**Unit 4 Quiz 1 Review Answers**

1. 5 – 10%; 2 – 20%; 2 – 30%; 1 – 50%

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X | 10% | 20% | 30% | 50% |
| P(X = x) | 5/10 | 2/10 | 2/10 | 1/10 |

1. P(>20%) = P(30%) + P(50%) = 2/10 + 1/10 = 0.30
2. P(<20%) = P(10%) = 5/10 = 0.50
3. 
4. 

OR: binomial B(3, 0.1) P(X = 0) = 0.729

1. 
2. 

OR: binomial B(5, 0.1) P(X>1) = 1- P(X<0) = 0.4095

1. Both are incorrect. Each roll of the rubber cube is independent of any other roll. So the probability of getting a 50% discount is the same no matter what the previous values were.
2. Dogs and cats
3. D = Family owns at least one dog

C = Family owns at least one cat

 (.39 + .34) - .60 = .13

.40

.21

.26

.13

C

D

1. 
2. 
3. 
4. No. . A household can own a cat and a dog at the same time.
5. Yes. Knowing that a family has a dog doesn’t change the probability that they own a cat. P(C) = 0.34; P(C|D) = 0.33
6. (a) P(A U B) = 0.65 + 0.23 – 0.15 = 0.73

(b) P(B|A) = 0.15 = 0.2307

 0.65

 (c) No. P(A n B) is not 0

 (d) Possibly. P(B|A) is very close to P(B). Justify whatever answer you give!!

1. P(D U C) = P(D) + P(C) = 0.78
2. P(K n R) = P(K)\*P(R) = 0.1633
3. (a) P(F n H) = P(H|F) \* P(F) = 0.0429

(b) P(F U H) = P(F) + P(H) – P(F n H) = 0.5671

1. P(A U B) = P(A) + P(B) – P(A n B)

 0.78 = 0.25 + P(B) – 0.12

 P(B) = 0.65

1. P(R) = 0.37 P(U|R) = 0.15 = 0.405

P(R n U) = 0.15 0.37

1. P(M) = 0.5 P(J|M) = 0.20 = 0.40

P(M n J) = 0.20 0.50

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | **Breakfast** |  |  |
|  |  | **Yes** | **No** |  |
| **Sex** | **Male** | 66 | 66 | 132 |
| **Female** | 125 | 74 | 199 |
|  |  | 191 | 140 | 331 |

* 1. P(F) = 199/331 = 0.6012
	2. P(B) = 191/331 = 0.5770
	3. P(F ∩ B) = 125/331 = 0.3776
	4. P(B|F) = 125/199 = 0.6281
	5. P(F|B) = 125/191 = 0.6545
	6. No it doesn’t appear that they are independent. Knowing that a student is female changes the probability that they ate breakfast. P(B|F) = 0.6281 ≠ P(B) = 0.5770
1. Tree Diagram



