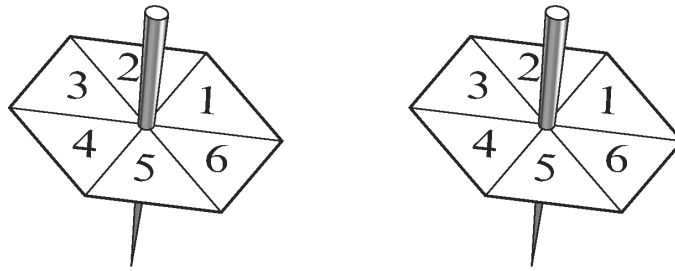


# Probability

1.

The following two spinners are spun.



Kevin adds together the two numbers obtained to get a total score.  
The table below shows some of the possible total scores.

Second spinner	6	7	.....	.....	.....	.....	.....
	5	6	.....	.....	.....	.....	.....
	4	5	6	.....	.....	.....	.....
	3	4	5	.....	.....	.....	.....
	2	3	4	5	6	7	.....
	1	2	3	4	5	6	7
		1	2	3	4	5	6
		First spinner					

(a) Complete the table to show **all** the possible total scores.

[2]

(b) What is the probability of getting a total score of 9?

.....  
 .....  
 [2]

(c) If Kevin spins the two spinners 180 times, how many times would he expect to get a total score of 9?

.....  
 .....  
 [2]

2.

Bronwen grows some flowers.  
Each flower is red, yellow or white.  
Bronwen picks one of the flowers at random.  
The probability that the flower is red is 0.3.  
The probability that the flower is yellow is 0.15.  
What is the probability that the flower is white?

[2]

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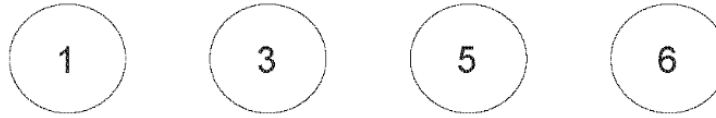
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3.

Stephen and Gwen play a game using four discs with a positive whole number on each disc. The discs are placed in a bag. Stephen selects a disc from the bag at random. He writes down the number on the disc and replaces the disc in the bag. Gwen now does the same and they then add together the two numbers they obtained. If the numbers add up to give an even number, then Stephen wins, otherwise Gwen wins.

(a) The numbers on the discs are



Who is more likely to win this game?  
Give full details of your reasoning. [4]

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(b) The numbers on the discs are changed, as shown below.



Is this game fair?  
Give full details of your reasoning. [2]

.....

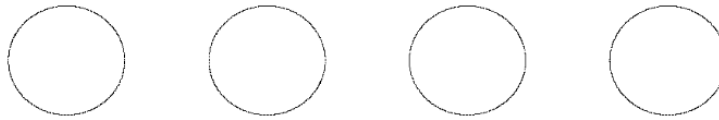
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- (c) (i) Choose four numbers of your own so that the game is fair.

[1]



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- (ii) State the rule for your choice of numbers on the discs so that the game is fair. [1]

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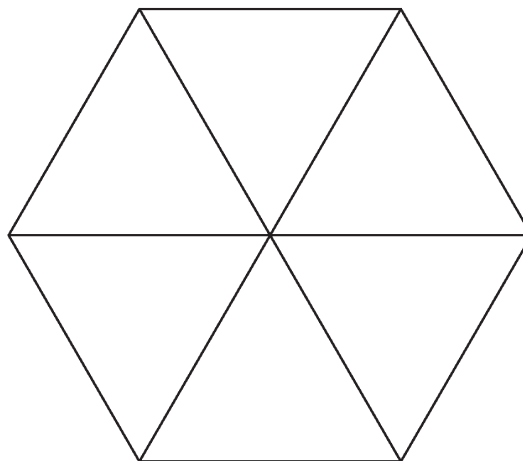
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4.

Each of the numbers 1, 2, 3 and 4 must occur at least once on the spinner below. Write one of the numbers 1, 2, 3 or 4 in each of the six sections of the spinner so that on each spin

- (i) the probability of getting a 1 is equal to the probability of getting a 2,
- (ii) the probability of getting a 3 is greater than the probability of getting a 1,
- (iii) the probability of getting a 4 is less than the probability of getting a 3.

[4]



5.

A machine is used to pack boxes of peaches.



There should be exactly 8 peaches in each box.

To check the machine, 10 boxes of peaches are selected on the hour for 5 consecutive hours. Each hour the number of boxes containing exactly 8 peaches is recorded.

	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.
Number of the 10 boxes with <b>exactly</b> 8 peaches	8	10	7	7	9

- (a) The company prints a label for each box.

*Contains at least 8 peaches*

Explain why this label **may** not be suitable to use on the boxes of peaches.

[1]

- (b) It is decided to record and plot the relative frequencies for the information shown in the previous table.

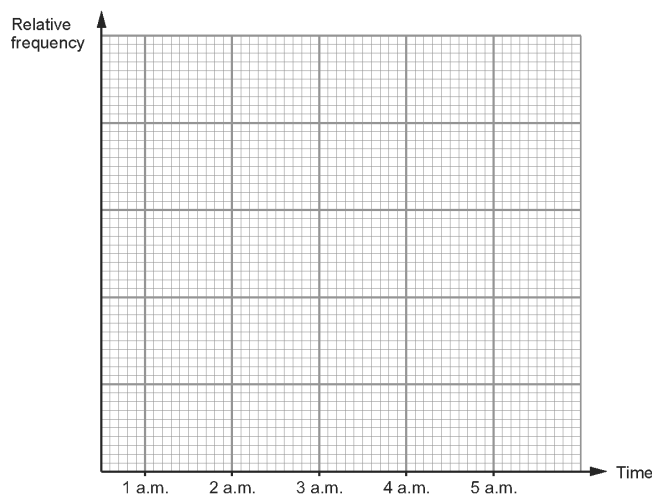
- (i) Complete the table below.  
Relative frequency must be recorded to 2 decimal places.

[2]

	1 a.m.	2 a.m.	3 a.m.	4 a.m.	5 a.m.
Total number of boxes with exactly 8 peaches	8	18	25	32	41
Total number of boxes checked	10	20	30		
Relative frequency	0.80				

- (ii) Use the graph paper below to plot the relative frequencies.

[2]



- (iii) A box of peaches is selected at random.  
What is the best estimate of the probability that the box contains exactly 8 peaches?

[1]

6.

- (a) Stan has 163 marbles.  
Fred has 285 marbles.  
Fred gives some marbles to Stan so that they both have the same number of marbles.  
How many marbles does Fred give to Stan? [3]

.....

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.....

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- (b) Calculate the value of  $2^3 + 5^2$ . [2]

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- (c) The probability of Jo forgetting her homework is 0.2.  
What is the probability of Jo remembering her homework? [1]

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