

IB Math 1 24B – D Probability

Experimental Probability

What actually happens

vs.

Theoretical Probability

What we expect to happen

$$P(\text{event}) = \frac{\text{favorable outcomes}}{\text{total outcomes}}$$

1. A bag has 4 Blue, 5 Green, 2 Red, and 9 Yellow marbles.

a. $P(B) = \frac{4}{20}$
 $= \boxed{\frac{1}{5}}$

b. $P(B') = \frac{16}{20}$
not B $= \boxed{\frac{4}{5}}$

Complementary Events:

$$P(B) + P(B') = 1$$

$$P(B') = 1 - P(B)$$

c. $P(B \text{ or } G) = \frac{9}{20}$

d. $P(\text{Purple}) = 0$

$$0 \leq P(\text{event}) \leq 1$$

e. $P(B \text{ or } G \text{ or } R \text{ or } Y) = 1$

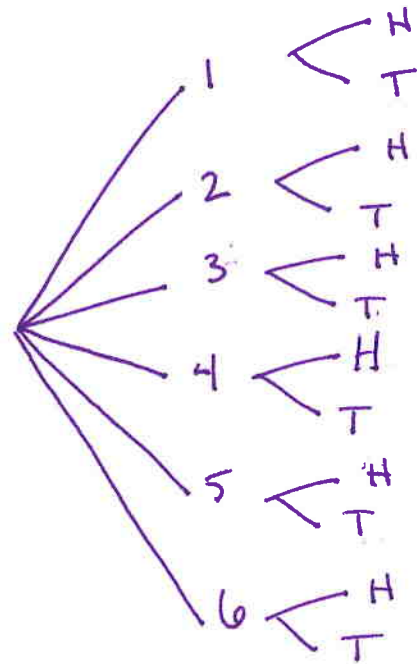
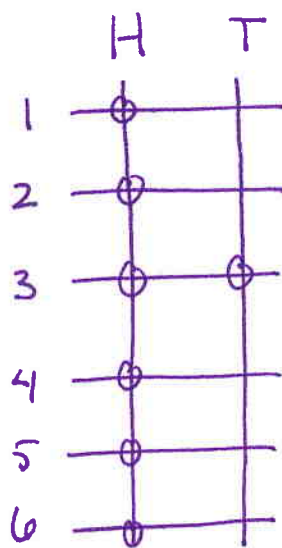
2. A six-sided die is rolled and a coin is tossed.

Make a list of outcomes

...as a grid

...as a tree diagram

1 H	1 T
2 H	2 T
3 H	3 T
4 H	4 T
5 H	5 T
6 H	6 T



a. $P(T) = \frac{1}{2}$

b. $P(H \text{ and } 3) = \frac{1}{12}$

c. $P(H \text{ or } 3) = \frac{7}{12} \leftarrow \frac{\text{Just H}}{6} + \frac{\text{Just 3}}{2} - \frac{\text{3 and H}}{1}$

↑
inclusive OR

24B (1-3 odd letters)
 24C.1 (1-3, 5, 6)
 24C.2 (2, 3)
 24D