PRINTABLE VERSION

Quiz 2

You scored 100 out of 100

Question 1

Your answer is CORRECT.

A researcher randomly selects 3 fish from among 7 fish in a tank and puts each of the 3 selected fish into different containers. How many ways can this be done?

a) 630

b) 840

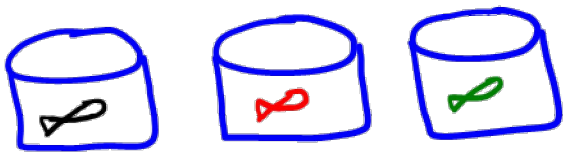
c) 70

d) 63

e) 210

f) None of the above

Order matters



$_7P_3 = \frac{7!}{(7-3)!} = 210$

Question 2

Your answer is CORRECT.

An experimenter is randomly sampling 5 objects in order from among 49 objects. What is the total number of samples in the sample space?

a) 1144130400

b) 1906884

c) 1086008

d) 228826080

e) 130320960

f) None of the above

$_{49}P_5 = \frac{49!}{(49-5)!} = 228\,826\,080$

Question 3

Your answer is CORRECT.

A person eating at a cafeteria must choose 4 of the 13 vegetables on offer. Calculate the number of elements in the sample space for this experiment.

↖ order doesn't matter

a) 17160

b) 2860

$_{13}C_4 = 715$

c) 3024

d) 126

e) 715

f) None of the above

Question 4

Your answer is CORRECT.

How many license plates can be made using 3 digits and 3 letters if repeated digits and letters are not allowed?

↖ order matters

a) 52728000

b) 11232000

$10 \cdot 9 \cdot 8 \cdot 26 \cdot 25 \cdot 24 =$ 11232000

digits letters

c) 9434880000

d) 17576000

e) 33696000

f) None of the above

Question 5

Your answer is CORRECT.

The union of two events A and B is the event that:

a) Both A and B occur.

b) Either A or B or both occur.

$P(A \cup B)$ ↑ A or B or both

c) A and B occur at the same time.

d) The intersection of A and B does not occur.

e) Either A or B, but not both occur.

f) None of the above

Question 6

Your answer is CORRECT.

Let A = {3, 10}, B = {10, 11, 28}, D = {35} and S = sample space = A ∪ B ∪ D. Identify A^c.

a) {3}

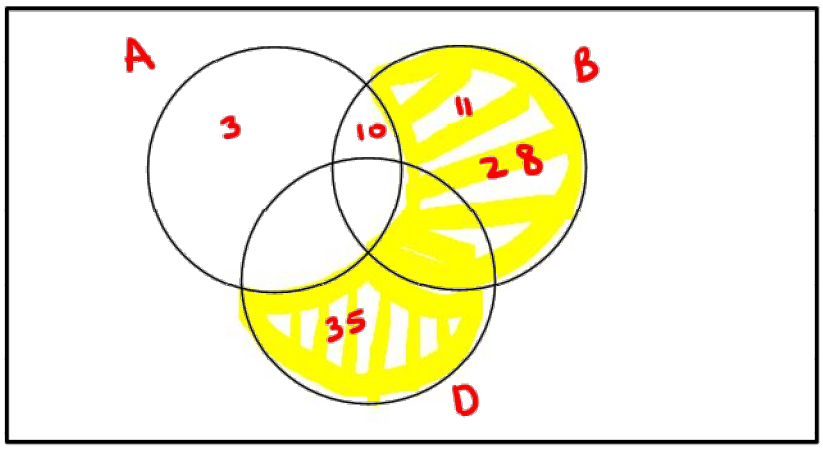
b) {11, 28, 35}

c) {35}

d) {3, 11, 28, 35}

e) {11, 28}

f) None of the above.



Question 7

Your answer is CORRECT.

Let A = {2, 7}, B = {7, 20, 30}, D = {32} and S = sample space = A ∪ B ∪ D. Identify B^c ∪ A.

a) {2, 32}

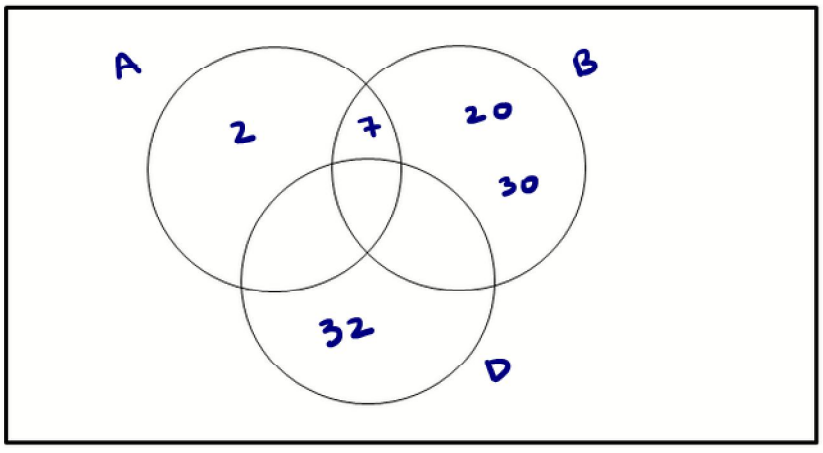
b) {2, 20, 30, 32}

c) {2, 7, 20, 30}

d) {2, 7}

e) {2, 7, 32}

f) None of the above.



Question 8

Your answer is CORRECT.

Let A = {3, 8}, B = {8, 12, 22}, D = {34} and S = sample space = A ∪ B ∪ D. Identify $(A^c \cap B^c)^c$.

= A ∪ B

a) {8}

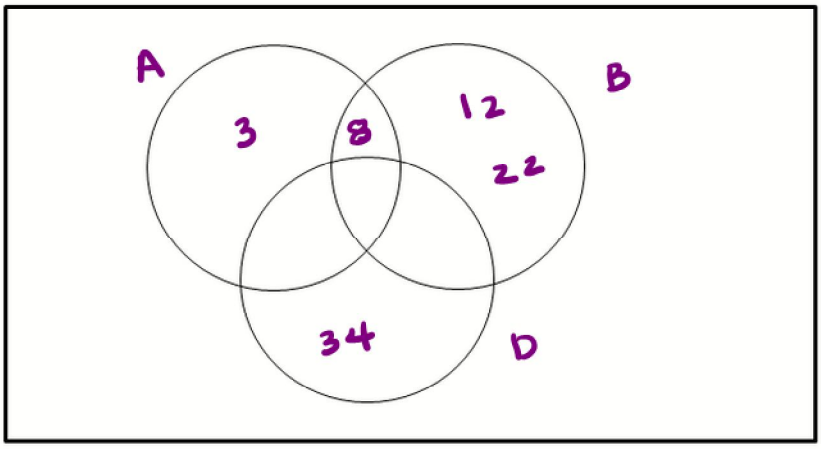
b) {12}

c) {3}

d) {3, 8, 12, 22}

e) {3, 8}

f) None of the above.



Question 9

Your answer is CORRECT.

Let A = {3, 9}, B = {9, 19, 21}, D = {36} and S = sample space = A ∪ B ∪ D. Identify $A^c \cap B$.

a) {19, 21}

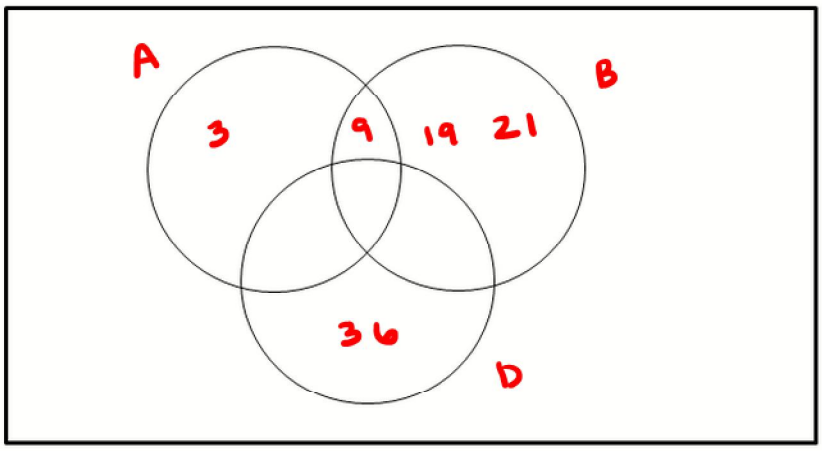
b) {9, 19, 21}

c) {9, 36}

d) {9}

e) {3, 19, 21}

f) None of the above.



Question 10

Your answer is CORRECT.

In a shipment of 56 vials, only 13 do not have hairline cracks. If you randomly select one vial from the shipment, what is the probability that it has a hairline crack?

a) $1/56$

b) $13/43$

c) $43/56$

d) $1/13$

e) $13/56$

56 total

13 non-defective

43 defective

$\frac{43 \leftarrow \text{defective}}{56 \leftarrow \text{total}}$

f) None of the above

Question 11

Your answer is CORRECT.

Suppose a card is drawn from a deck of 52 playing cards. What is the probability of drawing a 7 or a king?

$P(7 \text{ or } K) = P(7) + P(K) - P(K \cap 7)$

$= \frac{4}{52} + \frac{4}{52} - 0$

$= \frac{2}{13}$

a) $1/156$

b) $2/13$

c) $1/4$

d) $1/13$

e) $1/26$

f) None of the above

Question 12

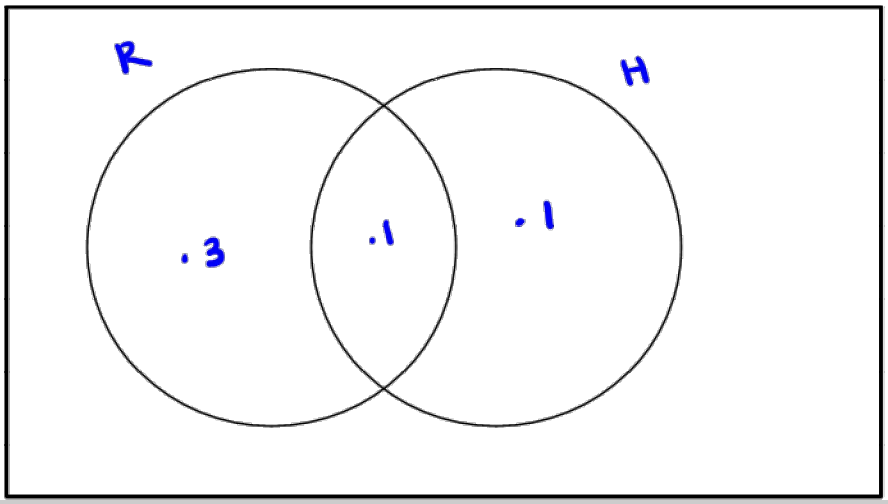
Your answer is CORRECT.

The probability that a randomly selected person has high blood pressure (the event H) is P(H) = 0.2 and the probability that a randomly selected person is a runner (the event R) is P(R) = 0.4. The probability that a randomly selected person has high blood pressure and is a runner is 0.1. Find the probability that a randomly selected person either has high blood pressure or is a runner or both.

a) 0.5

$.1 + .1 + .3$

$= .5$



b) 0.4

c) 0.9

d) 0.8

e) 0.6

f) None of the above.

Question 13

Your answer is CORRECT.

In a shipment of 80 vials, only 13 do not have hairline cracks. If you randomly select 3 vials from the

shipment, what is the probability that all 3 of the selected vials have hairline cracks?

80 total

13 non def

67 def

$\frac{{}_{67}C_3}{{}_{80}C_3} = \frac{47905}{82160}$

$= 0.5831$

a) 0.5831

b) 0.0027

c) 0.0043

d) 0.9973

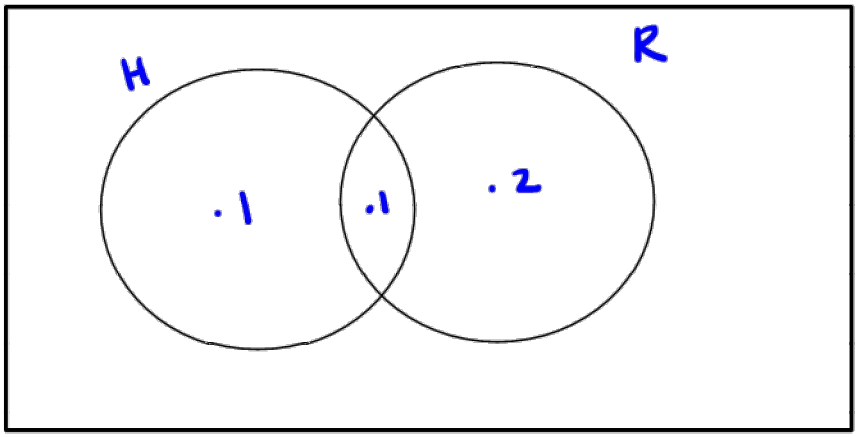
e) 0.4169

f) None of the above

Question 14

Your answer is CORRECT.

The probability that a randomly selected person has high blood pressure (the event H) is P(H) = 0.2 and the probability that a randomly selected person is a runner (the event R) is P(R) = 0.3. The probability that a randomly selected person has high blood pressure and is a runner is 0.1. Find the probability that a randomly selected person has high blood pressure and is not a runner.



a) 0.1

b) 0.4

c) 0.8

d) 0.2

e) 0.5

f) None of the above.

Question 15

Your answer is CORRECT.

The probability that a randomly selected person has high blood pressure (the event H) is P(H) = 0.3 and the probability that a randomly selected person is a runner (the event R) is P(R) = 0.4. The probability that a randomly selected person has high blood pressure and is a runner is 0.1. Select the false statement.

Independent

$P(A) * P(B) = P(A \cap B)$

or

$P(A|B) = P(A)$

and

$P(B|A) = P(B)$

a) $P(R^c \cup H^c) = 0.9$ ✔

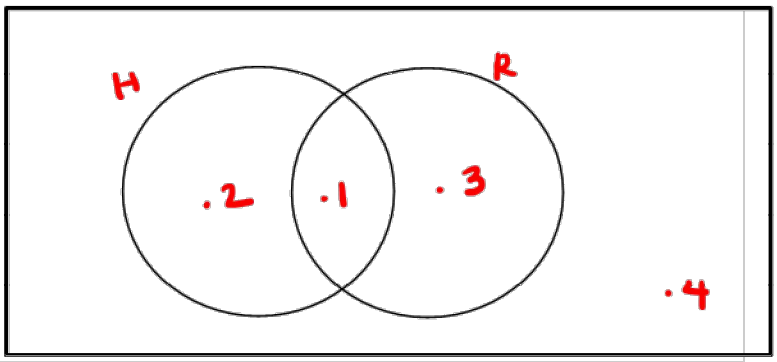
b) $P(R \cup H) = 0.6$ ✔

c) H and R are not mutually exclusive. ✓

d) $P(H \cap R^c) = 0.2$ ✓

e) H and R are independent events. ✗

f) None of the above.



Question 16

Your answer is CORRECT.

Hospital records show that 16% of all patients are admitted for heart disease, 18% are admitted for cancer (oncology) treatment, and 8% receive both coronary and oncology care. What is the probability that a randomly selected patient is admitted for coronary care, oncology or both? (Note that heart disease is a coronary care issue.)

a) 0.18

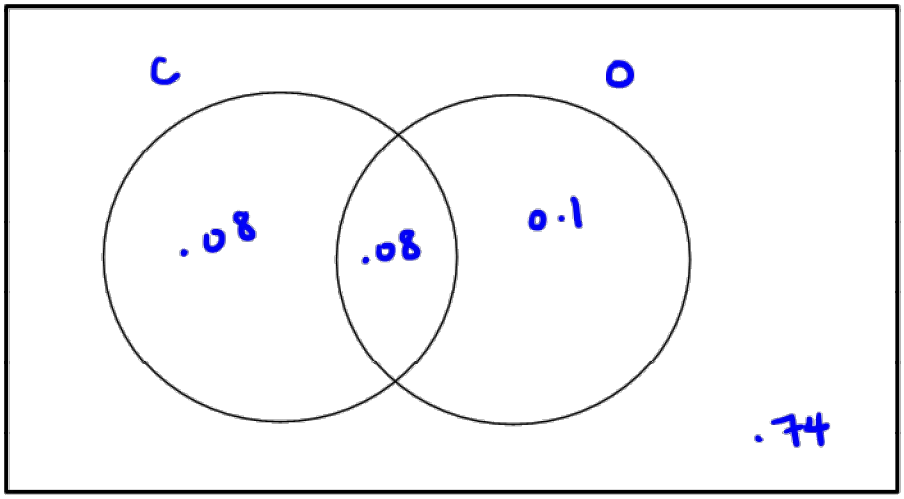
b) 0.26

c) 0.66

d) 0.42

e) 0.34

f) None of the above.



Question 17

Your answer is CORRECT.

Hospital records show that 16% of all patients are admitted for heart disease, 18% are admitted for cancer (oncology) treatment, and 8% receive both coronary and oncology care. What is the probability that a randomly selected patient is admitted for something other than coronary care? (Note that heart disease is a coronary care issue.)

$P(C^c) = .1 + .74 = .84$

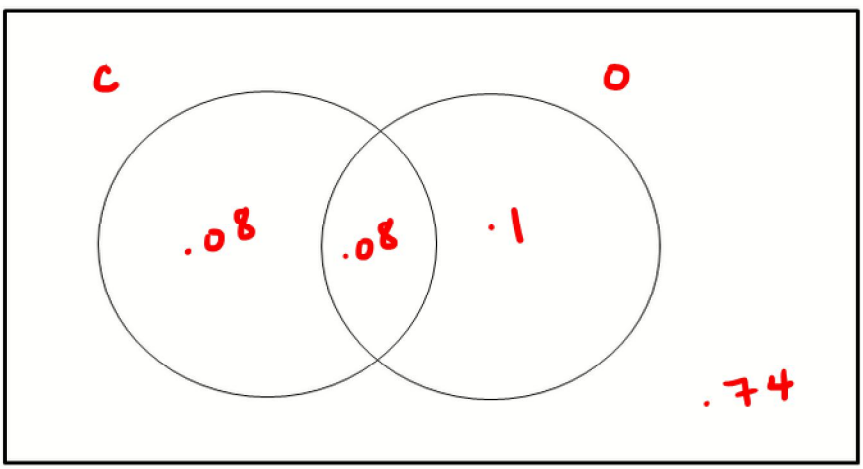
a) 0.76

b) 0.84

c) 0.74

d) 0.82

e) 0.92



f) None of the above.

Question 18

Your answer is CORRECT.

Among 9 electrical components exactly one is known not to function properly. If 2 components are randomly selected, find the probability that all selected components function properly.

a) 0.7778

b) 0.8889

c) 0.2222

d) 0.6667

e) 0.7023

f) None of the above

9 total
1 def
8 non def

$$\frac{{}_8C_2}{{}_9C_2} = \frac{28}{36} = .7778$$

Question 19

Your answer is CORRECT.

Among 9 electrical components exactly one is known not to function properly. If 3 components are selected randomly, find the probability that exactly one does not function properly.

a) 0.2222

b) 0.8889

c) 0.7023

d) 0.3333

e) 0.6667

f) None of the above

9 total
1 def
8 non def

$$\frac{{}_1C_1 \cdot {}_8C_2}{{}_9C_3} = \frac{28}{84} = 0.333$$

Question 20

Your answer is CORRECT.

Among 7 electrical components exactly one is known not to function properly. If 3 components are randomly selected, find the probability that at least one does not function properly.

a) 0.5714

b) 0.4286

c) 0.6297

d) 0.8571

e) 0.2857

f) None of the above

7 total

1 def

6 non def

$$\frac{{}_1C_1 \cdot {}_6C_2}{{}_7C_3} = \frac{15}{35} = .4286$$