

Q01 | 1 MARK

A frequency tree begins with 100 people. 40 chose A. How many did not choose A?

Q02 | 1 MARK

Of 41 people in group A, 16 chose B. How many in A did not choose B?

Chapter 7: Frequency trees

Q03 | 1 MARK

A frequency tree begins with 120 people. 42 chose A. How many did not choose A?

Q04 | 1 MARK

Of 43 people in group A, 18 chose B. How many in A did not choose B?

Chapter 7: Frequency trees

Q05 | 1 MARK

A frequency tree begins with 140 people. 44 chose A. How many did not choose A?

Q06 | 2 MARKS

Of 45 people in group A, 20 chose B. How many in A did not choose B?

Chapter 7: Frequency trees

Q07 | 2 MARKS

A frequency tree begins with 160 people. 46 chose A. How many did not choose A?

Q08 | 2 MARKS

Of 47 people in group A, 22 chose B. How many in A did not choose B?

Chapter 7: Frequency trees

Q09 | 2 MARKS

A frequency tree begins with 180 people. 48 chose A. How many did not choose A?

Q10 | 2 MARKS

Of 49 people in group A, 16 chose B. How many in A did not choose B?

Chapter 7: Frequency trees

Q11 | 2 MARKS

A frequency tree begins with 200 people. 50 chose A. How many did not choose A?

Q12 | 2 MARKS

Of 51 people in group A, 18 chose B. How many in A did not choose B?

Worked solutions

Q01 | 1 MARK

$$100-40=60.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

$$41-16=25.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$$120-42=78.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

$$43-18=25.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$$140-44=96.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

$$45-20=25.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$$160-46=114.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

$$47-22=25.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$$180-48=132.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

$$49-16=33.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$$200-50=150.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

$$51-18=33.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

Question	Score / marks	Repair target	Retest date
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FOUNDATION TIER

UNIT 5 | CHAPTER 8

Two-way tables

12 curated questions | complete solutions

Chapter focus

Completing row and column totals and finding probabilities from tables

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 8: Two-way tables

Q01 | 1 MARK

A two-way table has 80 people in total and 30 in row A. Find the total in row not A.

Q02 | 1 MARK

In a table, 31 people are in A and 11 are in both A and B. Find the number in A but not B.

Chapter 8: Two-way tables

Q03 | 1 MARK

A two-way table has 90 people in total and 32 in row A. Find the total in row not A.

Q04 | 1 MARK

In a table, 33 people are in A and 13 are in both A and B. Find the number in A but not B.

Chapter 8: Two-way tables

Q05 | 1 MARK

A two-way table has 100 people in total and 34 in row A. Find the total in row not A.

Q06 | 2 MARKS

In a table, 35 people are in A and 15 are in both A and B. Find the number in A but not B.

Chapter 8: Two-way tables

Q07 | 2 MARKS

A two-way table has 110 people in total and 36 in row A. Find the total in row not A.

Q08 | 2 MARKS

In a table, 37 people are in A and 11 are in both A and B. Find the number in A but not B.

Chapter 8: Two-way tables

Q09 | 2 MARKS

A two-way table has 120 people in total and 38 in row A. Find the total in row not A.

Q10 | 2 MARKS

In a table, 39 people are in A and 13 are in both A and B. Find the number in A but not B.

Chapter 8: Two-way tables

Q11 | 2 MARKS

A two-way table has 130 people in total and 40 in row A. Find the total in row not A.

Q12 | 2 MARKS

In a table, 41 people are in A and 15 are in both A and B. Find the number in A but not B.

Worked solutions

Q01 | 1 MARK

$$80-30=50.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

$$31-11=20.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$$90-32=58.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

$$33-13=20.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$$100-34=66.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

$$35-15=20.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$$110-36=74.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

$$37-11=26.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$$120-38=82.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

$$39-13=26.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$$130-40=90.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

$$41-15=26.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 5 | CHAPTER 9

Venn diagrams and sets

12 curated questions | complete solutions

Chapter focus

Placing frequencies in intersections, unions, complements and the outside region

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 9: Venn diagrams and sets

Q01 | 1 MARK

In a Venn diagram, $n(A)=38$ and $n(A \text{ intersection } B)=12$. Find the number in A only.

Q02 | 1 MARK

A Venn diagram represents 95 people. 78 are inside A union B. How many are outside both sets?

Chapter 9: Venn diagrams and sets

Q03 | 1 MARK

In a Venn diagram, $n(A)=40$ and $n(A \text{ intersection } B)=14$. Find the number in A only.

Q04 | 1 MARK

A Venn diagram represents 105 people. 88 are inside A union B. How many are outside both sets?

Chapter 9: Venn diagrams and sets

Q05 | 1 MARK

In a Venn diagram, $n(A)=42$ and $n(A \text{ intersection } B)=16$. Find the number in A only.

Q06 | 2 MARKS

A Venn diagram represents 115 people. 98 are inside A union B. How many are outside both sets?

Chapter 9: Venn diagrams and sets

Q07 | 2 MARKS

In a Venn diagram, $n(A)=44$ and $n(A \text{ intersection } B)=13$. Find the number in A only.

Q08 | 2 MARKS

A Venn diagram represents 125 people. 108 are inside A union B. How many are outside both sets?

Chapter 9: Venn diagrams and sets

Q09 | 2 MARKS

In a Venn diagram, $n(A)=46$ and $n(A \text{ intersection } B)=15$. Find the number in A only.

Q10 | 2 MARKS

A Venn diagram represents 135 people. 118 are inside A union B. How many are outside both sets?

Chapter 9: Venn diagrams and sets

Q11 | 2 MARKS

In a Venn diagram, $n(A)=48$ and $n(A \text{ intersection } B)=12$. Find the number in A only.

Q12 | 2 MARKS

A Venn diagram represents 145 people. 128 are inside A union B. How many are outside both sets?

Worked solutions

Q01 | 1 MARK

$$38-12=26.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

$$95-(78)=17.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$$40-14=26.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

$$105-(88)=17.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$$42-16=26.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

$$115-(98)=17.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$$44-13=31.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

$$125-(108)=17.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$$46-15=31.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

$$135-(118)=17.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$$48-12=36.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

$$145-(128)=17.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 5 | CHAPTER 10

The addition rule and mutually exclusive events

12 curated questions | complete solutions

Chapter focus

Combining alternative outcomes and avoiding double-counting overlap

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 10: The addition rule and mutually exclusive events

Q01 | 1 MARK

A and B are mutually exclusive. $P(A)=1/10$ and $P(B)=1/5$. Find $P(A \text{ or } B)$.

Q02 | 1 MARK

Can mutually exclusive events happen at the same time?

Chapter 10: The addition rule and mutually exclusive events

Q03 | 1 MARK

A and B are mutually exclusive. $P(A)=3/10$ and $P(B)=2/5$. Find $P(A \text{ or } B)$.

Q04 | 1 MARK

Can mutually exclusive events happen at the same time? After completing the calculation, give one independent check that supports your result.

Chapter 10: The addition rule and mutually exclusive events

Q05 | 1 MARK

A and B are mutually exclusive. $P(A)=1/10$ and $P(B)=1/5$. Find $P(A \text{ or } B)$. After completing the calculation, give one independent check that supports your result.

Q06 | 2 MARKS

Can mutually exclusive events happen at the same time? Identify the key condition you used and explain why it applies here.

Chapter 10: The addition rule and mutually exclusive events

Q07 | 2 MARKS

A and B are mutually exclusive. $P(A)=3/10$ and $P(B)=2/5$. Find $P(A \text{ or } B)$. After completing the calculation, give one independent check that supports your result.

Q08 | 2 MARKS

Can mutually exclusive events happen at the same time? Write one sentence interpreting your answer in the context of the question.

Chapter 10: The addition rule and mutually exclusive events

Q09 | 2 MARKS

A and B are mutually exclusive. $P(A)=1/10$ and $P(B)=1/5$. Find $P(A \text{ or } B)$. Identify the key condition you used and explain why it applies here.

Q10 | 2 MARKS

Can mutually exclusive events happen at the same time? Describe one common error in this calculation and how your working avoids it.

Chapter 10: The addition rule and mutually exclusive events

Q11 | 2 MARKS

A and B are mutually exclusive. $P(A)=3/10$ and $P(B)=2/5$. Find $P(A \text{ or } B)$. Identify the key condition you used and explain why it applies here.

Q12 | 1 MARK

A and B are mutually exclusive. $P(A)=1/10$ and $P(B)=1/5$. Find $P(A \text{ or } B)$. Write one sentence interpreting your answer in the context of the question.

Worked solutions

Q01 | 1 MARK

$$1/10 + 1/5 = 3/10.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

No. Their intersection is empty.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$3/10 + 2/5 = 7/10$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

No. Their intersection is empty. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$1/10 + 1/5 = 3/10$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

No. Their intersection is empty. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$3/10 + 2/5 = 7/10$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

No. Their intersection is empty. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$1/10 + 1/5 = 3/10$. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

No. Their intersection is empty. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$3/10 + 2/5 = 7/10$. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 1 MARK

$1/10 + 1/5 = 3/10$. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

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FOUNDATION TIER

UNIT 5 | CHAPTER 11

The multiplication rule and independent events

12 curated questions | complete solutions

Chapter focus

Combining successive independent outcomes and recognising changing assumptions

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 11: The multiplication rule and independent events

Q01 | 1 MARK

Independent events have probabilities $\frac{1}{5}$ and $\frac{1}{4}$. Find $P(\text{both})$.

Q02 | 1 MARK

State the calculation rule for two independent events both happening.

Chapter 11: The multiplication rule and independent events

Q03 | 1 MARK

Independent events have probabilities $\frac{3}{5}$ and $\frac{1}{2}$. Find $P(\text{both})$.

Q04 | 1 MARK

State the calculation rule for two independent events both happening. After completing the calculation, give one independent check that supports your result.

Chapter 11: The multiplication rule and independent events

Q05 | 1 MARK

Independent events have probabilities $\frac{1}{5}$ and $\frac{3}{4}$. Find $P(\text{both})$.

Q06 | 2 MARKS

State the calculation rule for two independent events both happening. Identify the key condition you used and explain why it applies here.

Chapter 11: The multiplication rule and independent events

Q07 | 2 MARKS

Independent events have probabilities $\frac{3}{5}$ and $\frac{1}{4}$. Find $P(\text{both})$.

Q08 | 2 MARKS

State the calculation rule for two independent events both happening. Write one sentence interpreting your answer in the context of the question.

Chapter 11: The multiplication rule and independent events

Q09 | 2 MARKS

Independent events have probabilities $\frac{1}{5}$ and $\frac{1}{2}$. Find $P(\text{both})$.

Q10 | 2 MARKS

State the calculation rule for two independent events both happening. Describe one common error in this calculation and how your working avoids it.

Chapter 11: The multiplication rule and independent events

Q11 | 2 MARKS

Independent events have probabilities $\frac{3}{5}$ and $\frac{3}{4}$. Find $P(\text{both})$.

Q12 | 1 MARK

Independent events have probabilities $\frac{1}{5}$ and $\frac{1}{4}$. Find $P(\text{both})$. After completing the calculation, give one independent check that supports your result.

Worked solutions

Q01 | 1 MARK

$\frac{1}{5} \times \frac{1}{4} = \frac{1}{20}$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

Multiply the two probabilities.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$3/5 \times 1/2 = 3/10$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

Multiply the two probabilities. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$$1/5 \times 3/4 = 3/20.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

Multiply the two probabilities. The explanation must name the relevant condition and link it explicitly to the method used.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$3/5 \times 1/4 = 3/20$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

Multiply the two probabilities. The interpretation should include the correct units or geometric/statistical meaning where applicable.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$1/5 \times 1/2 = 1/10$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

Multiply the two probabilities. A valid response identifies a plausible error and points to the step that prevents it.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$$3/5 \times 3/4 = 9/20.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 1 MARK

$1/5 \times 1/4 = 1/20$. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

Question	Score / marks	Repair target	Retest date
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FOUNDATION TIER

UNIT 5 | CHAPTER 12

Tree diagrams with replacement

12 curated questions | complete solutions

Chapter focus

Branch probabilities, path multiplication and combining alternative routes

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 12: Tree diagrams with replacement

Q01 | 1 MARK

A bag has 2 red and 3 blue counters. A counter is replaced after selection. Find $P(\text{red on each draw})$.

Q02 | 1 MARK

Using replacement, $P(\text{red}) = 3/7$. Find $P(\text{red twice})$.

Chapter 12: Tree diagrams with replacement

Q03 | 1 MARK

A bag has 4 red and 5 blue counters. A counter is replaced after selection. Find $P(\text{red on each draw})$.

Q04 | 1 MARK

Using replacement, $P(\text{red})=5/8$. Find $P(\text{red twice})$.

Chapter 12: Tree diagrams with replacement

Q05 | 1 MARK

A bag has 2 red and 4 blue counters. A counter is replaced after selection. Find $P(\text{red on each draw})$.

Q06 | 2 MARKS

Using replacement, $P(\text{red}) = \frac{3}{8}$. Find $P(\text{red twice})$.

Chapter 12: Tree diagrams with replacement

Q07 | 2 MARKS

A bag has 4 red and 3 blue counters. A counter is replaced after selection. Find $P(\text{red on each draw})$.

Q08 | 2 MARKS

Using replacement, $P(\text{red}) = 5/9$. Find $P(\text{red twice})$.

Chapter 12: Tree diagrams with replacement

Q09 | 2 MARKS

A bag has 2 red and 5 blue counters. A counter is replaced after selection. Find $P(\text{red on each draw})$.

Q10 | 2 MARKS

Using replacement, $P(\text{red}) = 3/6$. Find $P(\text{red twice})$.

Chapter 12: Tree diagrams with replacement

Q11 | 2 MARKS

A bag has 4 red and 4 blue counters. A counter is replaced after selection. Find $P(\text{red on each draw})$.

Q12 | 2 MARKS

Using replacement, $P(\text{red}) = 5/10$. Find $P(\text{red twice})$.

Worked solutions

Q01 | 1 MARK

Each draw has $P(\text{red})=2/5$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

$3/7 \times 3/7 = 9/49$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

Each draw has $P(\text{red})=4/9$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

$5/8 \times 5/8 = 25/64$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

Each draw has $P(\text{red})=2/6$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

$3/8 \times 3/8 = 9/64$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

Each draw has $P(\text{red})=4/7$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

$5/9 \times 5/9 = 25/81$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

Each draw has $P(\text{red})=2/7$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

$3/6 \times 3/6 = 1/4$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

Each draw has $P(\text{red})=4/8$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

$5/10 \times 5/10 = 1/4$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

Question	Score / marks	Repair target	Retest date
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FOUNDATION TIER

UNIT 5 | CHAPTER 13

Tree diagrams without replacement

12 curated questions | complete solutions

Chapter focus

Changing numerators and denominators, dependent selection and multi-stage probability

Assessment progression

Questions 1-4 build secure Foundation fluency; Questions 5-8 develop connected methods; Questions 9-12 reach Grade 4-5 reasoning.

You must show your working for every question worth 5 marks or more.

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Chapter 13: Tree diagrams without replacement

Q01 | 1 MARK

A bag has 3 red and 4 blue counters. One red is removed without replacement. Find $P(\text{red next})$.

Q02 | 1 MARK

A bag contains 9 counters. One is removed without replacement. What is the denominator on the second draw?

Chapter 13: Tree diagrams without replacement

Q03 | 1 MARK

A bag has 5 red and 6 blue counters. One red is removed without replacement. Find $P(\text{red next})$.

Q04 | 1 MARK

A bag contains 10 counters. One is removed without replacement. What is the denominator on the second draw?

Chapter 13: Tree diagrams without replacement

Q05 | 1 MARK

A bag has 3 red and 5 blue counters. One red is removed without replacement. Find $P(\text{red next})$.

Q06 | 2 MARKS

A bag contains 10 counters. One is removed without replacement. What is the denominator on the second draw? After completing the calculation, give one independent check that supports your result.

Chapter 13: Tree diagrams without replacement

Q07 | 2 MARKS

A bag has 5 red and 4 blue counters. One red is removed without replacement. Find $P(\text{red next})$.

Q08 | 2 MARKS

A bag contains 11 counters. One is removed without replacement. What is the denominator on the second draw?

Chapter 13: Tree diagrams without replacement

Q09 | 2 MARKS

A bag has 3 red and 6 blue counters. One red is removed without replacement. Find $P(\text{red next})$.

Q10 | 2 MARKS

A bag contains 8 counters. One is removed without replacement. What is the denominator on the second draw?

Chapter 13: Tree diagrams without replacement

Q11 | 2 MARKS

A bag has 5 red and 5 blue counters. One red is removed without replacement. Find $P(\text{red next})$.

Q12 | 2 MARKS

A bag contains 12 counters. One is removed without replacement. What is the denominator on the second draw?

Worked solutions

Q01 | 1 MARK

$2/6=1/3$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q02 | 1 MARK

8.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q03 | 1 MARK

$$4/10=2/5.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q04 | 1 MARK

9.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q05 | 1 MARK

$$2/7 = 2/7.$$

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q06 | 2 MARKS

9. A valid independent check uses substitution, an inverse operation, estimation, or the defining property as appropriate.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q07 | 2 MARKS

$4/8 = 1/2$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q08 | 2 MARKS

10.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q09 | 2 MARKS

$2/8=1/4$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q10 | 2 MARKS

7.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Worked solutions

Q11 | 2 MARKS

$4/9=4/9$.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Q12 | 2 MARKS

11.

Credit a correct method and accurate progress; reserve the final mark for the required answer, justification or contextual conclusion.

Chapter completion record

Question	Score / marks	Repair target	Retest date
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

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