

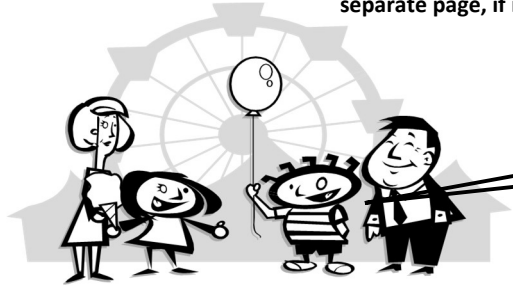
UNIT 5: PROBABILITY DISTRIBUTIONS – TIPS ASSIGNMENT

THINKING: $\frac{\square}{12}$



Name: _____

THE FOLLOWING QUESTION IS DIRECTLY RELATED TO THE UNIT YOU ARE CURRENTLY WORKING IN, THOUGH THEY MAY REQUIRE MORE THOUGHT THAN THOSE YOU HAVE ALREADY ENCOUNTERED. PLEASE PROVIDE A FULL, POLISHED SOLUTION IN THE SPACE PROVIDED (or a separate page, if needed). **SHOW ALL WORK TO GUARANTEE FULL MARKS**



Wow!! Look at all the AWESOME math I can do at the fair!!

Dizzy Dice Toss

For just \$5 you can roll a 12-sided die FIVE times. If you roll a "1" 3 times you win a small prize. If you roll a "1" 4 times you win a medium-sized prize and if you roll a "1" all five times you win the large prize. [4 marks]

- Type of probability? _____
- Find the probability of winning the LARGE prize.
- Find the probability of winning a prize.



The Super Spinner

A spinner has ten equal sections labelled 1 through 10. For \$1.00 you can spin the wheel. Prizes are as follows:

- | | |
|----------|----------------|
| 1 – lose | 2 – win \$1 |
| 3 – lose | 4 – win \$2 |
| 5 – lose | 6 – win \$5 |
| 7 – lose | 8 – win \$10 |
| 9 – lose | 10 – win \$100 |

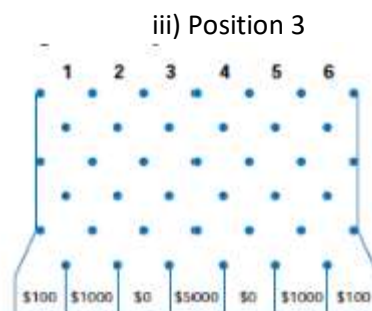
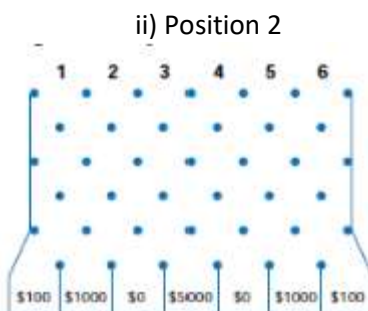
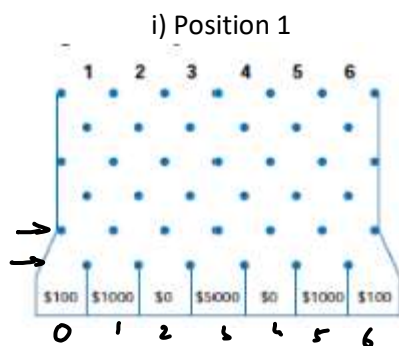


How much do you EXPECT to win with one spin? [3 marks]

Plinko Challenge!

In the game of Plinko, contestants drop a disk into one of the slots at the top of the upright board. The disk is equally likely to go left or right at each peg it encounters. The board shown below, which will be used for the calculations, is a smaller version than the one used in game shows.

- a) Determine the probability that a disk lands in the \$5000 prize slot given that it is dropped from: [4 marks]
You can show work on the Plinko boards.



$$\binom{n}{k} \frac{1}{2^n}$$

$$\binom{6}{0} \left(\frac{1}{2}\right)^0 \left(\frac{1}{2}\right)^6 = \left(\frac{1}{2}\right)^6$$

- b) If the contestant has 4 disks, and assuming the contestant knows the optimal position to drop the disk, what is the probability that they win \$20,000? [1 mark]