Homework Assignment 1

HWA1_1. Suppose that a performance test of manual dexterity has been administered to a group of subjects. The frequency distribution is reported as follows.

Score	50	60	70	80	90
Frequency	1	2	3	3	1

Joan and Peter are examinees of this group, and there are some unknown values in the following table for them.

	Raw Score	Deviation Score	Z-Score	T-Score
Joan	80			57.5
Peter	_	-21	-1.75	

HWA1__1__1. The mean of the scores is 7_, and the standard deviation is 1_.00.

1) 1
2) 2
3) 3
4) 4

HWA1__1__2. For Joan, her deviation score = __, and her z-score = 0._5.

1) 7
2) -7
3) 9
4) -9

HWA1__1__3. For Peter, his raw score = _0, and his T-score = _2.5.

1) 2
2) 3
3) 4
4) 5

Write your answer as a six-digit number.

HWA1_2. Suppose an instructor gave a 20-item quiz and weighted each item 1 point. The mean score on the test was 12 points and the standard deviation was 2 points. The instructor later decided to transform students' total scores from the 20-point scale to 100-point scale.

HWA1__2__1. Under the new scale, the weight for each item was __ points.

1) 2
2) 3
3) 4
4) 5

HWA1_2_2. The new mean and the standard deviation after being re-weighted were __ and __, respectively.

1) 10
2) 30
3) 50
4) 60

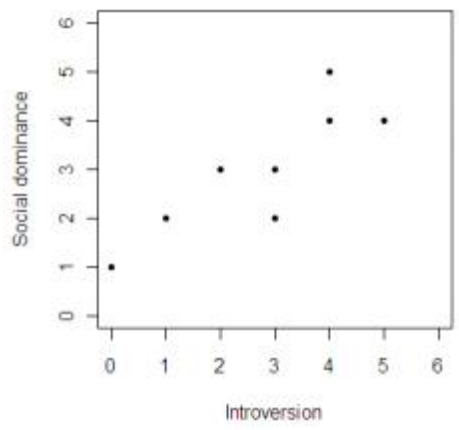
Write your answer as a three-digit number.

HWA1_3. A researcher was interested in finding the relationship between Introversion and Social dominance. He collected the following data and calculated the descriptive statistics of the data.

	Examinee							
	1	2	3	4	5	6	7	8
Introversion	0	1	1	2	2	3	4	5
Social-dominance	4	5	4	2	3	3	2	1

HWA1_3_1. Option __ is most likely the scatter plot for the above data.

1)



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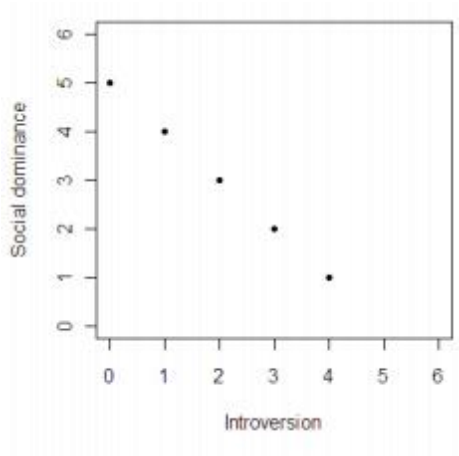

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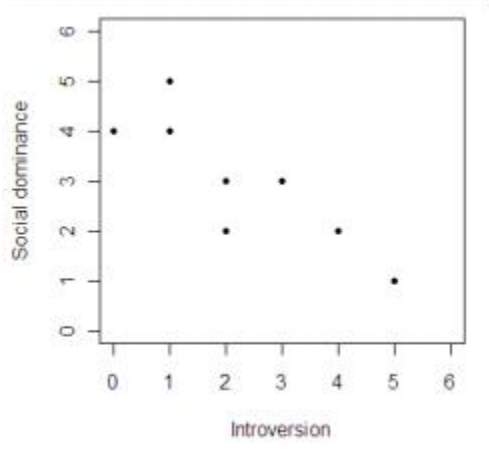
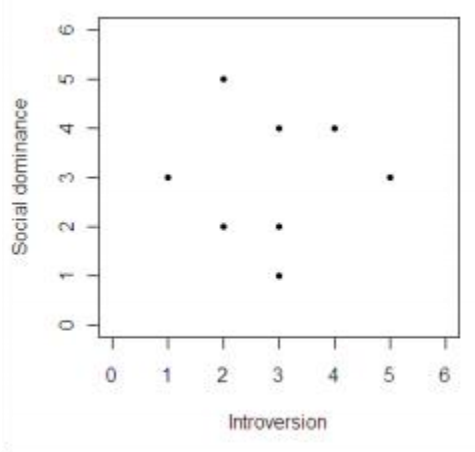


4)



HWA1_3_2. If the researcher predicted Social dominance from Introversion using regression line formulated as $Y=a+bX+e$, then Y represents __ and X represents __.

1) Introversion
2) Social dominance

HWA1_3_3. It is known that the estimate of a is 4.5, and the estimate of b is -0.67. Which TWO of the following interpretations is appropriate? (Give the answer in increasing order. If options 1 and 4 are correct, write the answer as 14, not 41.)

1) A one-point increase in Introversion will result in .67 point decrease in Social-dominance.
2) A one-point increase in Social-dominance will result in .67 point increase in Introversion.
3) If an examinee scored 0 on Introversion, his/her predicted score on Social-dominance was 4.5.
4) If an examinee scored 0 on Social-dominance, his/her predicted score on Introversion was -4.5.

HWA1_3_4. If an examinee scores 3 points on Introversion, his predicted score on Social-dominance is _.49.

1) 1
2) 2
3) 3
4) 4

Write your answer as a six-digit number.

HWA1_4. The National Assessment of Educational Progress (NAEP) is a national assessment for testing what students know and can do in various subject areas. One major goal of the assessment is to measure students' growth in those subjects. Tests are administered at the beginning and the end of an academic year with alternate forms for each subject. However, due to different testing schedules for different schools, students who take the two tests within an academic year are not the same. For the purpose of equating, there is an anchor test in both of the tests. Suppose that we have two data sets from two schools, A and B, in the academic year of 2002. Students in School A took form X and those in School B took form Y. The following table shows students' performances on both the anchor test and the overall test:

		Anchor		Overall	
School	Test Form	Mean	SD	Mean	SD
A	X	76	9	81.5	12
B	Y	85	10	82	12

HWA1_4_1. Based on the statistics of the anchor test, which of the following statements about the ability levels of students from these two schools is correct?

1) Group A has the same ability level as Group B
2) Group A has a higher ability level than Group B
3) Group A has a lower ability level than Group B
4) The two ability levels are not comparable

HWA1_4_2. Relating the results from the anchor test to those from the overall tests, which of the following statements about the two test forms is correct?

1) Form X is easier than Form Y
2) Form X is more difficult than Form Y
3) They are equally difficult
4) Not enough information to conclude one way or another

Write your answer as a two-digit number.

HWA1_5. In choosing an American household at random, and let the random variable Y be the number of persons living in the household.

Number of Persons	1	2	3	4	5	6	7
Household Probability	.25	.32	.17	.15	.07	.03	.01

HWA1_5_1. In terms of Y, "more than one person lives in this household" is equivalent to __.

1) $Y \geq 1$
2) $Y > 1$
3) $Y > 0$
4) $Y < 1$

HWA1_5_2. The probability of the event in HWA1_5_1 is __?

1) .25
2) .60
3) .75
4) .80

HWA1_5_3. $P(2 < Y \leq 4) =$ __.

1) .64
2) .32
3) .17
4) .05

HWA1_5_4. $P(Y \neq 2) =$ __.

1) .25
2) .49
3) .68
4) .11

Write your answer as a four-digit number.

HWA1_6. Given the data below, select the scale of measurement the numbers represent. Choose you answers from the following options:

1) Nominal 2) Ordinal 3) Interval 4) Ratio

HWA1_6_1. Excellence of baseball teams, as determined by their won-lost records at the end of the season

HWA1_6_2. The digits in the university student number

HWA1_6_3. Distances between New York City and other cities in the United States

Write your answer as a three-digit number.

HWA1_7. The scores of a reference population on the Wechsler Intelligence Scale for Children (WISC) are normally distributed with $\mu = 100$ and $\sigma = 15$.

HWA1_7_1. __% of this population have WISC scores below 100.

1) 50
2) 60
3) 70
4) 80

HWA1_7_2. __% of this population have WISC scores above 140.

1) .35
2) .36
3) .37
4) .38

HWA1_7_3. __.82% of this population have WISC scores between 100 and 120.

1) 30
2) 40
3) 50
4) 60

Write your answer as a three-digit number.