Mark with an X the symbol that represents the correct answer. Each question is worth 1.5 points.

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d
e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e

1) Which of the following statements is correct?
   a) The family yearly income (in JD) is a qualitative type of data.
   b) The family economic status (recorded as "low income", "middle income", or "high income" is an ordinal scale data.
   c) The spoken language of a person is an ordinal scale data.
   d) The number of people living in a household is a continuous random variable.
   e) none of the above statements is correct.

2) A sample data of 10 observations is as follows

Class	0 - 2	3 - 5	6 - 8
Frequency	2	5	3

The variance S^2 of this sample is
   a) 7.8   b) 8.3   c) 6.2   d) 4.9   e) 5.7

3) The grades of a sample of 20 students are as follow

Class	5 - 13	14 - 22	23 - 31
Frequency	5	10	5

The median of these grades is
   a) 18   b) 20   c) 19   d) 21   e) 17

4) The grades of a sample of 200 students are as follow

Class	0 - 5	6 - 11	12 - 17	18 - 23
Relative frequency	0.15	p = 0.4	0.35	0.10

The number of students with grades less than 12 is
   a) 80   b) 100   c) 110   d) 90   e) 130

5) A sample data of 10 numbers has mean 32. If one number in this sample was changed from 28 to 20, then the mean of this sample becomes
   a) 29.8   b) 30.8   c) 30   d) 30.2   e) 31.2

6) Which of the following statements are true?
   I. Quantitative variables are discrete or continuous.
   II. If a sample data is skewed to the left, then its mean is greater than its median.
   III. If a sample data is skewed to the right then more than 50% of the observations are smaller than its mean.
   a) all of them   b) I and III only   c) I and II only   d) II only   e) I only

7) A bell shaped sample data has mean 30 and standard deviation 5. The proportion of observations in this sample that are between 20 and 25 is at about
   a) 0.68   b) 0.34   c) 0.475   d) 0.270   e) 0.135

8) Let A, B be events such that $P(A) = 0.4$ and $P(A \cap \bar{B}) = 0.2$. Then $P(\bar{A} \cup \bar{B})$ equals
   a) 1   b) 0   c) 0.8   d) 0.9   e) 0.7

9) The grades of a sample of 20 students are as follow .

Class	5 - 13	14 - 22	23 - 31
Frequency	5	10	5

   The mean of these grades is
   a) 17   b) 19   c) 20   d) 16   e) 18

10) Let $Y = 5 - 2X$. If the interquartile range of X is 50 and the first quartile of X is 10, then the first quartile of Y is
a) -115
b) -15
c) 60
d) 10
e) -60

11) A sample data has mean 30 and standard deviation 5. The percentage of observations in this sample that are between 17.5 and 42.5 is at least
a) 75%
b) 68%
c) 99%
d) 84%
e) 95%

12) A sample data is as follows

Class	5 - 9	10 - 14	15 - 19
Frequency	5	10	15

The mode of this sample is
a) 10
b) 17
c) 12
d) 7
e) 15

13) In how many ways can the letters of the word ACTIVE be arranged if the letters C and E must NOT be together?
a) 96
b) 120
c) 720
d) 480
e) 240

14) The third quartile Q_3 of the numbers 36, 42, 18, 33, 22, 22, 25, 29, 30, 31, 19, 24 is
   a) 32   b) 29   c) 31   d) 33   e) 30

15) Five different types of fruit and six different types of vegetables are available for a healthy snack tray. The snack tray is to contain two fruits and three vegetables. How many different snack trays can be made if an apple must be served?

   a) 40   b) 80   c) 100   d) 60   e) 120

16) A box contains 2 red, 2 black and 2 white balls. Two balls are randomly drawn without replacement. The probability that none of the drawn balls is red equals
   a) 0.3   b) 0.6   c) 0.4   d) 0.2   e) 0.5

17) A sample data of 10 numbers has mean 12 and variance $S^2 = 16$. If one number in this sample was changed from 8 to 10, then $\sum x^2$ of this sample becomes
   a) 1620   b) 1860   c) 1540   d) 1730   e) 1350

| b | الاجابه

حل نموذج 7 فزت هيفى

Q2

$S^2 = ?$

$$S^2 = \dfrac{\sum X^2 - \dfrac{(\sum XF)^2}{n}}{n-1} = \dfrac{(1*2 + 4^2*5 + 7^2*3) - \dfrac{(2+20+21)^2}{10}}{9} = \boxed{4.9} \quad \underline{\underline{d}}$$

Q3

$$\dfrac{X_{\frac{n}{2}} + X_{\frac{n}{2}+1}}{2} = \dfrac{X_{10} + X_{11}}{2} = \dfrac{18+18}{2} = 18 \quad \longrightarrow \text{frome c.f}$$

Q4

$$P = \dfrac{15}{100} + \dfrac{40}{100} = \dfrac{55}{100} * 200 = 110 \qquad \boxed{C}$$

Q5

$\bar{X}_{old} = 32$ $\sum \bar{X}_{old} = 32 * 10 = 320$

$n = 10$

$$\sum X_{new} = 320 - 28 + 20 = 312 \qquad \boxed{e}$$

Q6   I and III only $\boxed{b}$

Q7 $\bar{X} = 30$ $(20, 25)$

$S = 5$

$20 = \bar{X} - ks$ $25 = \bar{X} + ks$

$20 = 30 - 5k$ $25 = 30 + 5k$

$k = 2$ $k = 1$
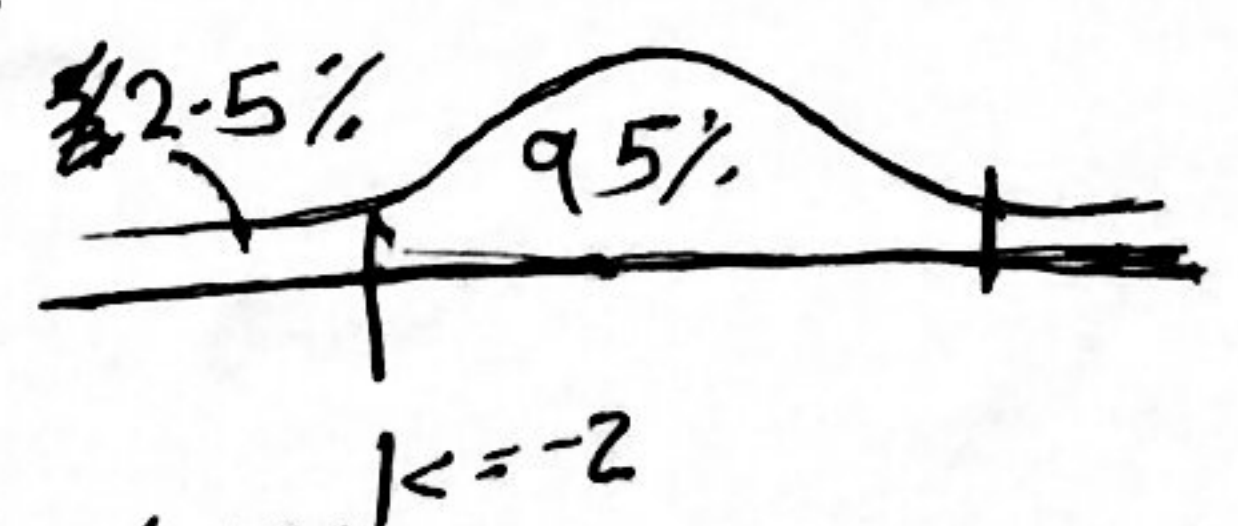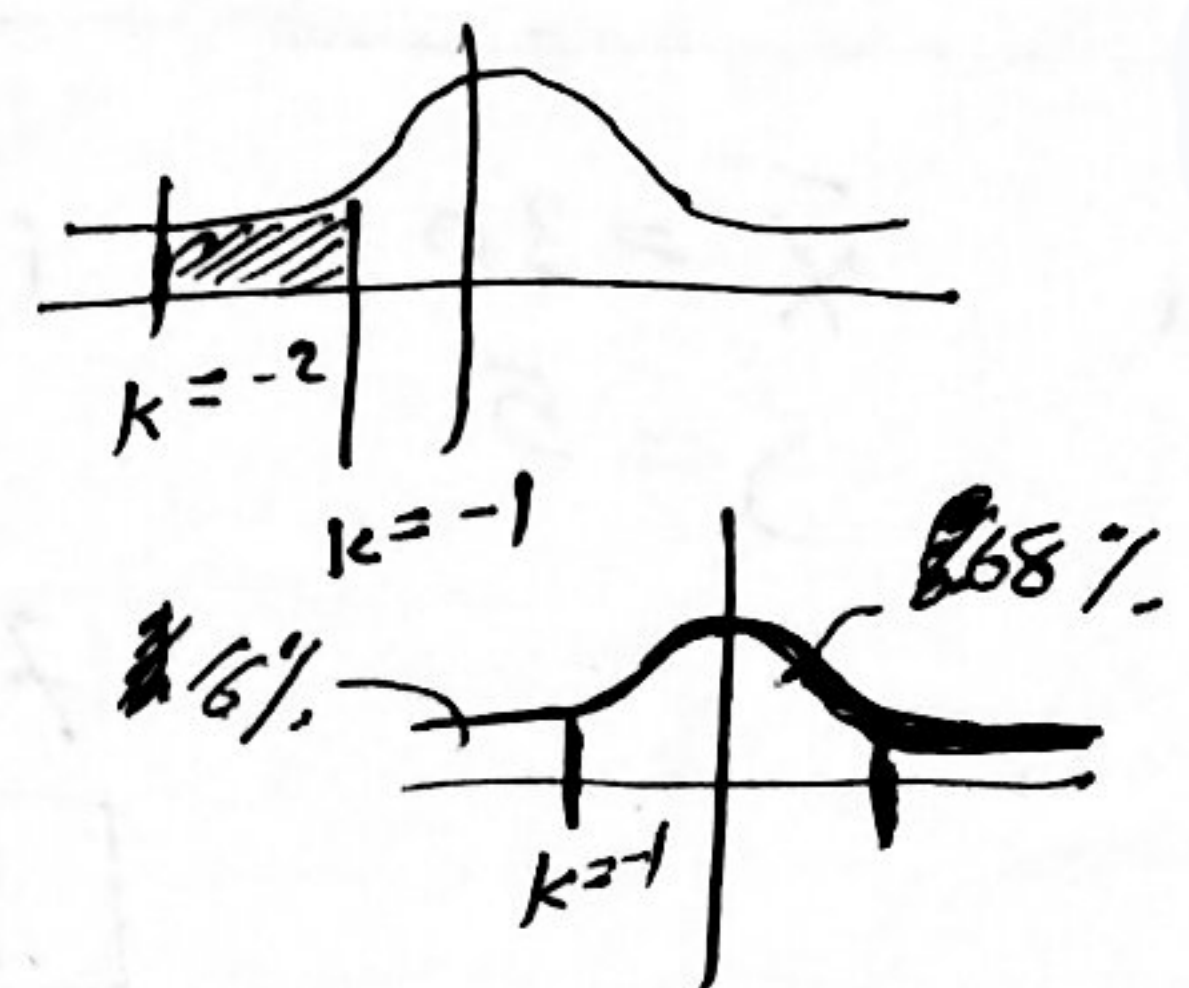
The observation between 20 and 25

$16\% - 2.5\% = 0.135$

$\boxed{e}$

Q8 $P(A \cap \bar{B}) = P(A) - P(B \cap A)$

$0.2 = 0.4 - P(A \cap B)$

$P(A \cap B) = 0.2$

$\therefore P(\bar{A} \cup \bar{B}) = P(\overline{A \cap B}) = 1 - 0.2 = 0.8$ $\boxed{c}$

Q9 $y = 5 - 2x$

$IQR_x = 50$

$Q_1 x = 10$

$Q_1 y$

الأول

$\Rightarrow$
$Q_3 y = 5 - 2 Q_1 x$

$Q_3 y = 5 - 20 = -15$

$IQR_x = Q_3 x - Q_1 x$

~~$50 + 15 = Q_1 x$~~

then $Q_1 y = 5 - 2 Q_3 x$

$5 - 2(-15)$

$5 + 30 = 35$

الثاني

$IQR_x = Q_3 x - Q_1 x$

$50 = Q_3 x - 10$

$Q_3 x = 60$

$\therefore Q_1 y = 5 - 2(60)$

$5 - 120$

$\boxed{= -115}$

الجواب $\boxed{9}$

Q10

mean $= \dfrac{\sum X^2 f}{\sum F}$

علامة الفئة

حيث $X = $ mid point

$\therefore \bar{X} = \dfrac{(5 \times 9) + 180 + (27 \times 5)}{20} = 18$ $\boxed{c}$

Q11 $\bar{X} = 30$

$S = 5$

$(17.5 \quad 42 - 5)$

$17.5 = 30 - 5k$

$\boxed{k = -2.5}$

$\triangleright 42.5 = 30 + 5k$

$k = 2.5$

$\therefore$ at least $1 - \frac{1}{k^2} =$

$1 - \frac{1}{(2.5)^2} =$

84%

$\boxed{d}$

Q_{12}

$$\text{mid Point} = \frac{15+19}{2} = 17 \quad \boxed{b}$$

Q_{13} ☐ ☐ ☐ ☐ ☐ ☐ ☐ $= 720 \boxed{c}$

Q_{14} $\quad Q_3 = \frac{75}{100} * 11 = 8.25 = 9$

اللي منزلة عن المشاهد 9 بعد ترتيبهم تصاعدياً

$$18, 19, 22, 24, 25, 29, 30, 31, 33, 36, 46$$

المشاهدة 9 ↓

الحل
33 $\boxed{d}$

Q_5

5 fruit
6 vegetables

$\binom{2}{2}$

$$\frac{2!}{2!} \cdot \frac{6!}{3!} = \frac{6*5*4*3!}{3!} = 120$$

Q_{16}

$$s^2 = \left(\frac{\Sigma X^2 - \frac{\Sigma X^2}{n}}{n-1} \right) \text{ old}$$

$$(16)(9) = \Sigma X^2_{old} - 1440 \implies \Sigma X^2_{old} = 1584$$

$$\Sigma X^2_{new} = \Sigma X^2_{old} - 8^2 + 10^2 = 1620$$

$\boxed{a}$