

PROBABILITY PROBLEMS

1. A letter is chosen at random from the letters of the word "MATHEMATICS". What is the probability that it is
 - (i) an "A"?
 - (ii) a vowel?
 - (iii) a consonant?

2. A coin is tossed 5 times. What is the probability of tossing
 - (i) 5 heads?
 - (ii) no heads?
 - (iii) 4 heads?
 - (iv) at least 3 heads?

3. A card is drawn at random from a normal deck of playing cards. What is the probability that the card drawn will be
 - (i) an ace?
 - (ii) a spade?
 - (iii) an ace and a spade?
 - (iv) either an ace or a spade?
 - (v) not a spade?

4. In a group of 25 students, 17 study physics, 13 study chemistry and 6 study no science subjects at all. If a student is chosen at random, what is the probability that he or she studies
 - (i) no science?
 - (ii) physics?
 - (iii) physics but not chemistry?
 - (iv) physics, chemistry or both?
 - (v) both physics and chemistry?

5. The "El- Cheapo Calculator Company" manufactures calculators but 10% of them are faulty. Zaf bought 3 El-Cheapo calculators. What is the probability that
 - (i) the first one he used was faulty?
 - (ii) all 3 were faulty?
 - (iii) at least one was faulty?
 - (iv) all 3 were good?

Answers:

1. (i) $\frac{2}{11}$ (ii) $\frac{4}{11}$ (iii) $\frac{7}{11}$
2. (i) $\frac{1}{32}$ (ii) $\frac{1}{32}$ (iii) $\frac{5}{32}$ (iv) $\frac{16}{32}$
3. (i) $\frac{1}{13}$ (ii) $\frac{1}{4}$ (iii) $\frac{1}{52}$ (iv) $\frac{4}{13}$ (don't count the ace of spades twice) (v) $\frac{3}{4}$
4. (i) $\frac{6}{25}$ (ii) $\frac{17}{25}$ (iii) $\frac{6}{25}$ (iv) $\frac{19}{25}$ (v) $\frac{11}{25}$
5. (i) $\frac{1}{10}$ (ii) $\frac{1}{1000}$ (iii) $\frac{271}{1000}$ (iv) $\frac{729}{1000}$