

13: Probability --- Answers

- There are 24 different ways.
(2,B,4), (2,B,6), (2,R,4), (2,R,6), (2,G,4), (2,G,6), (2,W,4), (2,W,6),
(4,B,4), (4,B,6), (4,R,4), (4,R,6), (4,G,4), (4,G,6), (4,W,4), (4,W,6),
(S,B,4), (S,B,6), (S,R,4), (S,R,6), (S,G,4), (S,G,6), (S,W,4), (S,W,6).
- 40.
- A probability can never be greater than 1 because it is always a fraction where the denominator is the total number of possible outcomes, and the numerator is the number of outcomes in a particular event which is a subset of all the possible outcomes. So, the numerator cannot be larger than the denominator.
- The probability that it will not rain is 0.4.
- HHH, HHT, HTH, THH, HTT, THT, TTH, TTT
 - HHH, HHT, HTH, THH
 - $4/8=1/2$
- This is 7, 8, or 9, so $15/36=5/12$.
- $8/13$.
 - $5/13$.
 - Sum is 1, since these are complements of each other.
 - i. $(8/13)^2 = 64/169$ ii. $(5/13)^2 = 25/169$ iii. $(5/13)(8/13) = 40/169$
- $(1/6)(3/6) = 1/12$.
- The collection of all possible outcomes of a random phenomenon together with the probabilities of these outcomes. The sum of all the outcomes should be 1.
- Answers will vary. One example is to roll 8 dice and find the mean number of sixes rolled.
- Answers will vary. One example is the distribution which gives the probability that a given person has a certain blood type.
- HHHH, HHHT, HHTH, HTHH, THHH, HHTT, HTTH, TTHH, THTH, HTHT, THHT, HTTT, THTT, TTHT, TTTH, TTTT.
- $1/16$
 - $5/16$
 - $1/2$
- The mean number of people per household is 3.15.
- 5.75
- $1/1024$
- $1/8$
 - $3/8$
- $(0.6)^2 = 0.36$
- $\$1(2/6) + (-\$1)(4/6) = -\$1/3 \approx -33$ cents
- $1 - (0.698)^4 = 0.76263226$
 - $0.76263226^{44} = 0.000006635$