Subject	Year	Month	
Mathematics	9	April	**Balcarras** From strength to strength

Topic:

PROBABILITY OF COMBINED EVENTS
5 LESSONS

Content (Intent)

Prior Learning

Y7
- Add fractions (decimals)
- Multiply fractions (decimals)
- Convert between fractions, decimals and percentages

Y8
- Probability line, notation, etc
- Theoretic probability
- frequency trees
- Venn diagrams
- Possibility space
- experimental vs theoretical probability

Future Learning

KS4
- Venn Diagrams and Set notation
- Sample space diagrams
- Probability trees
- Two way tables
- Algebraic probability

Objectives

- Calculate the probabilities of **independent** combined events
- Calculate the probabilities of **dependent** combined events
- Construct and list outcomes of combined events using a **tree diagram**
  - solve problems involving independent combined events
  - solve problems involving dependent combined events
- Understand that relative frequency tends towards theoretical probability as sample size increases

For teaching purposes

POSSIBLE QUESTIONS
- Show example of a probability problem that involves adding/multiplying
- Convince me that there are eight different outcomes when three coins are flipped together
- Always / Sometimes / Never: increasing the number of times an experiment is carried out gives an estimated probability that is closer to the theoretical probability

POSSIBLE MISCONCEPTIONS
- When constructing a tree diagram, some students may struggle to distinguish between how events and outcomes are represented
- may muddle the conditions for adding and multiplying probabilities
- may add the denominators when adding fractions

Pedagogical notes (implementation)

Notation
P(A) for the probability of event A
Probabilities are expressed as fractions, decimals or percentage. They should not be expressed as ratios

Tree diagrams can be introduced as an alternative way of listing outcomes for multiple events. *E.g. coins flipped: listed (a) systematically, (b) in a two-way table, or (c) in a tree diagram. The tree diagram has the* **advantage** *that it can be extended to more than two events (e.g. three or four coins are flipped).*

the drawing pin experiment

Students are taught not to simply fractions when finding probabilities of combined events using a tree diagram (so that a simple check can be made that the probabilities sum to 1)

How will understanding be assessed & recorded (Impact)

End of KS3 Exams in May
9BAM12 Tree diagrams

How can parents help at home?

MathsWatch clips (Qualification GCSE)
14, 59, 125, 185, 204

Further reading/discussion

Reading / Enrichment
KM: Stick on the Maths: Tree diagrams
KM: Stick on the Maths: Relative frequency
KM: The drawing pin experiment

Literacy
Outcome
Event, independent event, dependent event
Tree diagrams
Theoretical probability
Experimental probability
Random
Bias, unbiased, fair
Relative frequency
Set

Numeracy Links

Careers Links
Statistician
Bookmaker
Financial Analyst
Underwriter