



Aberdare Community School
Mathematics Department

WJEC GCSE

Higher – Calculator

Data

Probability - AND and OR rules

Name:

Set:

Date:

Teacher:

18. A bag contains 15 red beads, 4 green beads and 1 purple bead. Two beads are drawn at random without replacement from the bag.

(a) Calculate the probability that the two beads are of the same colour.

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(b) Calculate the probability that the purple bead is selected.

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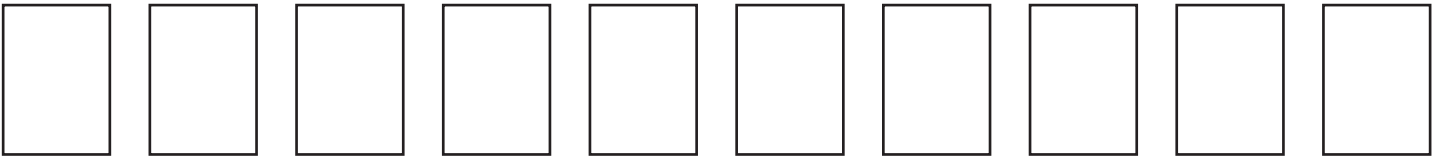
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16.



Each of ten cards has one number printed on it.
Four of the cards have even numbers and the other six have odd numbers.
The ten printed numbers are all different.
Two cards are selected at random.

(a) Calculate the probability that the **sum** of the two numbers on the selected cards is even.

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(b) State why the probability of the **product** of the two numbers on the selected cards being a square number is NOT necessarily zero.

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[1]

13. A bag contains 10 marbles of which 2 are yellow, 3 are blue and 5 are red. Two marbles are selected at random from the bag. Calculate the probability that exactly one of the selected marbles is blue.

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16. A bag contains 16 red beads, 4 green beads and 1 yellow bead. Two beads are drawn at random without replacement from the bag.

(a) Calculate the probability that the two beads are of the same colour.

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(b) Calculate the probability that one of the two beads selected is yellow.

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15. Two beads are selected at random from a bag containing 6 blue beads and 4 red beads. Find the probability that at least one red bead is selected.

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[3]

17. A bag contains 25 beans.
There are 3 green, 5 white, 8 black and 9 red beans in the bag.
Two beans are selected at random from the bag.

(a) Calculate the probability that both of the beans selected are red.

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(b) Calculate the probability that a green and a black bean are selected.

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15. Bags of mixed seeds are sold in a health food store.
In a large bag, 50% of the seeds are caraway seeds, 35% are cumin seeds and 15% are sesame seeds. Two seeds are selected at random from this large bag.

Find the probability that

- (a) neither is a sesame seed,

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- (b) at least one seed is a cumin seed.

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15. It is suggested that the three letters **a**, **e** and **r** are the most frequently used letters in the English language.

Six sentences were chosen at random from a newspaper article.

The total number of the letters **a**, **e** and **r** in each sentence was recorded.

Sentence number	1	2	3	4	5	6
Total number of letters a, e and r	8	6	8	3	4	5
Total number of letters in the sentence	36	22	42	8	10	14

- (a) Using all of this information, calculate the best estimate of the probability that a letter chosen at random from this article is one of the letters **a**, **e** or **r**.

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- (b) All of the letters from the 6 sentences are placed in a bag.
Two letters are selected at random from the bag and not replaced.
Calculate the probability that at least one of the letters is a letter **a**, **e** or **r**.
Give your answer correct to two decimal places.
You must show your working.

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[5]

15. Ceri plays in a hockey team.
The hockey team's training sessions are run by one of two different coaches, Meg or Lotti.
Meg is the coach for 70% of the training sessions.

Ceri likes to play as goal-keeper for the team.
When Meg coaches the hockey team, the probability that Ceri is the goal-keeper is 0.4.
When Lotti coaches the hockey team, the probability that Ceri is the goal-keeper is 0.9.

Calculate the probability that Ceri will **not** be the goal-keeper at the hockey team's next training session. [4]

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