

Three dice game I

This task is about estimating the probability of throwing a pair.

How to do the task

Example:



3 1 3

i.e., a pair of 3's

In this task you will do an experiment to give an estimate of the probability of getting a pair of the same numbers when three dice are thrown. Do not count triples (three of the same number).

a) Predict the probability of getting a pair of the same number _____

b) You are to complete the table below.

The first **three** lots of 10 throws have been done for you and recorded in the table. In the first 10 throws there were 7 pairs, in the second 10 throws there were 6 pairs, and in the third 10 throws there were **4** pairs.

You are to throw and record the next seven lots of 10 throws by following these instructions:

1. Roll the three dice 10 times and count the number of times there is a pair. Record the number of pairs in the column labelled "Number of pairs in these 10 throws".
2. Add this number to the previous number in the "Total number of pairs" column, and enter this in the "Total number of pairs" column.
3. Divide the "Total number of pairs" by the "Total number of throws" and enter the result in the "Cumulative probability of a pair" column.

Complete the table below for the next seven lots of 10 throws of the dice (you do not have to write the numbers in brackets in the third column which are just there to help you).

Total number of throws	Number of pairs in these 10 throws (Instruction 1)	Total number of pairs (Instruction 2)	Cumulative probability of a pair (Instruction 3)
10	7	7	$7/10 = 0.7$
20	6	13 (7 + 6)	$13/20 = 0.65$
30	4	17 (13 + 4)	$17/30 = 0.57$
40			
50			
60			
70			
80			
90			
100			

c) Using the table in b), what is the probability of throwing a pair after a total of

i) 20 throws? _____

ii) 100 throws? _____

d) i) Which would be the better number of throws to use to get the best estimate the probability of throwing a pair. (Circle one)

- (A) 20 throws
- (B) 50 throws
- (C) 100 throws
- (D) 200 throws
- (E) They are all just as good.

ii) Explain your answer.
