PROBABILITY TREE DIAGRAMS
Probability

Key Concepts

Independent events are events which do not affect one another.

Dependent events affect one another's probabilities. This is also known as **conditional probability**.

We **multiply** two probabilities when one event follows another.
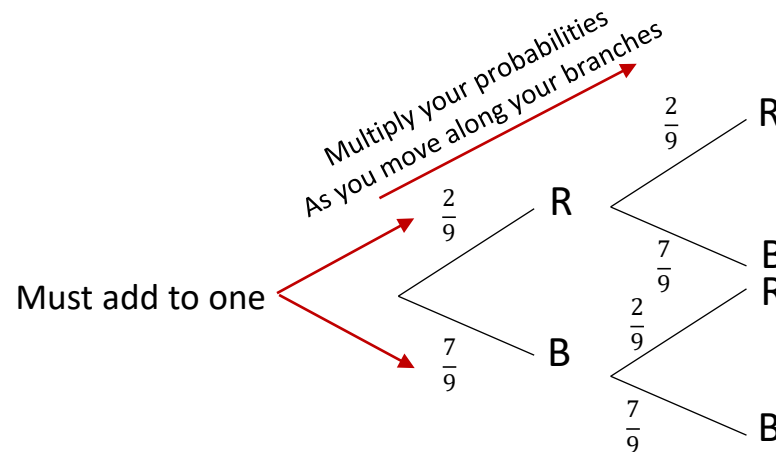
MathsWatch

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Examples

There are red and blue counters in a bag.

The probability that a red counter is chosen is $\frac{2}{9}$.

A counter is chosen and **replaced**, then a second counter is chosen.
Draw a tree diagram and calculate the probability that two counters of the same colour are chosen.

Multiply your probabilities
As you move along your branches

Must add to one

$\frac{2}{9}$ R
$\frac{7}{9}$ B
$\frac{2}{9}$ R
$\frac{7}{9}$ B

$\frac{2}{9}$ R

$\frac{7}{9}$ B

$\frac{2}{9}$ R

$\frac{7}{9}$ B

Prob of two reds:
$$\frac{2}{9} \times \frac{2}{9} = \frac{4}{81}$$

Prob of two blues :
$$\frac{7}{9} \times \frac{7}{9} = \frac{49}{81}$$

Prob of same colours:
$$\frac{4}{81} + \frac{49}{81} = \frac{53}{81}$$

Key Words
Independent
Dependant
Conditional
Probability
Fraction
Multiply

There are blue and green pens in a drawer.
There are 4 blues and 7 greens.
A pen is chosen and then **replaced**, then a second pen is chosen.
Draw a tree diagram to show this information and calculate the probability that pens of different colours are chosen.