

Name: _____

Exam Style Questions



Sample Space Diagrams Corbettmaths

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

You may use tracing paper if needed

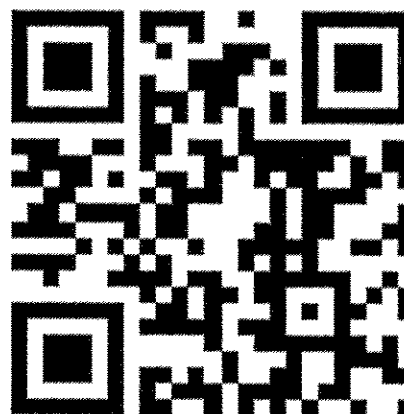
Guidance

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

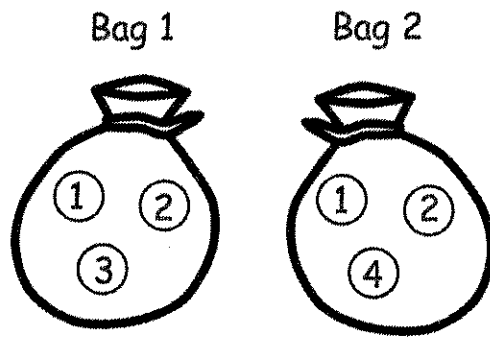
Revision for this topic

www.corbettmaths.com/contents

Video 246



1. Two bags, 1 and 2, each contain three counters that are equal size.



In bag 1, the counters are labelled 1, 2 and 3.

In bag 2, the counters are labelled 1, 2 and 4.

A counter is drawn at random from bag 1 and a counter is drawn at random from bag 2.

The two numbers are added together to give a score.

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

		Bag 1			
		+	1	2	3
Bag 2	1	2	3	4	
	2	3	4	5	
	4	5	6	7	

(1)

- (b) Find the probability of scoring a 4

$$\frac{2}{9}$$

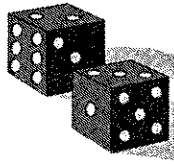
(1)

- (c) Find the probability of less than 5

$$\frac{5}{9}$$

(2)

2. Two fair six sided dice are rolled.



The numbers on the two dice are **multiplied** together to give a score.

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

		Dice 1					
		1	2	3	4	5	6
Dice 2	1	1	2	3	4	5	6
	2	2	4	6	8	10	12
	3	3	6	9	12	15	18
	4	4	8	12	16	20	24
	5	5	10	15	20	25	30
	6	6	12	18	24	30	36

(2)

(b) Find the probability of a score of 12

$$\frac{4}{36}$$

$$\frac{1}{9}$$

(1)

(c) Find the probability of a score of 10 or more

$$\frac{19}{36}$$

(2)

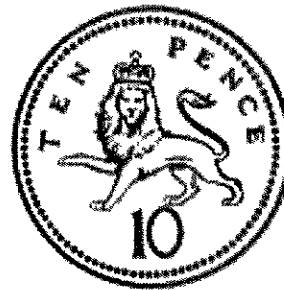
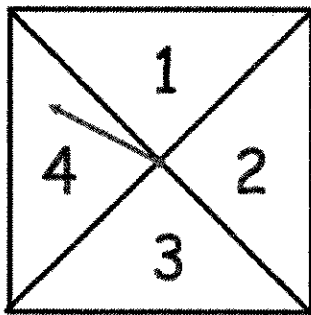
(d) Find the probability of an even number

$$\frac{27}{36}$$

$$\frac{3}{4}$$

(2)

3. Jordan is playing a game with a fair four sectioned spinner and a fair coin.



He spins the spinner and flips the coin.

If the coin lands on heads, his score is **one more** than the number on the spinner.

If the coin lands on tails, his score is the number on the spinner **doubled**.

(a) Complete the table to show all the possible shows that Jordan can get.

		Spinner			
		1	2	3	4
Coin	Heads	2	3	4	5
	Tails	2	4	6	8

(2)

(b) Write down the probability that Jordan gets a score of

(i) 4

$$\frac{2}{8}$$

$$\frac{1}{4}$$

..... (1)

(ii) 5 or more

$$\frac{3}{8}$$

..... (2)

(iii) a prime number

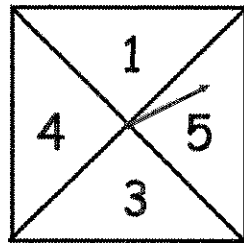
$$\frac{4}{8}$$

$$\frac{1}{2}$$

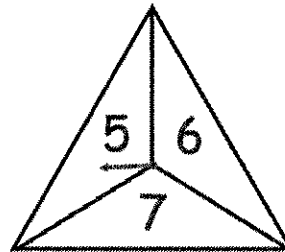
..... (2)

4. Two fair spinners are spun.

Spinner 1 has four equal sections labelled 1, 3, 4 and 5.
 Spinner 2 has three equal sections labelled 5, 6 and 7.



Spinner 1



Spinner 2

Each spinner is spun once.
 The numbers are added together to get a score.

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

Spinner 1

	1	3	4	5
5	6	8	9	10
6	7	9	10	11
7	8	10	11	12

Spinner 2

(2)

(b) Find the probability of scoring a 8

$$\frac{2}{12}$$

$$\frac{1}{6}$$

.....

(1)

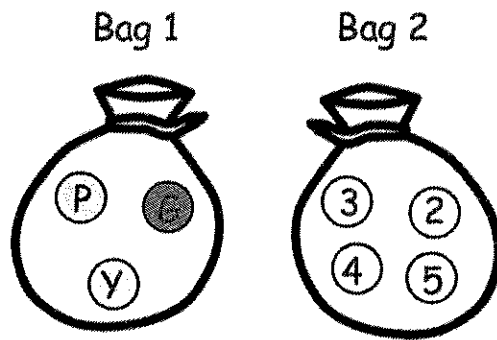
(c) Find the probability of scoring an odd number

$$\frac{5}{12}$$

.....

(1)

5. Two bags, 1 and 2, each contain counters that are equal size.



Bag 1 contains a pink counter, green counter and yellow counter.

Bag 2 contains counters labelled 2, 3, 4 and 5.

A counter is drawn at random from bag 1 and a counter is drawn at random from bag 2.

If the counter from bag 1 is pink, the number on the counter from bag 2 is doubled.

If the counter from bag 1 is green, one is added to the number on the counter from bag 2

If the counter from Bag 1 is yellow, the number on the counter from bag 2 stays the same.

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

		Bag 1		
		P	G	Y
Bag 2	2	4	3	2
	3	6	4	3
	4	8	5	4
	5	10	6	5

(2)

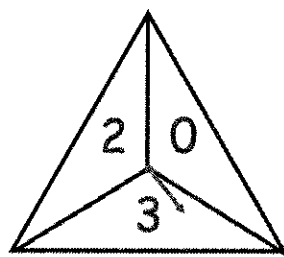
- (b) Find the probability of scoring a multiple of 3

$$\frac{4}{12}$$

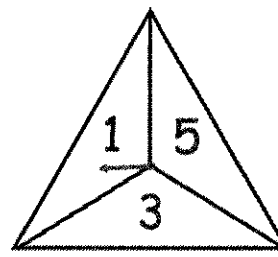
$$\frac{1}{3}$$

(2)

6. Phil uses two fair spinner in a game.



Spinner 1



Spinner 2

He spins both spinners.

His score is the two numbers multiplied together.

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

		Spinner 1		
		0	2	3
Spinner 2	x			
	1	0	2	3
	3	0	6	9
5	0	10	15	

(2)

Phil says the probability that he gets an even score is $\frac{1}{2}$

- (b) Explain why Phil is incorrect.

The probability of an even is $\frac{6}{9}$ or $\frac{2}{3}$
 as zero is even.

(2)

7. Two fair six-sided dice are rolled.
The score is **difference** between the numbers on each dice.

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

		Dice 1					
		1	2	3	4	5	6
Dice 2	1	0	1	2	3	4	5
	2	1	0	1	2	3	4
	3	2	1	0	1	2	3
	4	3	2	1	0	1	2
	5	4	3	2	1	0	1
	6	5	4	3	2	1	0

- (b) Find the probability of scoring a 2

$$\frac{8}{36} = \frac{4}{18} = \frac{2}{9}$$

$$\frac{2}{9}$$

(1)

- (c) Find the probability of scoring a number less than 3

$$\frac{24}{36}$$

$$\frac{2}{3}$$

(2)

8. A fair dice is numbered from 1 to 6.
The dice is rolled twice.

(a) Draw a sample space diagram to show the possible outcomes.

		Dice 1					
		1	2	3	4	5	6
Dice 2	1	1,1	2,1	<u>3,1</u>	<u>4,1</u>	<u>5,1</u>	<u>6,1</u>
	2	1,2	2,2	3,2	4,2	<u>5,2</u>	<u>6,2</u>
	3	1,3	2,3	3,3	4,3	5,3	6,3
	4	1,4	2,4	3,4	4,4	5,4	6,4
	5	1,5	2,5	3,5	4,5	5,5	6,5
	6	1,6	2,6	3,6	4,6	5,6	6,6

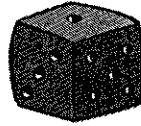
(2)

- (b) Work out the probability that the number obtained on the first roll is more than double the score on the second roll.

$$\frac{6}{36} = \frac{1}{6}$$

.....
(2)

9. James has organised a game to raise money for charity at a local fair. He rolls a fair six sided dice and flips a fair coin.



If the coin lands on heads, the number on the dice is **squared**.
If the coin lands on tails, the number on the dice is **cubed**.

Each person pays 50p to play.
If they score above 30, they win £1
The game is played 450 times.

How much money does James raise for charity?

	1	2	3	4	5	6
H	1	4	9	16	25	36
T	1	8	27	64	125	216

$$P(\text{over } 30) = \frac{4}{12} = \frac{1}{3}$$

$$\frac{1}{3} \text{ of } 450 = 150$$

$$450 \times 50p = £225$$

$$225 - 150$$

$$\underline{\underline{£75}}$$

(5)