OFFICIAL USE ONLY	**An Investigation** **Measurement 8-10**	NAME

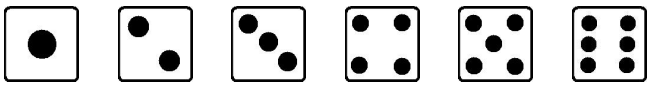
What's the chance

Instructions

- Work alone
- Follow the questions carefully. Read all instructions, including how to score marks.
- There as information on 'Decks of Cards' and the 'Throwing of Two Dice' at the back of this task.
- All solutions are to be written on this paper.

1 A die is thrown. (**Note:** A <u>die</u> is singular [one] and <u>dice</u> is plural [more than one]). **You are required to answer the questions below.**

The possible results are listed below. This is called the sample space.



Score the maximum of **10 marks** if you answer each of the questions correctly. You lose a mark for each error. You may not lose as many marks if there is a repeated error. If you do not answer any of the questions, **0 marks**.

a)	How many different results are there?	
b)	How many sixes are there?	
c)	How many fours are there?	
d)	How many ones are there?	
e)	How many eights are there?	
f)	How many even numbers are there?	
g)	How many odd numbers are there?	
h)	How many numbers are there that are bigger than two?	
i)	How many numbers are there that are smaller than three?	
j)	How many numbers are there that can be divided by three?	

2 Use your answers for question 1 to **answer the questions below**. Each of these answers will be a fraction.

Score the maximum of **10 marks** if you answer each of the questions correctly. You lose a mark for each error. You may not lose as many marks if there is a repeated error. If you do not answer any of the questions, **0 marks**.

a)	What fraction of the results are sixes?	
b)	What fraction of the results are fours?	
c)	What fraction of the results are eights?	
d)	What fraction of the results is even?	
e)	What fraction of the results are sixes?	
f)	What fraction of the results is bigger than two?	
g)	What fraction of the results can be divided by three?	
h)	What is the probability that a five is thrown? This is the same as answering "What fraction of the results are fives?"	
i)	What is the probability that an odd number is thrown? This is the same as answering "What fraction of the results are odd numbers?"	
j)	What is the probability that number smaller than two is thrown? This is the same as answering "What fraction of the results are smaller than three?"	

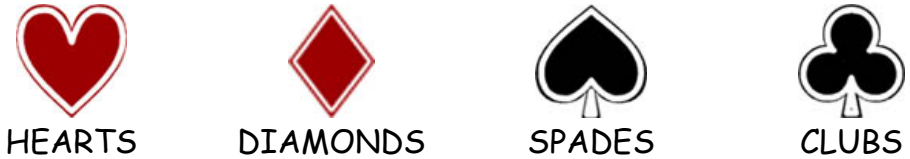
3	Two dice are thrown. **You are required to answer the questions below.** All of these answers will be a fraction. You should refer to the sample space on page 5 to help you answer these questions.		
a)	What is the probability that a pair of sixes is thrown?		Score the maximum of **10 marks** if you answer each of the questions correctly. You lose a mark for each error. You may not lose as many marks if there is a repeated error. If you do not answer any of the questions, **0 marks**.
b)	What is the probability that 'snake eyes' (a pair of ones) is thrown?		
c)	What is the probability that a pair (any pair) is thrown?		
d)	What is the probability that at least one of the dice thrown is a six?		
e)	What is the probability that at neither of the dice thrown is a six?		
f)	What is the probability that two even numbers are thrown?		
g)	What is the probability that at least one of the dice thrown is an even number?		
h)	What is the probability that a four and five is thrown?		
i)	What is the probability that the first die thrown is two?		
j)	What is the probability that the second die thrown is five?		
4	Two dice are thrown. The result is obtained by adding the results of the two dice together. **You are required to answer the questions below.** Some of these answers will be a fraction. You should refer to the sample space on page 5 to help you answer these questions.		
a)	What is the smallest result that can be thrown?		Score the maximum of **10 marks** if you answer each of the questions correctly. You lose a mark for each error. You may not lose as many marks if there is a repeated error. If you do not answer any of the questions, **0 marks**.
b)	What result is thrown the most often?		
c)	What is the probability that a total of three is thrown?		
d)	What is the probability that a total of eleven is thrown?		
e)	What is the probability that a total of seven is thrown?		
f)	What is the probability that an even total is thrown?		
g)	What is the probability that a total of four or five is thrown?		
h)	What is the probability that a total less than five is thrown?		
i)	What is the probability that a total of at least five is thrown?		
j)	What is the probability that a total of one is thrown?		

5	One card is selected at random from a standard deck of playing cards. **You are required to answer the questions below.** All of these answers will be a fraction. You should refer to the sample space on page 6 to help you answer these questions.		
			Score the maximum of **10 marks** if you answer each of the questions correctly. You lose a mark for each error. You may not lose as many marks if there is a repeated error. If you do not answer any of the questions, **0 marks**.
a)	What is the probability that the card chosen is red?		
b)	What is the probability that the card chosen is black?		
c)	What is the probability that the card chosen is a King?		
d)	What is the probability that the card chosen is an ace?		
e)	What is the probability that the card chosen is a heart?		
f)	What is the probability that the card chosen is a diamond?		
g)	What is the probability that the card chosen is a red Queen?		
h)	What is the probability that the card chosen is a black ten?		
i)	What is the probability that the card chosen is a court card (or picture card, jack, Queen or King)?		
j)	What is the probability that the card chosen is not black?		
6	Five cards are selected at random from a standard deck of playing cards. The cards chosen are shown below in the order they were selected. **You are required to answer the questions below.** Some of these answers will be a fraction. You should refer to the sample space on page 6 to help you answer these questions.		
			Score the maximum of **10 marks** if you answer each of the questions correctly. You lose a mark for each error. You may not lose as many marks if there is a repeated error. If you do not answer any of the questions, **0 marks**.
a)	How many cards are left in the deck after the jack of hearts is selected?		
b)	How many cards are left in the deck after the ten of spades is selected?		
c)	How many cards are left in the deck after the ace of hearts is selected?		
d)	What is the probability that the first card selected is jack of hearts?		
e)	What is the probability that the second card selected is jack of hearts?		
f)	What is the probability that the third card selected is ten of spades?		
g)	What is the probability that the fourth card selected is King of diamonds?		
h)	What is the probability that the fifth card selected is Queen of spades?		

DECK OF STANDARD PLAYING CARDS

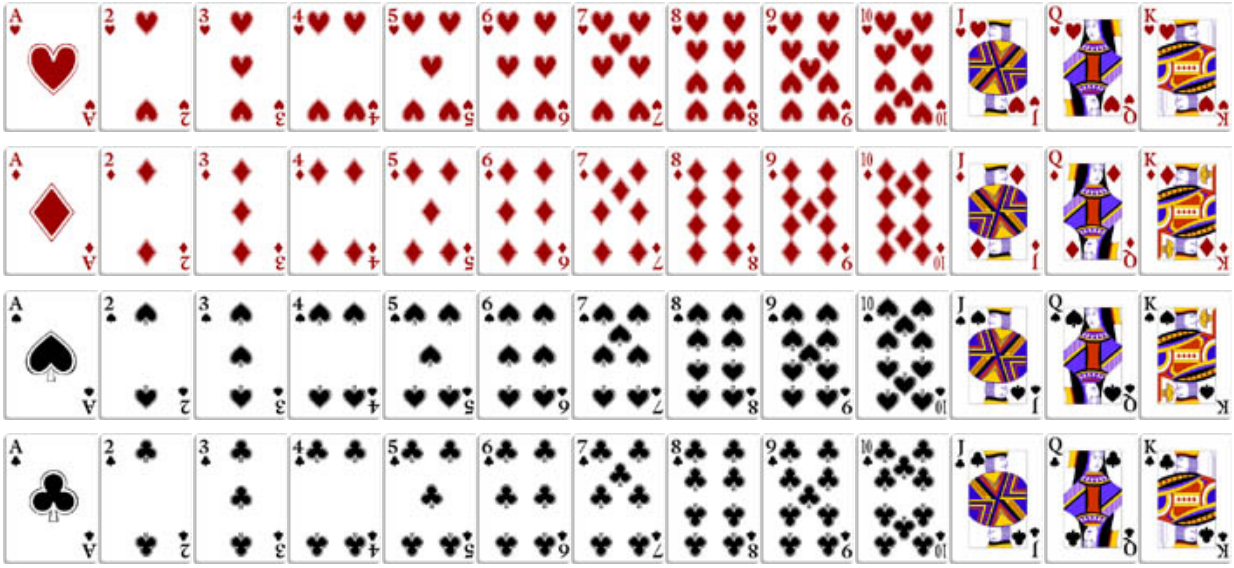
SUITS

There are 4 suits (or sets) of cards. Tere are 2 red suits and 2 black suits.



HEARTS DIAMONDS SPADES CLUBS

Red Black



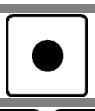
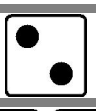
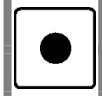
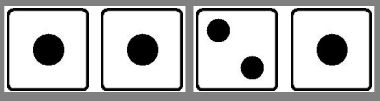
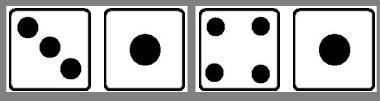
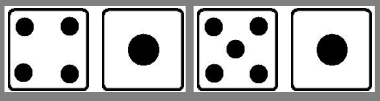
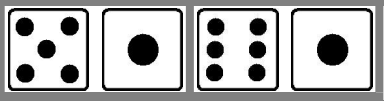
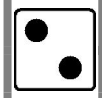
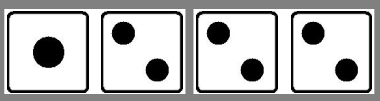
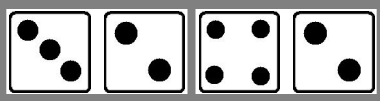
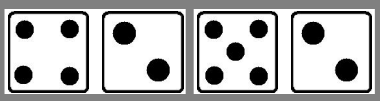
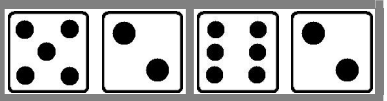
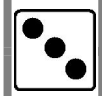
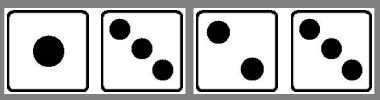
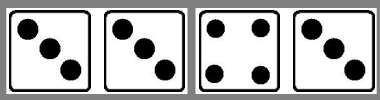
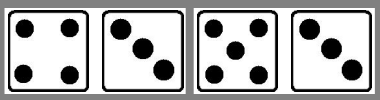
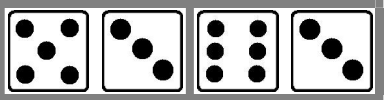
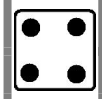
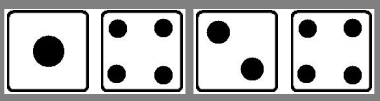
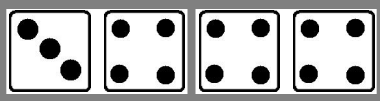
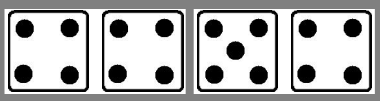
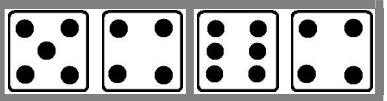
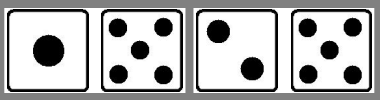
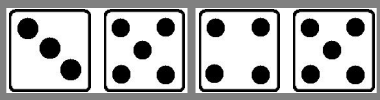
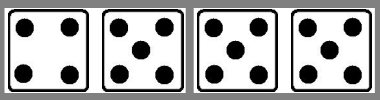
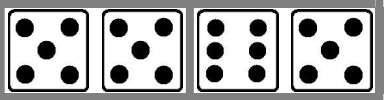
Ace Two Three Four Five Six Seven Eight Nine Ten Jack Queen King

Each suit (or set) has 13 different cards

Examples of card names	
	Ace of clubs
	Jack of diamonds
	King of hearts
	Four of spades

SAMPLE SPACE

TOSSING A PAIR OF DICE
and
THE SUM OBTAINED WHEN TOSSING A PAIR OF DICE

SECOND DIE \ FIRST DIE						
	 1 + 1 = 2	 2 + 1 = 3	 3 + 1 = 4	 4 + 1 = 5	 5 + 1 = 6	 6 + 1 = 7
	 1 + 2 = 3	 2 + 2 = 4	 3 + 2 = 5	 4 + 2 = 6	 5 + 2 = 7	 6 + 2 = 8
	 1 + 3 = 4	 2 + 3 = 5	 3 + 3 = 6	 4 + 3 = 7	 5 + 3 = 8	 6 + 3 = 9
	 1 + 4 = 5	 2 + 4 = 6	 3 + 4 = 7	 4 + 4 = 8	 5 + 4 = 9	 6 + 4 = 10
	 1 + 5 = 6	 2 + 5 = 7	 3 + 5 = 8	 4 + 5 = 9	 5 + 5 = 10	 6 + 5 = 11
	 1 + 6 = 7	 2 + 6 = 8	 3 + 6 = 9	 4 + 6 = 10	 5 + 6 = 11	 6 + 6 = 12