Name:

Exam Style Questions

Independent Events

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

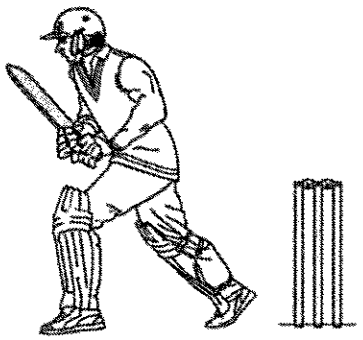
1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

www.corbettmaths.com/contents

Video 249

1. Gary is playing cricket.



When attempting to catch the ball, the probability Gary is successful is ¾
During the game, Gary attempts two catches.

Find the probability Gary is successful with both catches.

$P(CC) = \frac{3}{4} \times \frac{3}{4} = \frac{9}{16}$

$\frac{9}{16}$

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(2)

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2. Helen is taking part in a quiz on TV.
The probability she answers a question correctly is ⅘

Helen is asked two questions

Calculate the probability she answers both questions correctly.

$P(CC) = \frac{4}{5} \times \frac{4}{5} = \frac{16}{25}$

$\frac{16}{25}$

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(2)

3. A fair six sided dice is rolled three times.

(a) Find the probability of getting a six all three times.

$P(666) = \frac{1}{6} \times \frac{1}{6} \times \frac{1}{6}$

$\frac{1}{216}$

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(2)

(b) Find the probability of getting no sixes.

$P(\text{Not } 6, \text{Not } 6, \text{Not } 6) = \frac{5}{6} \times \frac{5}{6} \times \frac{5}{6}$

$\frac{125}{216}$

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(2)

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4. Matthew is playing darts.
The probability he hits a bullseye is 0.3

Matthew throws two darts.

(a) Find the probability Matthew hits the bullseye with both darts

$P(B, B) = 0.3 \times 0.3$

0.09

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(2)

(b) Find the probability Matthew does not hit the bullseye with either dart

$P(n, n) = 0.7 \times 0.7$

0.49

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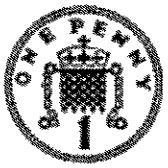
(2)

5. A biased coin is flipped twice.



Heads 0.3

The probability of the coin landing on tails is 0.7

(a) Find the probability the coin lands on heads twice.

$P(HH) = 0.3 \times 0.3$

0.09

(2)

(b) Find the probability the coin lands on tails exactly once.

$P(HT) = 0.3 \times 0.7 = 0.21$

$P(TH) = 0.7 \times 0.3 = 0.21$

0.42

(2)

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6. A bag contains 6 yellow sweets and 4 blue sweets.
A sweet is taken out at random, it is replaced, and another is taken out.

Find the probability that at least one sweet is blue.

$P(BB) = \frac{4}{10} \times \frac{4}{10} = \frac{16}{100}$

$P(BY) = \frac{4}{10} \times \frac{6}{10} = \frac{24}{100}$

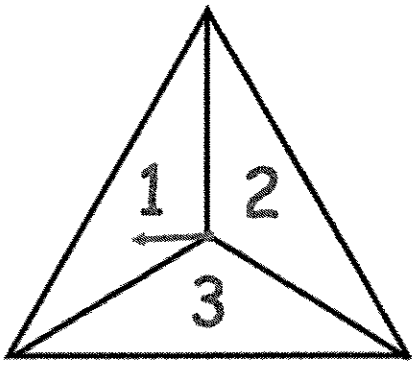
$P(YB) = \frac{6}{10} \times \frac{4}{10} = \frac{24}{100}$

$\frac{64}{100}$

$\frac{16}{25}$

(3)

7. A triangular spinner has three sections of equal size.



The spinner is spun twice.
A score is found by adding the two numbers together.

Find the probability of

(a) a score of 6

$P(3,3) = \frac{1}{3} \times \frac{1}{3}$

$\frac{1}{9}$

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(2)

(b) a score of 5

$P(2,3) = \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

$P(3,2) = \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

$\frac{2}{9}$

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(2)

(c) a score of 4

$P(2,2) = \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

$P(1,3) = \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

$P(3,1) = \frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$

$\frac{3}{9}$

$\frac{1}{3}$

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(2)

(d) a score of 7

0

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(1)

8. A bag contains 10 counters.

5 of the counters are red
3 of the counters are purple
2 of the counters are white

Sharon chooses a counter at random, records the colour, then replaces it.
Sharon then chooses a second counter at random and records the colour.

What is the probability that both counters are the same colour?

$P(RR) = \frac{5}{10} \times \frac{5}{10} = \frac{25}{100}$

$P(PP) = \frac{3}{10} \times \frac{3}{10} = \frac{9}{100}$

$P(WW) = \frac{2}{10} \times \frac{2}{10} = \frac{4}{100}$

$\frac{38}{100}$

$\frac{19}{50}$

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(4)

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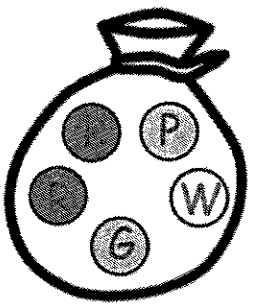
9. A bag contains 5 discs.
Two discs are red (R), one disc is green (G), one disc is white (W) and one disc is pink (P)



A game is played where a disc is removed, the colour noted and it is **replaced**.
Then another disc is removed and the colour noted.

Calculate the probability that the two discs removed are **different** colours

Same

$P(RR) = \frac{2}{5} \times \frac{2}{5} = \frac{4}{25}$

$P(GG) = \frac{1}{5} \times \frac{1}{5} = \frac{1}{25}$

$P(WW) = \frac{1}{5} \times \frac{1}{5} = \frac{1}{25}$

$P(PP) = \frac{1}{5} \times \frac{1}{5} = \frac{1}{25}$

$\frac{7}{25}$

Different

$1 - \frac{7}{25}$

$\frac{18}{25}$

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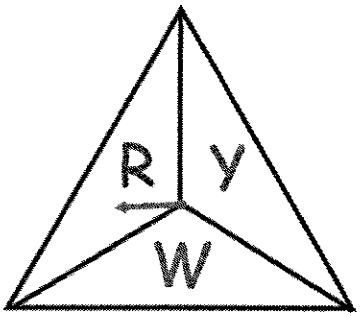
(4)

10. A triangular spinner has three sections of equal size.
One section is red (R), one section is white (W) and one section is yellow (Y)



The spinner is spun three times.

(a) Find the probability that the spinner lands on red (R) at least once.

No reds

$P(\text{Not red, not red, not red}) = \frac{2}{3} \times \frac{2}{3} \times \frac{2}{3} = \frac{8}{27}$

At least one red

$1 - \frac{8}{27}$

$\frac{19}{27}$

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(3)

(b) Find the probability that the spinner lands on white (W) exactly twice.

$P(W, W, \text{Not } W) = \frac{1}{3} \times \frac{1}{3} \times \frac{2}{3} = \frac{2}{27}$

$P(W, \text{not } W, W) = \frac{1}{3} \times \frac{2}{3} \times \frac{1}{3} = \frac{2}{27}$

$P(\text{not } W, W, W) = \frac{2}{3} \times \frac{1}{3} \times \frac{1}{3} = \frac{2}{27}$

$\frac{6}{27}$

$\frac{2}{9}$

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(3)

11. Harry gets the train to work in the morning.
He works Monday to Friday.

The probability the train is late is 0.2

Find the probability the train is late exactly once.

$P(O,O,O,O,L) = 0.8 \times 0.8 \times 0.8 \times 0.8 \times 0.2 = 0.08192$

$P(O,O,O,L,O) = 0.08192$

$P(O,O,L,O,O) = 0.08192$

$P(O,L,O,O,O) = 0.08192$

$P(L,O,O,O,O) = 0.08192$

0.4096

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12. James, Fred and Kevin each take a penalty

The probability James scores is $\frac{4}{5}$
The probability Fred scores is $\frac{2}{3}$
The probability Kevin scores is $\frac{3}{4}$

What is the probability

(a) all three score

$P(S,S,S) = \frac{4}{5} \times \frac{2}{3} \times \frac{3}{4} = \frac{24}{60}$

$\frac{2}{5}$

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(2)

(b) at least two boys score

$P(S,S,S) = \frac{2}{5}$

$P(M,S,S) = \frac{1}{5} \times \frac{2}{3} \times \frac{3}{4} = \frac{6}{60}$

$P(S,M,S) = \frac{4}{5} \times \frac{1}{3} \times \frac{3}{4} = \frac{12}{60}$

$P(S,S,M) = \frac{4}{5} \times \frac{2}{3} \times \frac{1}{4} = \frac{8}{60}$

$\rightarrow \frac{50}{60}$

$\frac{5}{6}$

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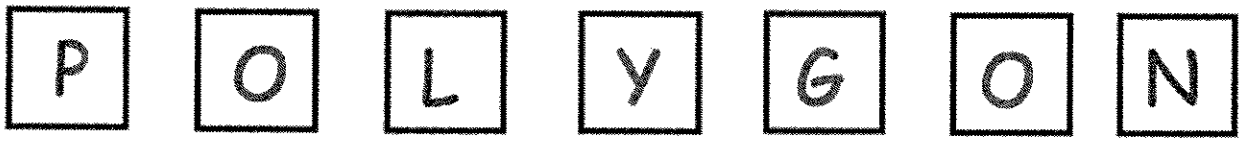
(3)

13. There are seven tiles in a bag, each with a letter written on it.



A tile is selected at random, it is **replaced** and then another tile is selected.

Find the probability that both tiles have a different letter on it.

Same

$P(PP) = \frac{1}{7} \times \frac{1}{7} = \frac{1}{49}$

$P(LL) = \frac{1}{49}$

$P(YY) = \frac{1}{49}$

$P(GG) = \frac{1}{49}$

$P(NN) = \frac{1}{49}$

$\frac{9}{49}$

$P(OO) = \frac{2}{7} \times \frac{2}{7} = \frac{4}{49}$

Different

$1 - \frac{9}{49}$

$\frac{40}{49}$

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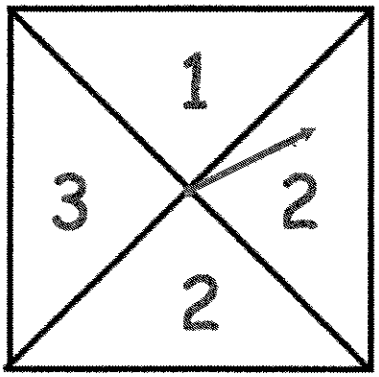
(5)

14. A fair spinner has four sections.



The spinner is spun three times.
The three numbers are added together to give a score.

Find the probability the score is even.

Even + Even + Even
Even + odd + odd
odd + even + odd
odd + odd + even

$P(EEE) = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$
$P(EOO) = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{8}$
$P(OEO) = \frac{1}{8}$
$P(OOE) = \frac{1}{8}$

$\frac{4}{8} = \frac{1}{2}$

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(5)