Introductory Statistics Homework Analysis

Comparison among Sections

Overview

The homework results that will be compared are Topico6.AB.csv, Topico6.CD.csv. Those files record the scores of students who are taught by different instructors. The homework questions examine the understanding of Topico6.

Full credit for this homework assignment is 25. The histograms of total scores by section are shown in Figure 1. The summary statistics of the scores are given by Table 1 and Figure 2. The table is sorted by the mean score of each section. Section CD has the highest mean score, and section AB,CD have the highest median. Section AB has the largest standard deviation of the scores, while section CD has the smallest.

	Mean	Std.dev	Min	Q1	Median	Q3	Max
CD	6.76	2.27	2.00	5.00	7.00	8.00	12.00
AB	6.24	2.38	0.00	5.00	6.00	8.00	12.00

Table 1: Summary of overall scores by section. Sections are ordered from the highest mean score to the lowest.

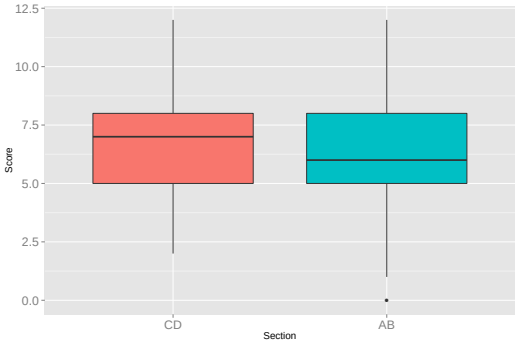


Figure 2: Boxplot for the overall scores by section. The highest median comes from Section AB,CD.

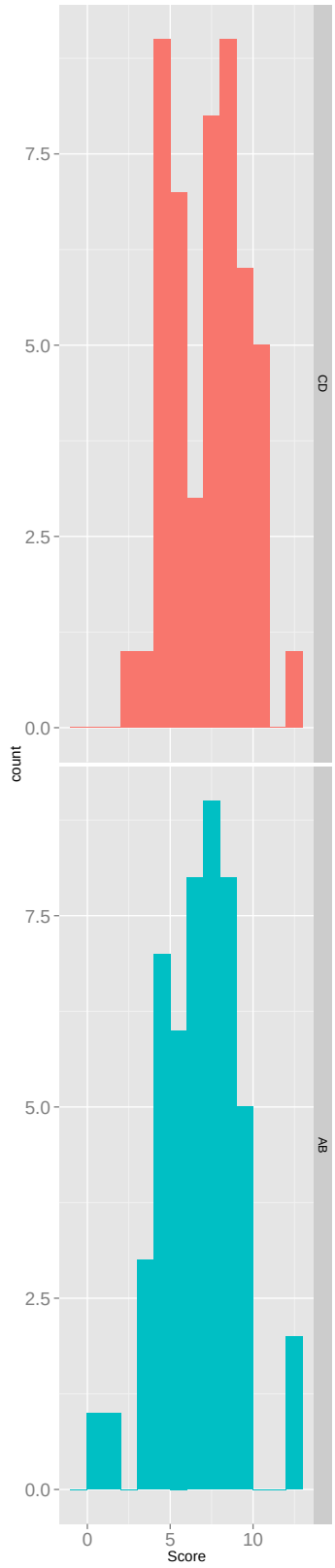


Figure 1: Histograms of overall scores by section. The support of the scores is [0,25].

Learning Outcomes

The learning outcomes in this topic are:

Use standardizing to determine how many standard deviations an observation is away from the mean value.

Use z-scores to compare observations for different quantitative variables.

Explain how standardizing affects the shape, center, and variability of the distribution of a quantitative variable.

Determine which quantitative variables could be modeled using the normal distribution by interpreting graphical representations of the variable.

Apply the 68-95-99.

Find percentile or area values for any given observation from a normal distribution.

Find the value of an observation when given a percentile or area value from the normal distribution.

Figure 3 displays the percentage correct of each question by section. The graph is facetted by learning outcome. In addition, sections are ordered by their overall mean scores and learning outcomes are ordered by their average percentage correct scores.

Table 2 and Figure 4 give the average percentages correct for each learning outcome. The learning outcome D has the highest correct percentage, and E has the lowest average correct percent.

	CD	AB
D	72.00	61.00
B	31.00	38.00
A	25.50	23.00
G	26.00	21.50
C	22.00	22.00
F	19.20	20.80
E	20.67	16.67

Table 2: Average percentages correct for each learning outcome by section. The learning outcomes are sorted by the average percentages correct of all sections, from the highest to the lowest.

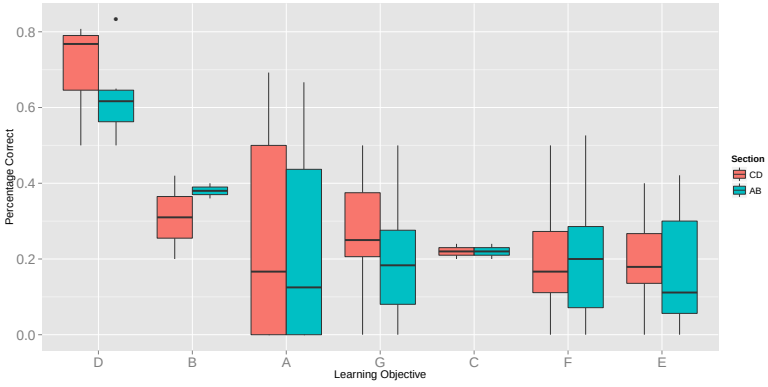


Figure 4: Side-by-side boxplots for learning outcomes by section. The learning outcome on the left has the highest average correct percentage, while the one on the right has the lowest.

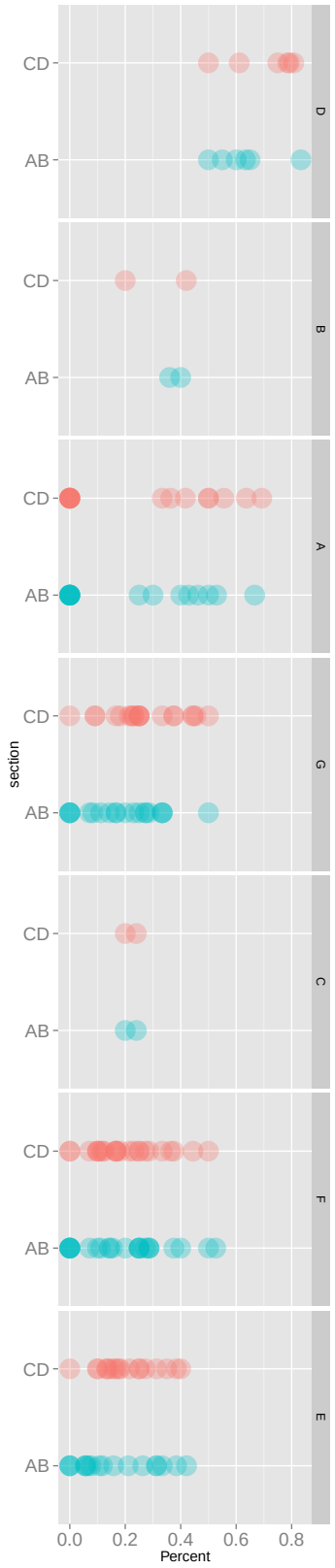


Figure 3: Scatterplot of correct percentage by learning outcome. The sections are sorted by their overall mean scores, and the learning outcomes are ordered by the mean correct percentage.

To analyze the students' performance by section and learning outcomes, we consider the generalized linear mixed model:

$$g(E[Y_{ijk}|u_{jk}]) = \mu + \tau_i + s_j + \tau s_{ij} + u_{jk}$$

where $i = 1, ...,7$ learning outcomes; $j = 1, ...,2$ sections; $k = 1, ..., n_j$ students. Y_{ijk} is the score (scaled in $[0, 1]$) of the kth student of section j in the ith learning outcome. τ_i and s_j are the fixed effects of learning outcome i and section j. τs_{ij} is the interaction between the two factors. u_{jk} is the random effect from the students with $u_{jk} \sim N(0, \sigma_u^2)$.

By default the software R sets $\tau_1 = 0$, $s_1 = 0$ and $\tau s_{ij} = 0, \forall i, j = 1$ as the identifiability constraints.

Table 3 and 4 present the p-values of multiple comparison in the learning outcomes and the sections. The result of the model is as follows.

	D	B	G	A	C	E
B	0.0000					
G	0.0000	1.0000				
A	0.0000	1.0000	1.0000			
C	0.0000	1.0000	1.0000	1.0000		
E	0.0000	1.0000	1.0000	1.0000	1.0000	
F	0.0000	0.3627	1.0000	1.0000	1.0000	1.0000

Table 3: P-values of the multiple comparison between learning outcomes

	CD
AB	0.0336

Table 4: P-values of the multiple comparison between sections

```
## Generalized linear mixed model fit by maximum likelihood (Adaptive
##   Gauss-Hermite Quadrature, nAGQ = 0) [glmerMod]
##  Family: binomial  ( logit )
## Formula:
## Score ~ Objective * Section + (1 | student) + (1 | Section:student)
##    Data: Learning_Objectives
## Weights: FullPoints
##
##      AIC      BIC   logLik deviance df.resid
##   1783.7   1856.5   -875.8   1751.7      684
```

```
##
## Scaled residuals:
##     Min      1Q  Median      3Q     Max
## -2.9874 -0.8716  0.0052  0.8666  4.1551
##
## Random effects:
##  Groups          Name        Variance Std.Dev.
##  student         (Intercept) 0.1190   0.3450
##  Section:student (Intercept) 0.1213   0.3483
## Number of obs: 700, groups:  student, 100; Section:student, 100
##
## Fixed effects:
##                      Estimate Std. Error z value Pr(>|z|)
## (Intercept)            0.9672     0.1737   5.568 2.58e-08 ***
## ObjectiveB            -1.7870     0.2707  -6.602 4.06e-11 ***
## ObjectiveA            -2.0647     0.2814  -7.336 2.20e-13 ***
## ObjectiveG            -2.0380     0.2802  -7.272 3.54e-13 ***
## ObjectiveC            -2.2619     0.2129 -10.623  < 2e-16 ***
## ObjectiveF            -2.4362     0.2276 -10.705  < 2e-16 ***
## ObjectiveE            -2.3427     0.2379  -9.848  < 2e-16 ***
## SectionAB             -0.5068     0.2381  -2.129   0.0333 *
## ObjectiveB:SectionAB   0.8203     0.3725   2.203   0.0276 *
## ObjectiveA:SectionAB   0.3607     0.3984   0.905   0.3653
## ObjectiveG:SectionAB   0.2454     0.4011   0.612   0.5406
## ObjectiveC:SectionAB   0.4993     0.2950   1.693   0.0905 .
## ObjectiveF:SectionAB   0.6008     0.3137   1.915   0.0555 .
## ObjectiveE:SectionAB   0.2299     0.3393   0.678   0.4980
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##             (Intr) ObjctB ObjctA ObjctG ObjctC ObjctF ObjctE SctnAB OB:SAB
## ObjectiveB  -0.540
## ObjectiveA  -0.520  0.335
## ObjectiveG  -0.522  0.336  0.324
## ObjectiveC  -0.687  0.443  0.426  0.428
## ObjectiveF  -0.643  0.414  0.399  0.401  0.528
## ObjectiveE  -0.615  0.396  0.382  0.383  0.505  0.472
## SectionAB   -0.730  0.394  0.379  0.381  0.502  0.469  0.449
## ObjctvB:SAB  0.393 -0.727 -0.243 -0.244 -0.322 -0.301 -0.288 -0.531
## ObjctvA:SAB  0.367 -0.236 -0.706 -0.229 -0.301 -0.282 -0.270 -0.497  0.319
## ObjctvG:SAB  0.365 -0.235 -0.226 -0.699 -0.299 -0.280 -0.268 -0.494  0.317
## ObjctvC:SAB  0.496 -0.320 -0.308 -0.309 -0.722 -0.381 -0.364 -0.671  0.431
```

```
## ObjctvF:SAB  0.467 -0.301 -0.289 -0.291 -0.383 -0.725 -0.343 -0.631  0.405
## ObjctvE:SAB  0.431 -0.278 -0.268 -0.269 -0.354 -0.331 -0.701 -0.584  0.375
##             OA:SAB OG:SAB OC:SAB OF:SAB
## ObjectiveB
## ObjectiveA
## ObjectiveG
## ObjectiveC
## ObjectiveF
## ObjectiveE
## SectionAB
## ObjctvB:SAB
## ObjctvA:SAB
## ObjctvG:SAB  0.296
## ObjctvC:SAB  0.403  0.401
## ObjctvF:SAB  0.379  0.377  0.513
## ObjctvE:SAB  0.351  0.349  0.474  0.446
```

Question Sets

The question set is a set of questions which are randomly delivered to the students. The questions in each question set cover the same learning outcome and should be equally difficult.

The average percentages correct for question sets are shown in Table 5 and Figure 5. Among all the 21 question sets, question set I has the highest correct percentage. C is the hardest question set which has the lowest average score.

Qset	LO	#Qn	Overall	CD	AB
I	D	2	72.00	80.00	64.00
J	D	4	61.00	64.00	58.00
B	A	4	51.00	54.00	48.00
A	A	4	46.00	48.00	44.00
E	B	1	41.00	42.00	40.00
M	F	5	29.00	22.00	36.00
U	G	5	29.00	32.00	26.00
F	B	1	28.00	20.00	36.00
S	G	5	26.00	26.00	26.00
H	C	1	24.00	24.00	24.00
R	G	5	24.00	30.00	18.00
Q	F	5	23.00	16.00	30.00
L	E	9	22.67	22.00	23.33
G	C	1	20.00	20.00	20.00
N	F	5	19.00	20.00	18.00
O	F	5	18.00	22.00	14.00
T	G	5	16.00	16.00	16.00
K	E	9	14.67	19.33	10.00
P	F	5	11.00	16.00	6.00
C	A	4	0.00	0.00	0.00
D	A	4	0.00	0.00	0.00

Table 5: Average percentages correct for each question set by section. The question sets are sorted by the section means. The second column indicates the corresponding learning outcomes.

Table 6 presents the standard deviation of the question correct rates by question set and section.

Qset	LO	#Qn	Overall	CD	AB
I	D	2	9.17	1.13	1.18
J	D	4	13.12	13.15	14.74
B	A	4	15.24	14.85	17.26
A	A	4	10.50	11.89	9.74

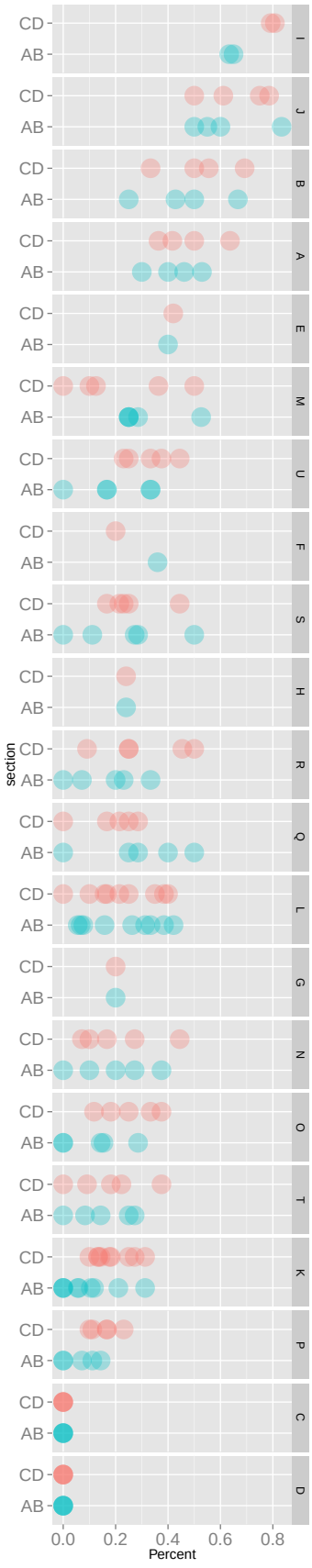


Figure 5: Scatterplot of Correct Percentage by Question Set.

E	B	1	1.41	0.00	0.00
M	F	5	16.71	20.67	12.06
U	G	5	12.88	8.85	13.94
F	B	1	11.31	0.00	0.00
S	G	5	14.62	10.70	19.03
H	C	1	0.00	0.00	0.00
R	G	5	16.07	16.75	13.21
Q	F	5	15.58	11.15	18.83
L	E	9	13.54	13.54	14.35
G	C	1	0.00	0.00	0.00
N	F	5	14.09	15.17	14.61
O	F	5	12.83	10.57	12.03
T	G	5	12.18	14.14	11.41
K	E	9	10.09	7.28	10.68
P	F	5	7.29	5.24	6.46
C	A	4	0.00	0.00	0.00
D	A	4	0.00	0.00	0.00

Table 6: Standard deviations of the percentages correct by section. The second column indicates the corresponding learning outcomes. The third column gives the number of questions in each question set.

Questions

Table 7 compares the performance on each question.

ID	LO	Qset	Name	Type	FullPt	QinSet	N	CrtPct	Count	NA's	Mean	Std	Flag
1	A	A	1	MC	1	1	4	46.15	26	74	0.46	0.51	
2	A	A	2	MC	1	1	4	54.17	24	76	0.54	0.51	*
3	A	A	3	MC	1	1	4	36.36	22	78	0.36	0.49	*
4	A	A	4	MC	1	1	4	46.43	28	72	0.46	0.51	
5	A	B	1	MC	1	1	4	50.00	32	68	0.50	0.51	
6	A	B	2	MC	1	1	4	50.00	26	74	0.50	0.51	
7	A	B	3	MC	1	1	4	52.38	21	79	0.52	0.51	
8	A	B	4	MC	1	1	4	52.38	21	79	0.52	0.51	
9	A	C	1	FB	1	1	4	0.00	23	77	0.00	0.00	
10	A	C	2	FB	1	1	4	0.00	27	73	0.00	0.00	
11	A	C	3	FB	1	1	4	0.00	23	77	0.00	0.00	
12	A	C	4	FB	1	1	4	0.00	27	73	0.00	0.00	
13	A	D	1	FB	1	1	4	0.00	20	80	0.00	0.00	
14	A	D	2	FB	1	1	4	0.00	27	73	0.00	0.00	
15	A	D	3	FB	1	1	4	0.00	24	76	0.00	0.00	
16	A	D	4	FB	1	1	4	0.00	29	71	0.00	0.00	
17	B	E	compare1	MC	1	1	1	41.00	100	0	0.41	0.49	
18	B	F	compare2	MC	1	1	1	28.00	100	0	0.28	0.45	
19	C	G	1	MC	1	1	1	20.00	100	0	0.20	0.40	
20	C	H	1	MC	1	1	1	24.00	100	0	0.24	0.43	
21	D	I	feet	TF	1	1	2	73.91	46	54	0.74	0.44	
22	D	I	lowtemp	TF	1	1	2	70.37	54	46	0.70	0.46	
23	D	J	gain	TF	1	1	4	60.71	28	72	0.61	0.50	*
24	D	J	mpg	TF	1	1	4	80.00	10	90	0.80	0.42	*
25	D	J	blowhole	TF	1	1	4	64.29	28	72	0.64	0.49	*
26	D	J	CDs	TF	1	1	4	52.94	34	66	0.53	0.51	*
27	E	K	whale1	FB	1	3	9	25.71	35	65	0.26	0.44	*
28	E	K	whale2	FB	1	3	9	6.06	33	67	0.06	0.24	*
29	E	K	whale3	FB	1	3	9	14.71	34	66	0.15	0.36	
30	E	K	cow1	FB	1	3	9	17.65	34	66	0.18	0.39	

31	E	K	cow2	FB	1	3	9	7.89	38	62	0.08	0.27	*
32	E	K	cow3	FB	1	3	9	14.29	28	72	0.14	0.36	
33	E	K	bulbs1	FB	1	3	9	22.58	31	69	0.23	0.43	*
34	E	K	bulbs2	FB	1	3	9	9.68	31	69	0.10	0.30	*
35	E	K	bulbs3	FB	1	3	9	13.89	36	64	0.14	0.35	
36	E	L	heights1	MC	1	3	9	15.79	38	62	0.16	0.37	*
37	E	L	heights2	MC	1	3	9	15.79	38	62	0.16	0.37	*
38	E	L	heights3	MC	1	3	9	38.46	39	61	0.38	0.49	*
39	E	L	mm1	MC	1	3	9	3.33	30	70	0.03	0.18	*
40	E	L	mm2	MC	1	3	9	26.67	30	70	0.27	0.45	*
41	E	L	mm3	MC	1	3	9	17.95	39	61	0.18	0.39	*
42	E	L	IQ1	MC	1	3	9	36.36	33	67	0.36	0.49	*
43	E	L	IQ2	MC	1	3	9	28.00	25	75	0.28	0.46	*
44	E	L	IQ3	MC	1	3	9	21.43	28	72	0.21	0.42	*
45	F	M	mm1	MC	1	1	5	40.74	27	73	0.41	0.50	*
46	F	M	Bulb1	MC	1	1	5	16.67	18	82	0.17	0.38	*
47	F	M	IQ1	MC	1	1	5	31.58	19	81	0.32	0.48	*
48	F	M	Whale1	MC	1	1	5	41.18	17	83	0.41	0.51	*
49	F	M	Cow1	MC	1	1	5	10.53	19	81	0.11	0.32	*
50	F	N	mm2	MC	1	1	5	22.22	18	82	0.22	0.43	*
51	F	N	Bulb2	MC	1	1	5	5.88	17	83	0.06	0.24	*
52	F	N	IQ2	MC	1	1	5	27.27	22	78	0.27	0.46	*
53	F	N	Whale2	MC	1	1	5	26.32	19	81	0.26	0.45	*
54	F	N	Cow2	MC	1	1	5	12.50	24	76	0.12	0.34	
55	F	O	mm3	MC	1	1	5	20.00	15	85	0.20	0.41	
56	F	O	Bulb3	MC	1	1	5	14.29	14	86	0.14	0.36	
57	F	O	IQ3	MC	1	1	5	8.00	25	75	0.08	0.28	*
58	F	O	Whale3	MC	1	1	5	24.00	25	75	0.24	0.44	*
59	F	O	Cow3	MC	1	1	5	23.81	21	79	0.24	0.44	*
60	F	P	mm4	MC	1	1	5	8.70	23	77	0.09	0.29	
61	F	P	Bulb4	MC	1	1	5	5.88	17	83	0.06	0.24	
62	F	P	IQ4	MC	1	1	5	20.00	20	80	0.20	0.41	
63	F	P	Whale4	MC	1	1	5	5.26	19	81	0.05	0.23	
64	F	P	Cow4	MC	1	1	5	14.29	21	79	0.14	0.36	
65	F	Q	mm5	MC	1	1	5	27.78	18	82	0.28	0.46	*
66	F	Q	Bulb5	MC	1	1	5	26.32	19	81	0.26	0.45	*
67	F	Q	IQ5	MC	1	1	5	10.53	19	81	0.11	0.32	*
68	F	Q	Whale5	MC	1	1	5	27.27	11	89	0.27	0.47	*

69	F	Q	Cow5	MC	1	1	5	24.24	33	67	0.24	0.44	
70	G	R	mm1	MC	1	1	5	33.33	21	79	0.33	0.48	*
71	G	R	Bulb1	MC	1	1	5	22.73	22	78	0.23	0.43	
72	G	R	IQ1	MC	1	1	5	16.67	12	88	0.17	0.39	*
73	G	R	Whale1	MC	1	1	5	24.00	25	75	0.24	0.44	
74	G	R	Cow1	MC	1	1	5	20.00	20	80	0.20	0.41	
75	G	S	mm2	MC	1	1	5	35.71	28	72	0.36	0.49	*
76	G	S	Bulb2	MC	1	1	5	23.53	17	83	0.24	0.44	
77	G	S	IQ2	MC	1	1	5	13.64	22	78	0.14	0.35	*
78	G	S	Whale2	MC	1	1	5	27.78	18	82	0.28	0.46	
79	G	S	Cow2	MC	1	1	5	26.67	15	85	0.27	0.46	
80	G	T	mm3	MC	1	1	5	18.18	22	78	0.18	0.39	
81	G	T	Bulb3	MC	1	1	5	31.25	16	84	0.31	0.48	*
82	G	T	IQ3	MC	1	1	5	8.00	25	75	0.08	0.28	*
83	G	T	Whale3	MC	1	1	5	12.50	16	84	0.12	0.34	*
84	G	T	Cow3	MC	1	1	5	14.29	21	79	0.14	0.36	*
85	G	U	mm4	MC	1	1	5	16.67	18	82	0.17	0.38	*
86	G	U	Bulb4	MC	1	1	5	35.00	20	80	0.35	0.49	*
87	G	U	IQ4	MC	1	1	5	33.33	33	67	0.33	0.48	*
88	G	U	Whale4	MC	1	1	5	21.43	14	86	0.21	0.43	
89	G	U	Cow4	MC	1	1	5	33.33	15	85	0.33	0.49	*

Table 7: Summary statistics of each question

Below is the key for the question types.

MC/MU	Multiple Choice
MA	Matching
TF	True/False
FB	Fill in the Blank
CA	Calculation
JS	Jumbled Sentence

Summary of Questions

The description for each question is as follows:

(1) Question "T06.A.A.04.1.1.MC.1" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 26 out of the total of 100 students. The average score was 0.46 out of 1.

(Back to the question summary Table 7.)

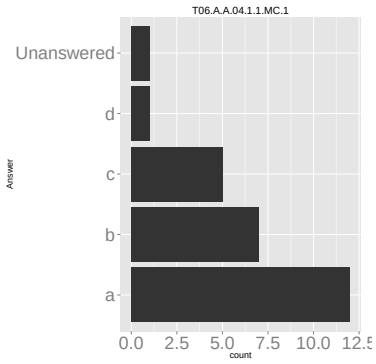
The z-score for a particular observation is z = 1.5. This means the observation is

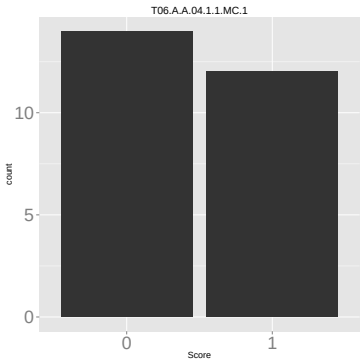
*a. 1.5 standard deviations above the mean.

b. 1.5 standard deviations below the mean.

c. 1.5 units above the mean.

d. 1.5 units below the mean.





Answer	Count
a	12
b	7
c	5
d	1
Unanswered	1

Summary	Value
Mean	0.46
Std.dev	0.51
Min	0.00
Median	0.00
Max	1.00

(2) Question "To6.A.A.04.1.1.MC.2" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 24 out of the total of 100 students. The average score was 0.54 out of 1.

(Back to the question summary Table 7.)

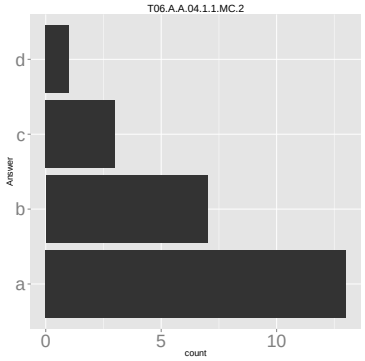
The z-score for a particular observation is z = 0.4. This means the observation is

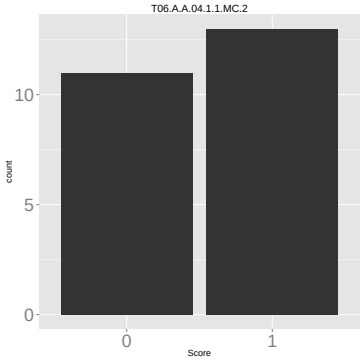
*a. 0.4 standard deviations above the mean.

b. 0.4 standard deviations below the mean.

c. 0.4 units above the mean.

d. 0.4 units below the mean.





Answer	Count
a	13
b	7
c	3
d	1

Summary	Value
Mean	0.54
Std.dev	0.51
Min	0.00
Median	1.00
Max	1.00

(3) Question "To6.A.A.04.1.1.MC.3" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 22 out of the total of 100 students. The average score was 0.36 out of 1.

(Back to the question summary Table 7.)

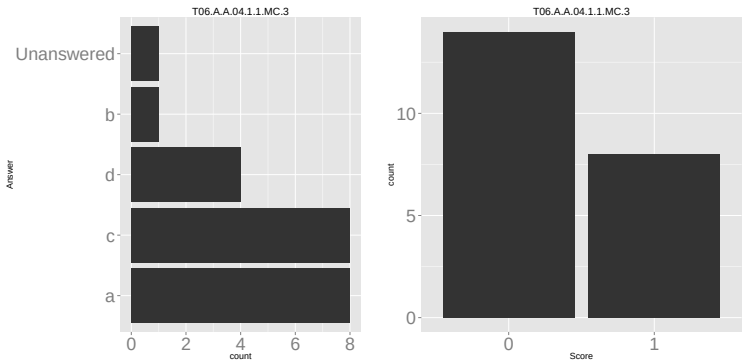
The z-score for a particular observation is z = 2.3. This means the observation is

*a. 2.3 standard deviations above the mean.

b. 2.3 standard deviations below the mean.

c. 2.3 units above the mean.

d. 2.3 units below the mean.



Answer	Count
a	8
c	8
d	4
b	1
Unanswered	1

Summary	Value
Mean	0.36
Std.dev	0.49
Min	0.00
Median	0.00
Max	1.00

(4) Question "To6.A.A.04.1.1.MC.4" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 28 out of the total of 100 students. The average score was 0.46 out of 1.

(Back to the question summary Table 7.)

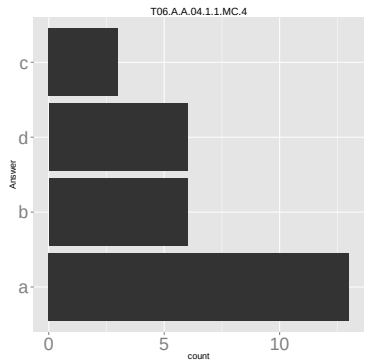
The z-score for a particular observation is z = 3.4. This means the observation is

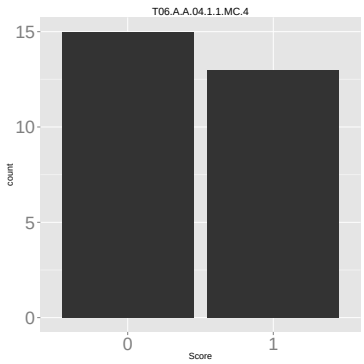
*a. 3.4 standard deviations above the mean.

b. 3.4 standard deviations below the mean.

c. 3.4 units above the mean.

d. 3.4 units below the mean.





Answer	Count
a	13
b	6
d	6
c	3

Summary	Value
Mean	0.46
Std.dev	0.51
Min	0.00
Median	0.00
Max	1.00

(5) Question "To6.A.B.04.1.1.MC.1" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 32 out of the total of 100 students. The average score was 0.5 out of 1.

(Back to the question summary Table 7.)

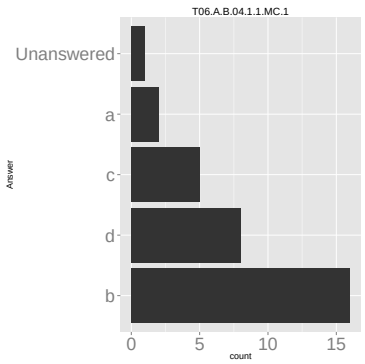
The z-score for a particular observation is z = -1.2. This means the observation is

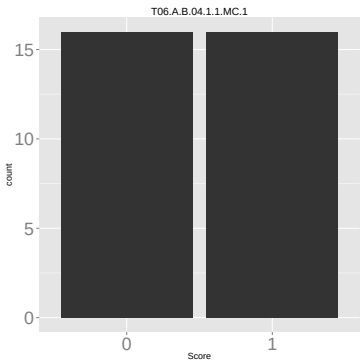
a. 1.2 standard deviations above the mean.

*b. 1.2 standard deviations below the mean.

c. 1.2 units above the mean.

d. 1.2 units below the mean.





Answer	Count
b	16
d	8
c	5
a	2
Unanswered	1

Summary	Value
Mean	0.50
Std.dev	0.51
Min	0.00
Median	0.50
Max	1.00

(6) Question "To6.A.B.04.1.1.MC.2" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 26 out of the total of 100 students. The average score was 0.5 out of 1.

(Back to the question summary Table 7.)

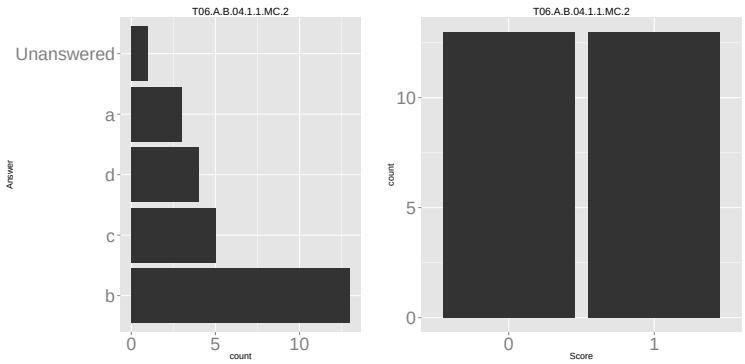
The z-score for a particular observation is z = -0.8. This means the observation is

a. 0.8 standard deviations above the mean.

*b. 0.8 standard deviations below the mean.

c. 0.8 units above the mean.

d. 0.8 units below the mean.



Answer	Count
b	13
c	5
d	4
a	3
Unanswered	1

Summary	Value
Mean	0.50
Std.dev	0.51
Min	0.00
Median	0.50
Max	1.00

(7) Question "To6.A.B.04.1.1.MC.3" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 21 out of the total of 100 students. The average score was 0.52 out of 1.

(Back to the question summary Table 7.)

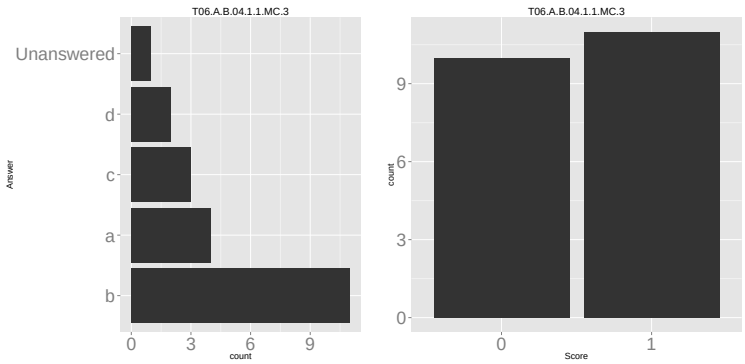
The z-score for a particular observation is z = -2.7. This means the observation is

a. 2.7 standard deviations above the mean.

*b. 2.7 standard deviations below the mean.

c. 2.7 units above the mean.

d. 2.7 units below the mean.



Answer	Count
b	11
a	4
c	3
d	2
Unanswered	1

Summary	Value
Mean	0.52
Std.dev	0.51
Min	0.00
Median	1.00
Max	1.00

(8) Question "To6.A.B.04.1.1.MC.4" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 21 out of the total of 100 students. The average score was 0.52 out of 1.

(Back to the question summary Table 7.)

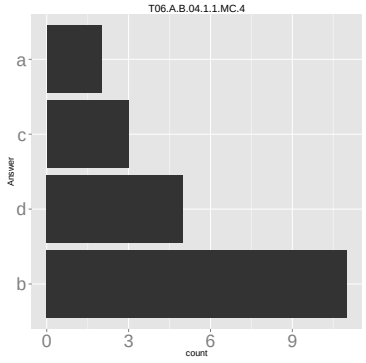
The z-score for a particular observation is z = -3.1. This means the observation is

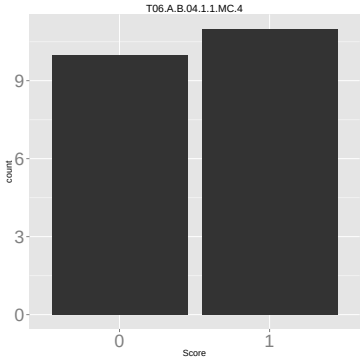
a. 3.1 standard deviations above the mean.

*b. 3.1 standard deviations below the mean.

c. 3.1 units above the mean.

d. 3.1 units below the mean.





Answer	Count
b	11
d	5
c	3
a	2

Summary	Value
Mean	0.52
Std.dev	0.51
Min	0.00
Median	1.00
Max	1.00

(9) Question "T06.A.C.04.1.1.FB.1" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 23 out of the total of 100 students. The average score was 0 out of 1.

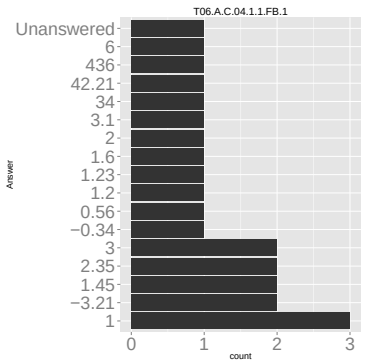
(Back to the question summary Table 7.)

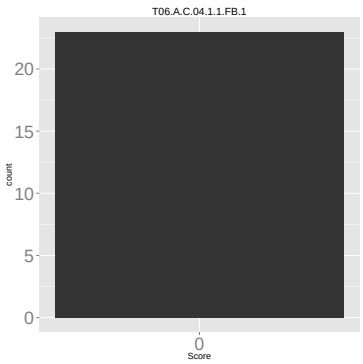
In a sample of 25 male newborns, the mean birth weight was 3.4 kg and the standard deviation was 0.35 kg.

The z-score for a birth weight of 4.5 kg is _____. Round your answer to 2 decimal places.

Correct Answer(s):

a. 3.14
b. 3.15
c. 3.13





Answer	Count
1	3
-3.21	2
1.45	2
2.35	2
3	2
-0.34	1
0.56	1
1.2	1
1.23	1
1.6	1
2	1
3.1	1
34	1
42.21	1
436	1
6	1
Unanswered	1

Summary	Value
Mean	0.00
Std.dev	0.00
Min	0.00
Median	0.00
Max	0.00

(10) Question "To6.A.C.04.1.1.FB.2" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 27 out of the total of 100 students. The average score was 0 out of 1.

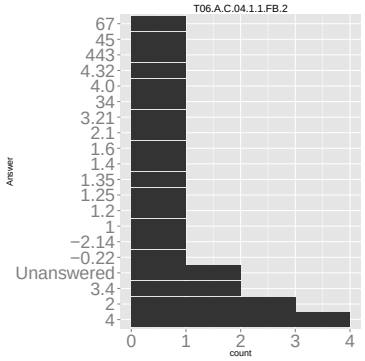
(Back to the question summary Table 7.)

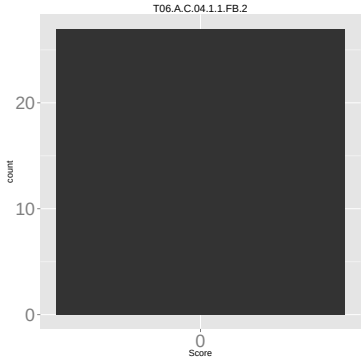
In a sample of 25 male newborns, the mean birth weight was 3.4 kg and the standard deviation was 0.35 kg.

The z-score for a birth weight of 4.0 kg is _____. Round your answer to 2 decimal places.

Correct Answer(s):

a. 1.71
b. 1.72
c. 1.70
d. 1.7





Answer	Count
4	4
2	3
3.4	2
Unanswered	2
-0.22	1
-2.14	1
1	1
1.2	1
1.25	1
1.35	1
1.4	1
1.6	1
2.1	1
3.21	1
34	1
4.0	1
4.32	1
443	1
45	1
67	1

Summary	Value
Mean	0.00
Std.dev	0.00
Min	0.00
Median	0.00
Max	0.00

(11) Question "T06.A.C.04.1.1.FB.3" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 23 out of the total of 100 students. The average score was 0 out of 1.

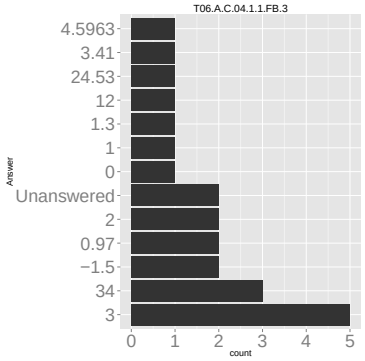
(Back to the question summary Table 7.)

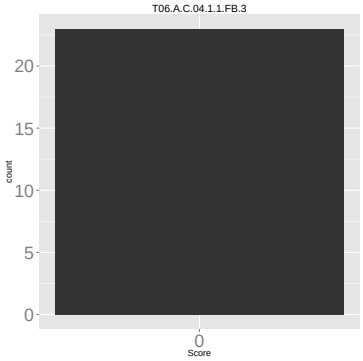
In a sample of 25 male newborns, the mean birth weight was 3.4 kg and the standard deviation was 0.35 kg.

The z-score for a birth weight of 4.2 kg is _____. Round your answer to 2 decimal places.

Correct Answer(s):

a. 2.28
b. 2.29
c. 2.27





Answer	Count
3	5
34	3
-1.5	2
0.97	2
2	2
Unanswered	2
0	1
1	1
1.3	1
12	1
24.53	1
3.41	1
4.5963	1

Summary	Value
Mean	0.00
Std.dev	0.00
Min	0.00
Median	0.00
Max	0.00

(12) Question "T06.A.C.04.1.1.FB.4" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 27 out of the total of 100 students. The average score was 0 out of 1.

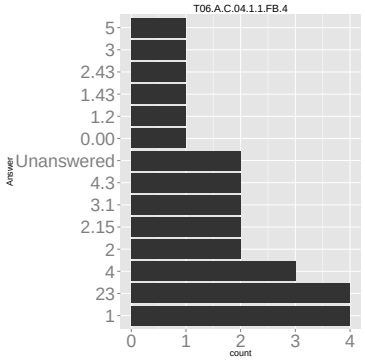
(Back to the question summary Table 7.)

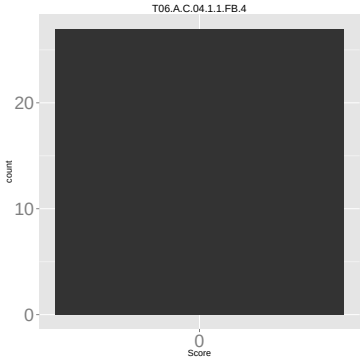
In a sample of 25 male newborns, the mean birth weight was 3.4 kg and the standard deviation was 0.35 kg.

The z-score for a birth weight of 4.3 kg is _____. Round your answer to 2 decimal places.

Correct Answer(s):

a. 2.57
b. 2.56
c. 2.58





Answer	Count
1	4
23	4
4	3
2	2
2.15	2
3.1	2
4.3	2
Unanswered	2
0.00	1
1.2	1
1.43	1
2.43	1
3	1
5	1

Summary	Value
Mean	0.00
Std.dev	0.00
Min	0.00
Median	0.00
Max	0.00

(13) Question "T06.A.D.04.1.1.FB.1" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 20 out of the total of 100 students. The average score was 0 out of 1.

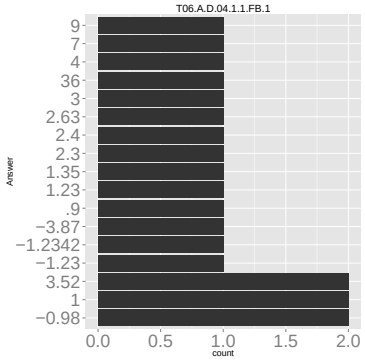
(Back to the question summary Table 7.)

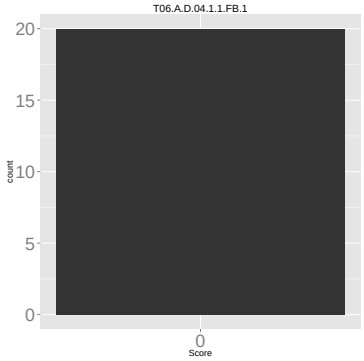
In a sample of 25 male newborns, the mean birth weight was 3.4 kg and the standard deviation was 0.35 kg.

The z-score for a birth weight of 2.3 kg is _____. Round your answer to 2 decimal places.

Correct Answer(s):

a. -3.14
b. -3.13
c. -3.15





Answer	Count
-0.98	2
1	2
3.52	2
-1.23	1
-1.2342	1
-3.87	1
.9	1
1.23	1
1.35	1
2.3	1
2.4	1
2.63	1
3	1
36	1
4	1
7	1
9	1

Summary	Value
Mean	0.00
Std.dev	0.00
Min	0.00
Median	0.00
Max	0.00

(14) Question "T06.A.D.04.1.1.FB.2" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 27 out of the total of 100 students. The average score was 0 out of 1.

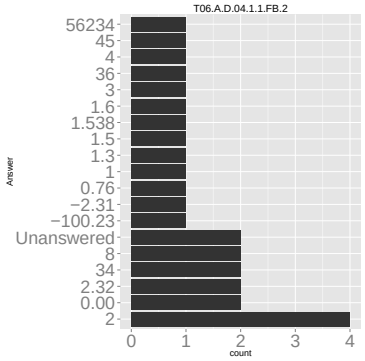
(Back to the question summary Table 7.)

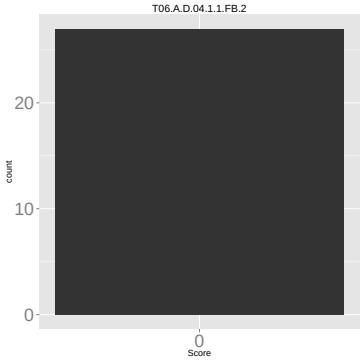
In a sample of 25 male newborns, the mean birth weight was 3.4 kg and the standard deviation was 0.35 kg.

The z-score for a birth weight of 2.5 kg is _____. Round your answer to 2 decimal places.

Correct Answer(s):

a. -2.57
b. -2.58
c. -2.56





Answer	Count
2	4
0.00	2
2.32	2
34	2
8	2
Unanswered	2
-100.23	1
-2.31	1
0.76	1
1	1
1.3	1
1.5	1
1.538	1
1.6	1
3	1
36	1
4	1
45	1
56234	1

Summary	Value
Mean	0.00
Std.dev	0.00
Min	0.00
Median	0.00
Max	0.00

(15) Question "To6.A.D.04.1.1.FB.3" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 24 out of the total of 100 students. The average score was 0 out of 1.

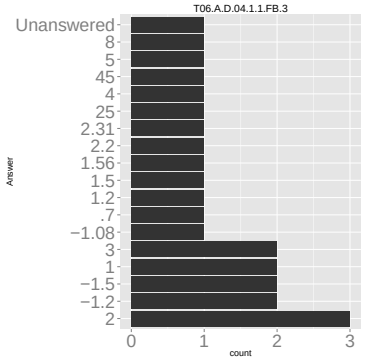
(Back to the question summary Table 7.)

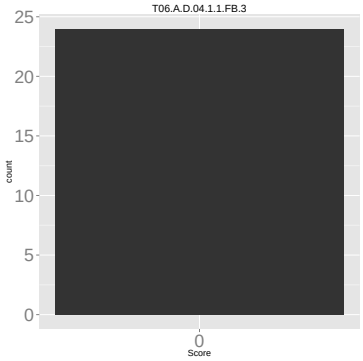
In a sample of 25 male newborns, the mean birth weight was 3.4 kg and the standard deviation was 0.35 kg.

The z-score for a birth weight of 2.2 kg is _____. Round your answer to 2 decimal places.

Correct Answer(s):

a. -3.43
b. -3.44
c. -3.42





Answer	Count
2	3
-1.2	2
-1.5	2
1	2
3	2
-1.08	1
.7	1
1.2	1
1.5	1
1.56	1
2.2	1
2.31	1
25	1
4	1
45	1
5	1
8	1
Unanswered	1

Summary	Value
Mean	0.00
Std.dev	0.00
Min	0.00
Median	0.00
Max	0.00

(16) Question "To6.A.D.04.1.1.FB.4" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 29 out of the total of 100 students. The average score was 0 out of 1.

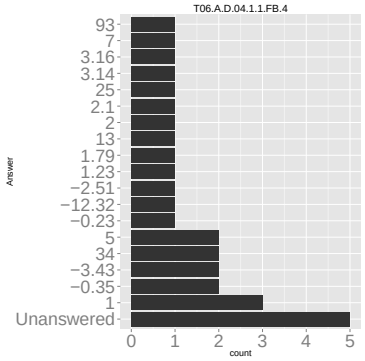
(Back to the question summary Table 7.)

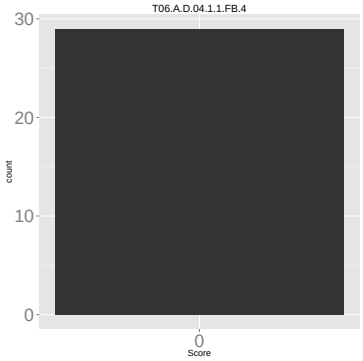
In a sample of 25 male newborns, the mean birth weight was 3.4 kg and the standard deviation was 0.35 kg.

The z-score for a birth weight of 2.8 kg is _____. Round your answer to 2 decimal places.

Correct Answer(s):

a. -1.71
b. -1.72
c. -1.70
d. -1.7





Answer	Count
Unanswered	5
1	3
-0.35	2
-3.43	2
34	2
5	2
-0.23	1
-12.32	1
-2.51	1
1.23	1
1.79	1
13	1
2	1
2.1	1
25	1
3.14	1
3.16	1
7	1
93	1

Summary	Value
Mean	0.00
Std.dev	0.00
Min	0.00
Median	0.00
Max	0.00

(17) Question "To6.B.E.01.1.1.MC.compare1" is given on the right. This question was selected from the question set with a frequency of 1. The question was administered to 100 out of the total of 100 students. The average score was 0.41 out of 1.

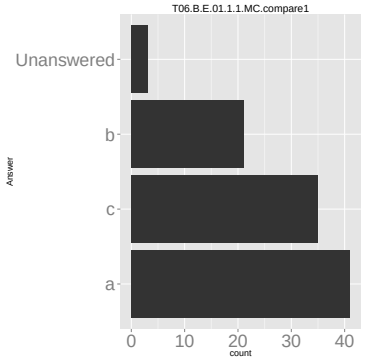
(Back to the question summary Table 7.)

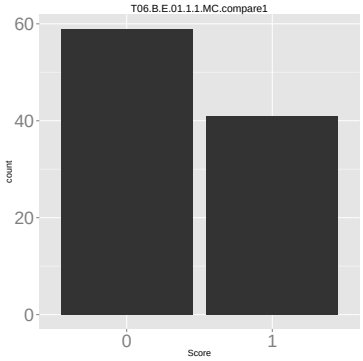
The height of adult women is thought to have a mean of 65 inches and a standard deviation of 2.5 inches. The height of adult men is thought to have a mean of 71 inches and a standard deviation of 3 inches. In the same family, the son is 73 inches tall and the daughter is 67 inches tall. Who is taller among their gender, the son or daughter?

*a. The daughter

b. The son

c. The daughter and son are the same height within their gender.





Answer	Count
a	41
c	35
b	21
Unanswered	3

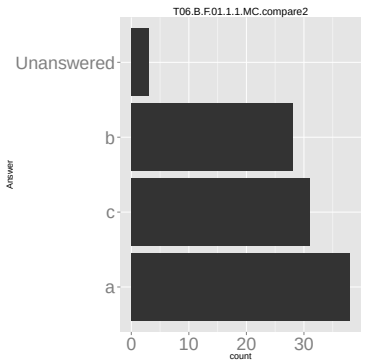
Summary	Value
Mean	0.41
Std.dev	0.49
Min	0.00
Median	0.00
Max	1.00

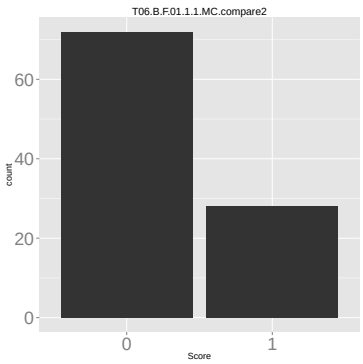
(18) Question "To6.B.F.01.1.1.MC.compare2" is given on the right. This question was selected from the question set with a frequency of 1. The question was administered to 100 out of the total of 100 students. The average score was 0.28 out of 1.

(Back to the question summary Table 7.)

The height of adult women is thought to have a mean of 65 inches and a standard deviation of 2.5 inches. The height of adult men is thought to have a mean of 71 inches and a standard deviation of 3 inches. In the same family, the son is 67 inches tall and the daughter is 59 inches tall. Who is taller among their gender, the son or daughter?

a. The daughter
*b. The son
c. The daughter and son are the same height within their gender.





Answer	Count
a	38
c	31
b	28
Unanswered	3

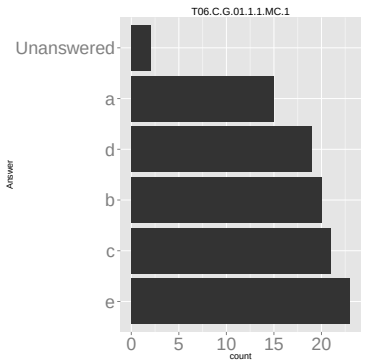
Summary	Value
Mean	0.28
Std.dev	0.45
Min	0.00
Median	0.00
Max	1.00

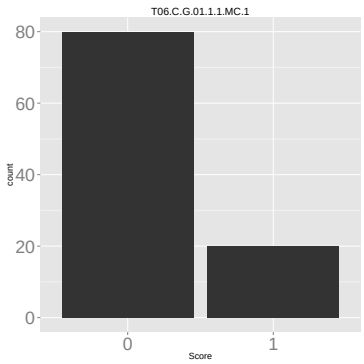
(19) Question "T06.C.G.01.1.1.MC.1" is given on the right. This question was selected from the question set with a frequency of 1. The question was administered to 100 out of the total of 100 students. The average score was 0.2 out of 1.

(Back to the question summary Table 7.)

Standardizing makes the following change(s) to a distribution: I. Shifts the distribution by subtracting the mean. II. Rescales the distribution by dividing by the standard deviation. III. Changes the skewness or symmetry of the distribution. IV. Creates outliers.

a. I, II, and III
*b. I and II
c. III and IV
d. II and III
e. I, II and IV





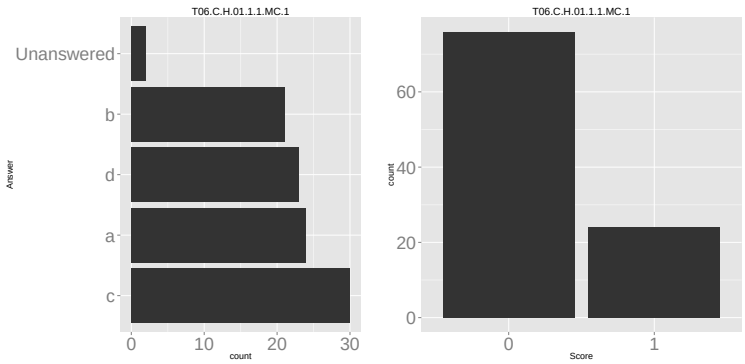
Answer	Count
e	23
c	21
b	20
d	19
a	15
Unanswered	2

Summary	Value
Mean	0.20
Std.dev	0.40
Min	0.00
Median	0.00
Max	1.00

(20) Question "T06.C.H.01.1.1.MC.1" is given on the right. This question was selected from the question set with a frequency of 1. The question was administered to 100 out of the total of 100 students. The average score was 0.24 out of 1.

(Back to the question summary Table 7.)

Which part of the distribution is NOT affected by standardizing?
*a. shape
b. median
c. IQR
d. range

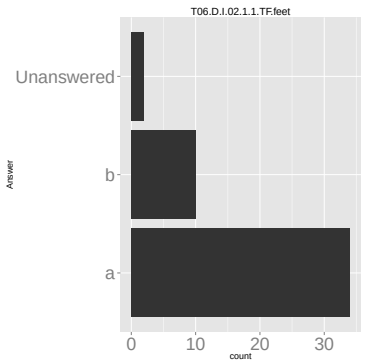


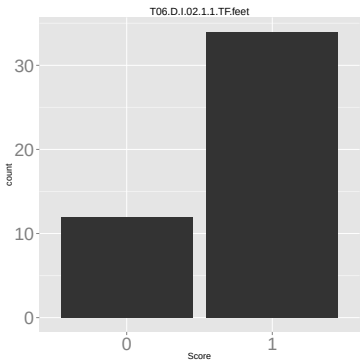
Answer	Count
c	30
a	24
d	23
b	21
Unanswered	2

Summary	Value
Mean	0.24
Std.dev	0.43
Min	0.00
Median	0.00
Max	1.00

(21) Question "T06.D.I.02.1.1.TF.feet" is given on the right. This question was selected from the question set with a frequency of 0.5. The question was administered to 46 out of the total of 100 students. The average score was 0.74 out of 1.

(Back to the question summary Table 7.)

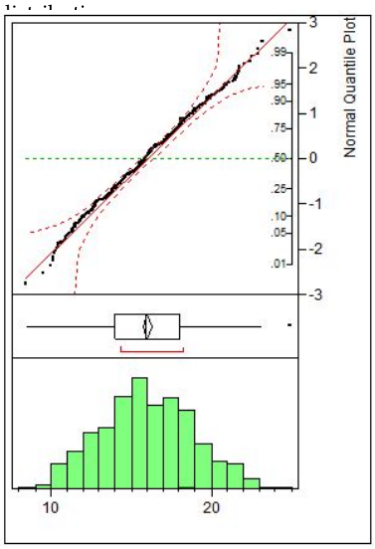




Answer	Count
a	34
b	10
Unanswered	2

Summary	Value
Mean	0.74
Std.dev	0.44
Min	0.00
Median	1.00
Max	1.00

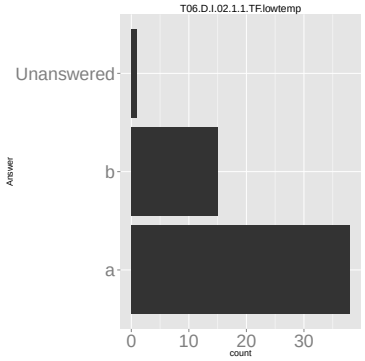
NBA players tend to have very large feet. The following plots display what these shoe sizes may hypothetically look like. Based on the output, it is reasonable to model the distribution of NBA players shoe sizes with a normal

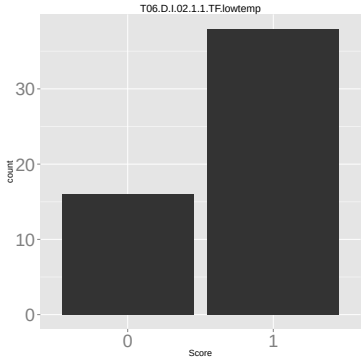


*a. True
b. False

(22) Question "To6.D.I.02.1.1.TF.lowtemp" is given on the right. This question was selected from the question set with a frequency of 0.5. The question was administered to 54 out of the total of 100 students. The average score was 0.7 out of 1.

(Back to the question summary Table 7.)

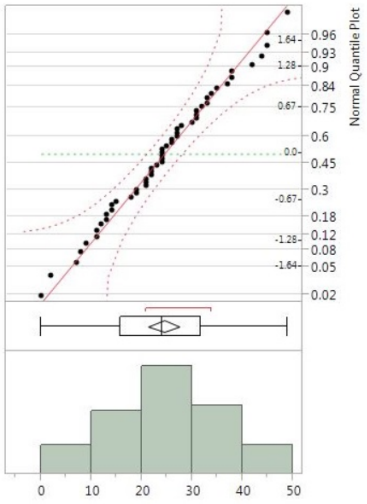




Answer	Count
a	38
b	15
Unanswered	1

Summary	Value
Mean	0.70
Std.dev	0.46
Min	0.00
Median	1.00
Max	1.00

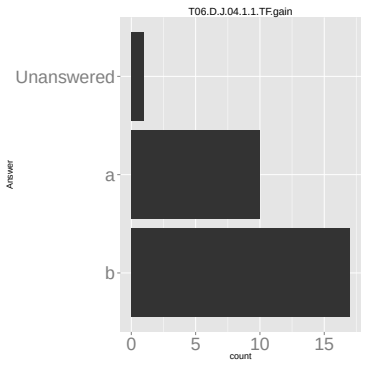
Below is the distribution of low temperatures (in degrees F) for 52 cities in the U.S. Based on the output, it is reasonable to model the distribution of low temperature for these cities with a normal distribution.

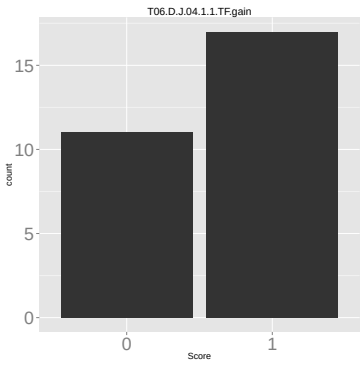


*a. True
b. False

(23) Question "T06.D.J.04.1.1.TF.gain" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 28 out of the total of 100 students. The average score was 0.61 out of 1.

(Back to the question summary Table 7.)



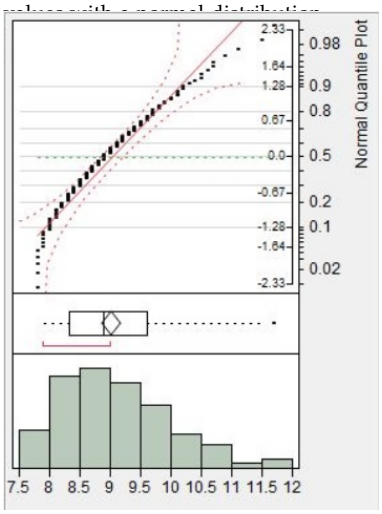


Answer	Count
b	17
a	10
Unanswered	1

Summary	Value
Mean	0.61
Std.dev	0.50
Min	0.00
Median	1.00
Max	1.00

The distribution of the gain of 120 different amplifiers is depicted below.

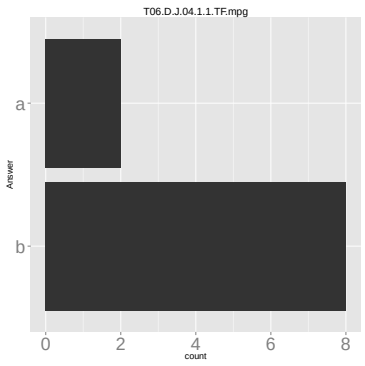
Based on the output, it is reasonable to model the distribution of amplifier

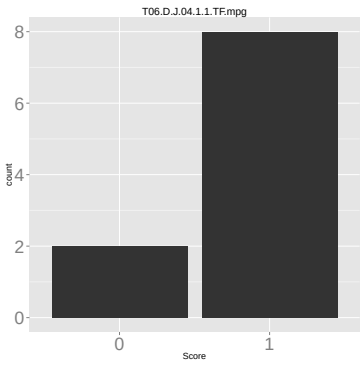


a. True
*b. False

(24) Question "To6.D.J.04.1.1.TF.mpg" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 10 out of the total of 100 students. The average score was 0.8 out of 1.

(Back to the question summary Table 7.)

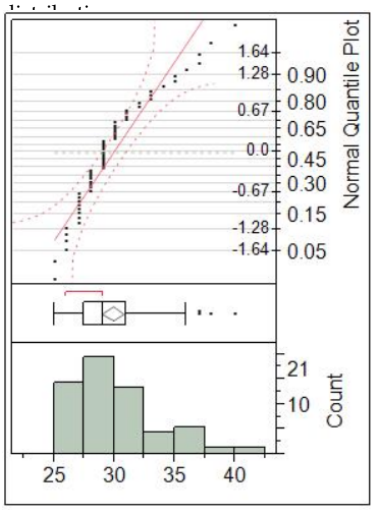




Answer	Count
b	8
a	2

Summary	Value
Mean	0.80
Std.dev	0.42
Min	0.00
Median	1.00
Max	1.00

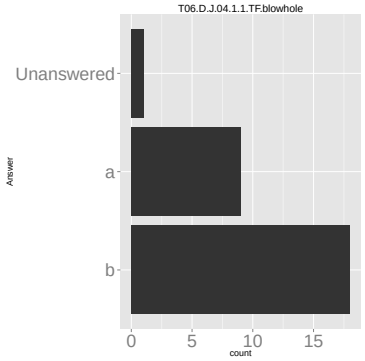
The distribution of estimated highway miles per gallon (mpg) for various makes and models of cars is given below. Based on the output, it is reasonable to model the distribution of highway mpg values with a normal

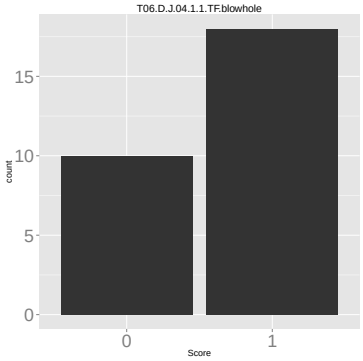


a. True
*b. False

(25) Question "To6.D.J.04.1.1.TF.blowhole" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 28 out of the total of 100 students. The average score was 0.64 out of 1.

(Back to the question summary Table 7.)



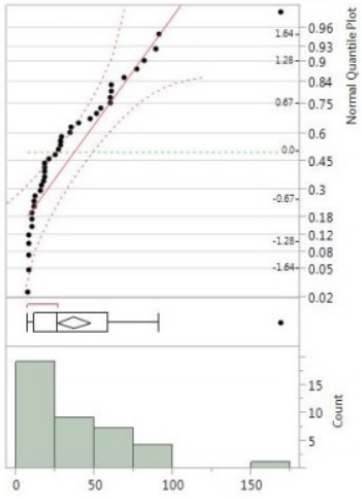


Answer	Count
b	18
a	9
Unanswered	1

Summary	Value
Mean	0.64
Std.dev	0.49
Min	0.00
Median	1.00
Max	1.00

A blowhole is a hole in a cliff that produces eruptions of water when the ocean swell hits the cliff. Below are 40 times (in seconds) between eruptions for the Kiama blowhole in Australia.

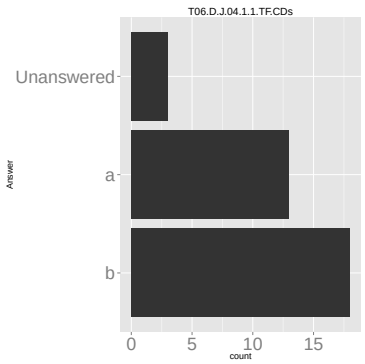
Based on the output, it is reasonable to model the distribution of times between eruptions with a normal

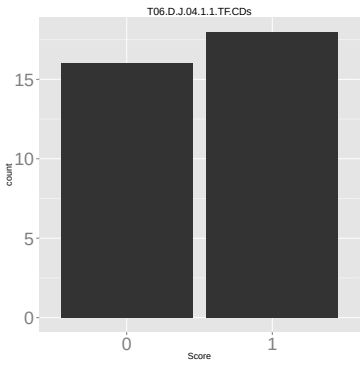


a. True
*b. False

(26) Question "To6.D.J.04.1.1.TF.CDs" is given on the right. This question was selected from the question set with a frequency of 0.25. The question was administered to 34 out of the total of 100 students. The average score was 0.53 out of 1.

(Back to the question summary Table 7.)

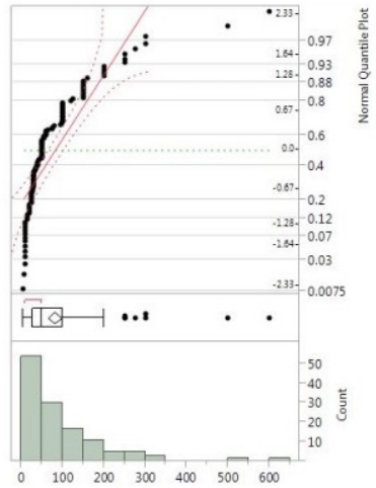




Answer	Count
b	18
a	13
Unanswered	3

Summary	Value
Mean	0.53
Std.dev	0.51
Min	0.00
Median	1.00
Max	1.00

A random sample of 120 students was selected from those students who completed the Stat 101 survey over the last 2 years. The survey asked the number of music CDs owned by each of these students. The histogram of the number of music CDs owned by the students is shown below. Based on the output, it is reasonable to model the distribution of the number of CDs owned by Stat 101 students with a normal distribution.



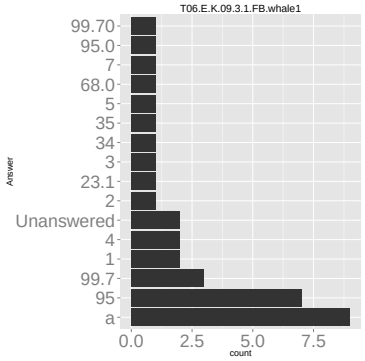
a. True
*b. False

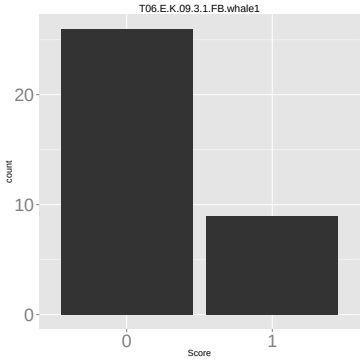
(27) Question "To6.E.K.09.3.1.FB.whale1" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 35 out of the total of 100 students. The average score was 0.26 out of 1.

(Back to the question summary Table 7.)

Fill in the blank with the correct number: Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. According to the Empirical Rule or 68-95-99.7 Rule, _____ percent of female humpback whales will have a length between 13.2 meters and 14.2 meters.

Correct Answer(s):
a. 68
b. 68%





Answer	Count
a	9
95	7
99.7	3
1	2
4	2
Unanswered	2
2	1
23.1	1
3	1
34	1
35	1
5	1
68.0	1
7	1
95.0	1
99.70	1

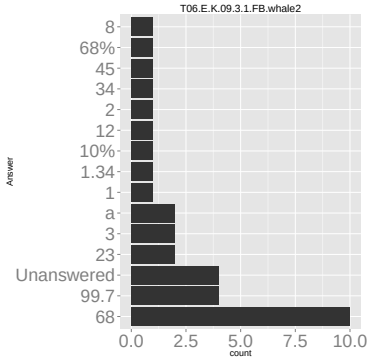
Summary	Value
Mean	0.26
Std.dev	0.44
Min	0.00
Median	0.00
Max	1.00

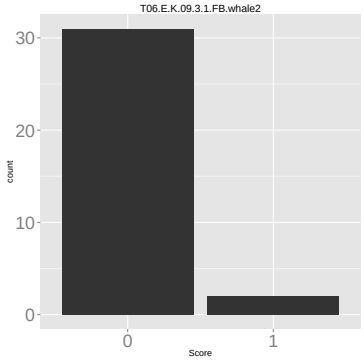
(28) Question "To6.E.K.09.3.1.FB.whale2" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 33 out of the total of 100 students. The average score was 0.06 out of 1.

(Back to the question summary Table 7.)

Fill in the blank with the correct number: Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. According to the Empirical Rule or 68-95-99.7 Rule, _____ percent of female humpback whales will have a length between 12.7 meters and 14.7 meters.

Correct Answer(s):
a. 95
b. 95%





Answer	Count
68	10
99.7	4
Unanswered	4
23	2
3	2
a	2
1	1
1.34	1
10%	1
12	1
2	1
34	1
45	1
68%	1
8	1

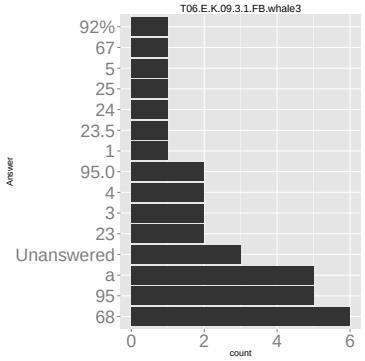
Summary	Value
Mean	0.06
Std.dev	0.24
Min	0.00
Median	0.00
Max	1.00

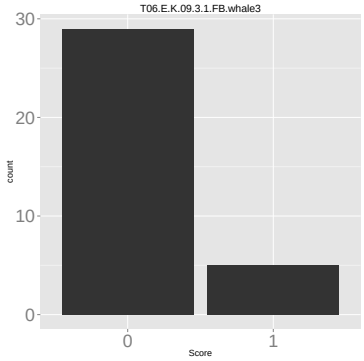
(29) Question "To6.E.K.09.3.1.FB.whale3" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 34 out of the total of 100 students. The average score was 0.15 out of 1.

(Back to the question summary Table 7.)

Fill in the blank with the correct number: Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. According to the Empirical Rule or 68-95-99.7 Rule, _____ percent of female humpback whales will have a length between 12.2 meters and 15.2 meters.

Correct Answer(s):
a. 99.7
b. 99.7%





Answer	Count
68	6
95	5
a	5
Unanswered	3
23	2
3	2
4	2
95.0	2
1	1
23.5	1
24	1
25	1
5	1
67	1
92%	1

Summary	Value
Mean	0.15
Std.dev	0.36
Min	0.00
Median	0.00
Max	1.00

(30) Question "T06.E.K.09.3.1.FB.cow1" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 34 out of the total of 100 students. The average score was 0.18 out of 1.

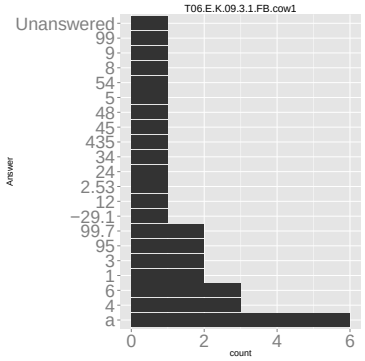
(Back to the question summary Table 7.)

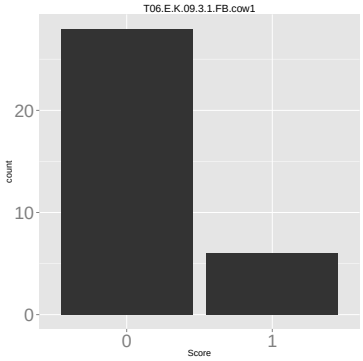
Fill in the blank with the correct number: Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. According to the Empirical Rule or 68-95-99.7 Rule, _____ percent of cows from this breed will weigh between 720 kg and 780 kg.

Correct Answer(s):

a. 68

b. 68%





Answer	Count
a	6
4	3
6	3
1	2
3	2
95	2
99.7	2
-29.1	1
12	1
2.53	1
24	1
34	1
435	1
45	1
48	1
5	1
54	1
8	1
9	1
99	1
Unanswered	1

Summary	Value
Mean	0.18
Std.dev	0.39
Min	0.00
Median	0.00
Max	1.00

(31) Question "T06.E.K.09.3.1.FB.cow2" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 38 out of the total of 100 students. The average score was 0.08 out of 1.

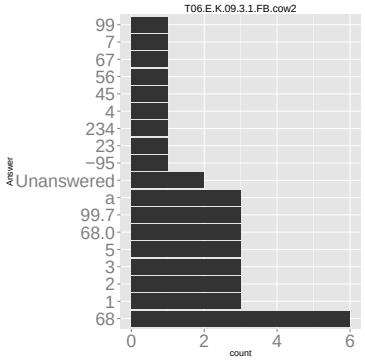
(Back to the question summary Table 7.)

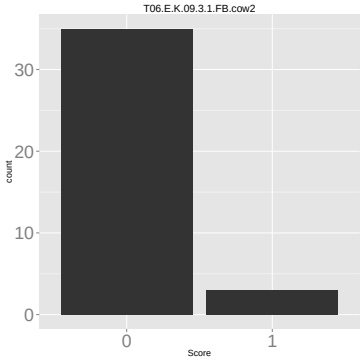
Fill in the blank with the correct number: Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. According to the Empirical Rule or 68-95-99.7 Rule, _____ percent of cows from this breed will weigh between 690 kg and 810 kg.

Correct Answer(s):

a. 95

b. 95%





Answer	Count
68	6
1	3
2	3
3	3
5	3
68.0	3
99.7	3
a	3
Unanswered	2
-95	1
23	1
234	1
4	1
45	1
56	1
67	1
7	1
99	1

Summary	Value
Mean	0.08
Std.dev	0.27
Min	0.00
Median	0.00
Max	1.00

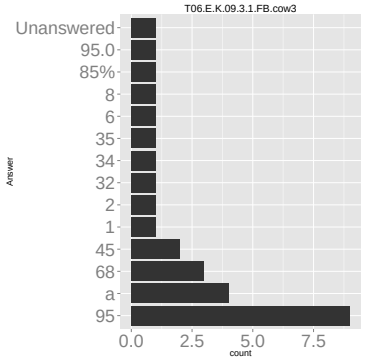
(32) Question "T06.E.K.09.3.1.FB.cow3" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 28 out of the total of 100 students. The average score was 0.14 out of 1.

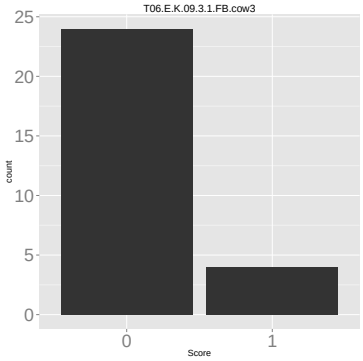
(Back to the question summary Table 7.)

Fill in the blank with the correct number: Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. According to the Empirical Rule or 68-95-99.7 Rule, _____ percent of cows from this breed will weigh between 660 kg and 840 kg.

Correct Answer(s):

a. 99.7
b. 99.7%





Answer	Count
95	9
a	4
68	3
45	2
1	1
2	1
32	1
34	1
35	1
6	1
8	1
85%	1
95.0	1
Unanswered	1

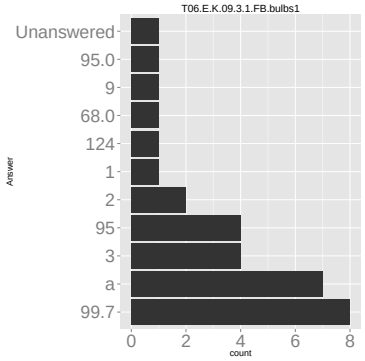
Summary	Value
Mean	0.14
Std.dev	0.36
Min	0.00
Median	0.00
Max	1.00

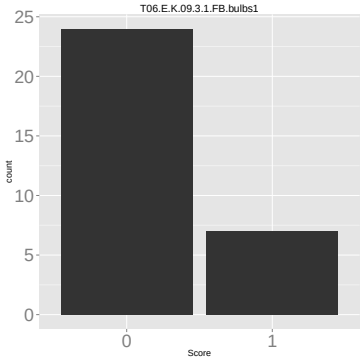
(33) Question "To6.E.K.09.3.1.FB.bulbs1" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 31 out of the total of 100 students. The average score was 0.23 out of 1.

(Back to the question summary Table 7.)

Fill in the blank with the correct number: Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. According to the Empirical Rule or 68-95-99.7 Rule, _____ percent of light bulbs made by Bright Inc. will last between 260 and 340 days.

Correct Answer(s):
a. 68
b. 68%





Answer	Count
99.7	8
a	7
3	4
95	4
2	2
1	1
124	1
68.0	1
9	1
95.0	1
Unanswered	1

Summary	Value
Mean	0.23
Std.dev	0.43
Min	0.00
Median	0.00
Max	1.00

(34) Question "To6.E.K.09.3.1.FB.bulbs2" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 31 out of the total of 100 students. The average score was 0.1 out of 1.

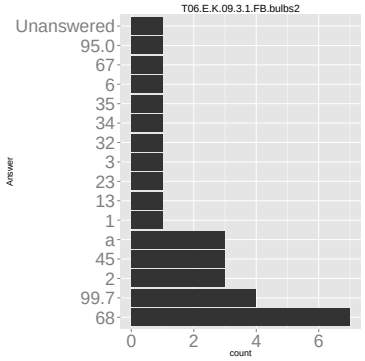
(Back to the question summary Table 7.)

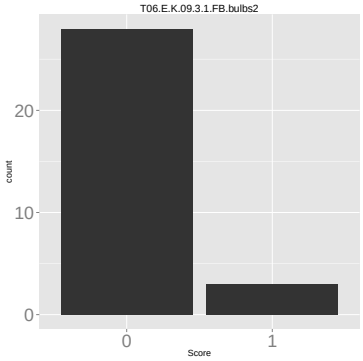
Fill in the blank with the correct number: Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. According to the Empirical Rule or 68-95-99.7 Rule, _____ percent of light bulbs made by Bright Inc. will last between 220 and 380 days.

Correct Answer(s):

a. 95

b. 95%





Answer	Count
68	7
99.7	4
2	3
45	3
a	3
1	1
13	1
23	1
3	1
32	1
34	1
35	1
6	1
67	1
95.0	1
Unanswered	1

Summary	Value
Mean	0.10
Std.dev	0.30
Min	0.00
Median	0.00
Max	1.00

(35) Question "To6.E.K.09.3.1.FB.bulbs3" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 36 out of the total of 100 students. The average score was 0.14 out of 1.

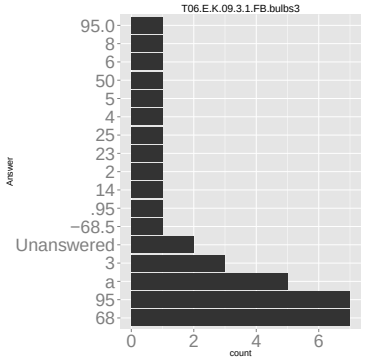
(Back to the question summary Table 7.)

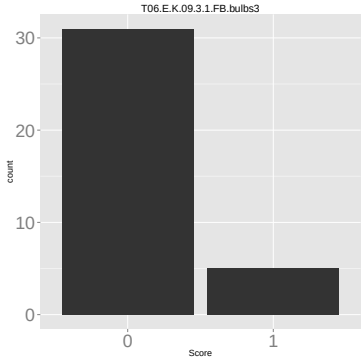
Fill in the blank with the correct number: Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. According to the Empirical Rule or 68-95-99.7 Rule, _____ percent of light bulbs made by Bright Inc. will last between 180 and 420 days.

Correct Answer(s):

a. 99.7

b. 99.7%





Answer	Count
68	7
95	7
a	5
3	3
Unanswered	2
-68.5	1
.95	1
14	1
2	1
23	1
25	1
4	1
5	1
50	1
6	1
8	1
95.0	1

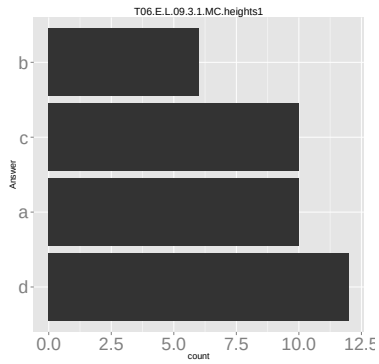
Summary	Value
Mean	0.14
Std.dev	0.35
Min	0.00
Median	0.00
Max	1.00

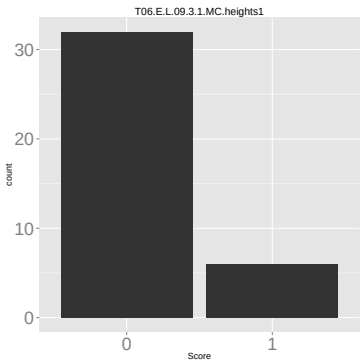
(36) Question "To6.E.L.09.3.1.MC.heights1" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 38 out of the total of 100 students. The average score was 0.16 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of the height of adult females can be modeled with a normal distribution with mean 66 inches and standard deviation 3 inches. According to the Empirical Rule or 68-95-99.7 Rule, the center 99.7% of all women will have heights between _____ and 75 inches.

a. 60
*b. 57
c. 63
d. 66





Answer	Count
d	12
a	10
c	10
b	6

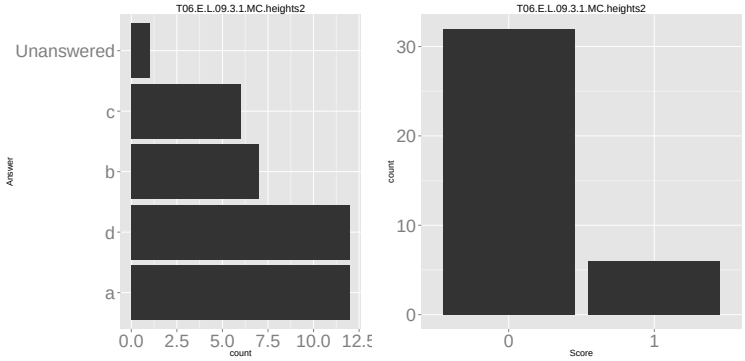
Summary	Value
Mean	0.16
Std.dev	0.37
Min	0.00
Median	0.00
Max	1.00

(37) Question "To6.E.L.09.3.1.MC.heights2" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 38 out of the total of 100 students. The average score was 0.16 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of the height of adult females can be modeled with a normal distribution with mean 66 inches and standard deviation 3 inches. According to the Empirical Rule or 68-95-99.7 Rule, the center 68% of all women will have heights between _____ and 69 inches.

a. 60
b. 57
*c. 63
d. 66



Answer	Count
a	12
d	12
b	7
c	6
Unanswered	1

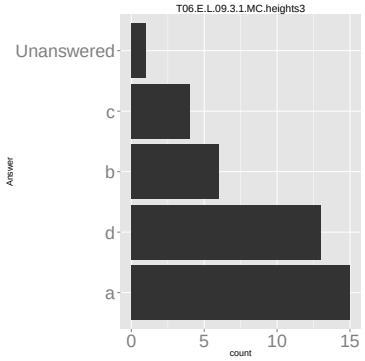
Summary	Value
Mean	0.16
Std.dev	0.37
Min	0.00
Median	0.00
Max	1.00

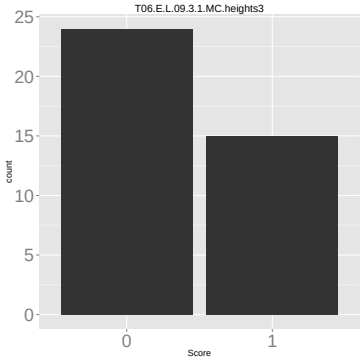
(38) Question "To6.E.L.09.3.1.MC.heights3" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 39 out of the total of 100 students. The average score was 0.38 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of the height of adult females can be modeled with a normal distribution with mean 66 inches and standard deviation 3 inches. According to the Empirical Rule or 68-95-99.7 Rule, the center 95% of all women will have heights between _____ and 72 inches.

*a. 60
b. 57
c. 63
d. 66





Answer	Count
a	15
d	13
b	6
c	4
Unanswered	1

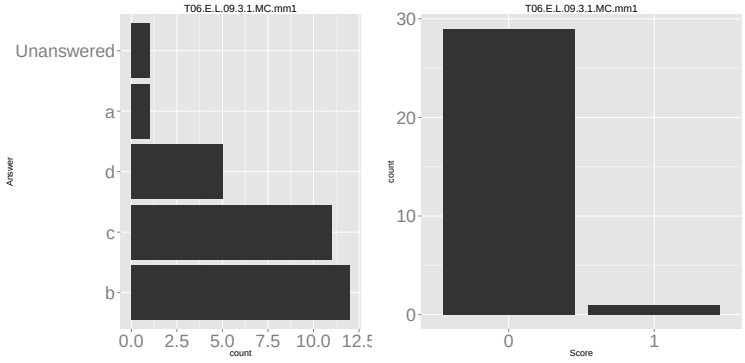
Summary	Value
Mean	0.38
Std.dev	0.49
Min	0.00
Median	0.00
Max	1.00

(39) Question "To6.E.L.09.3.1.MC.mm1" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 30 out of the total of 100 students. The average score was 0.03 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. According to the Empirical Rule or 68-95-99.7 rule, 99.7% of all M&M bags will have weights between _____ and 53 grams.

*a. 47
b. 48
c. 49
d. 50



Answer	Count
b	12
c	11
d	5
a	1
Unanswered	1

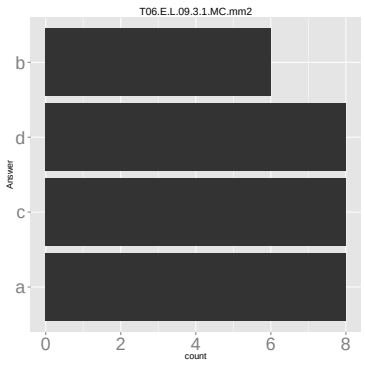
Summary	Value
Mean	0.03
Std.dev	0.18
Min	0.00
Median	0.00
Max	1.00

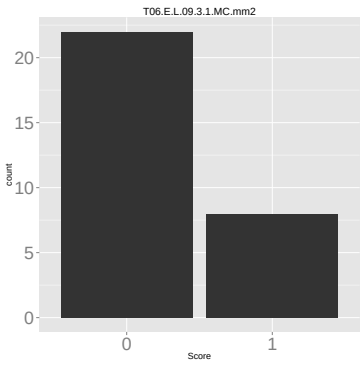
(40) Question "T06.E.L.09.3.1.MC.mm2" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 30 out of the total of 100 students. The average score was 0.27 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. According to the Empirical Rule or 68-95-99.7 rule, 68% of all M&M bags will have weights between _____ and 51 grams.

a. 47
b. 48
*c. 49
d. 50





Answer	Count
a	8
c	8
d	8
b	6

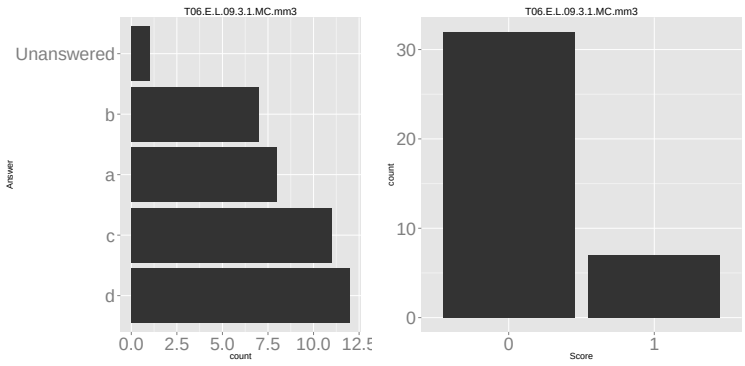
Summary	Value
Mean	0.27
Std.dev	0.45
Min	0.00
Median	0.00
Max	1.00

(41) Question "To6.E.L.09.3.1.MC.mm3" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 39 out of the total of 100 students. The average score was 0.18 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. According to the Empirical Rule or 68-95-99.7 rule, 95% of all M&M bags will have weights between _____ and 52 grams.

a. 47
*b. 48
c. 49
d. 50



Answer	Count
d	12
c	11
a	8
b	7
Unanswered	1

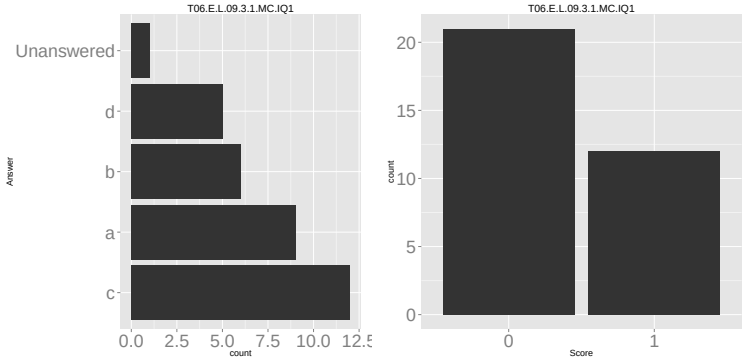
Summary	Value
Mean	0.18
Std.dev	0.39
Min	0.00
Median	0.00
Max	1.00

(42) Question "To6.E.L.09.3.1.MC.IQ1" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 33 out of the total of 100 students. The average score was 0.36 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. According to the Empirical Rule or 68-95-99.7 Rule, the middle 95% of all adults will have an IQ score between 80 and _____ points.

a. 110
b. 100
*c. 120
d. 130



Answer	Count
c	12
a	9
b	6
d	5
Unanswered	1

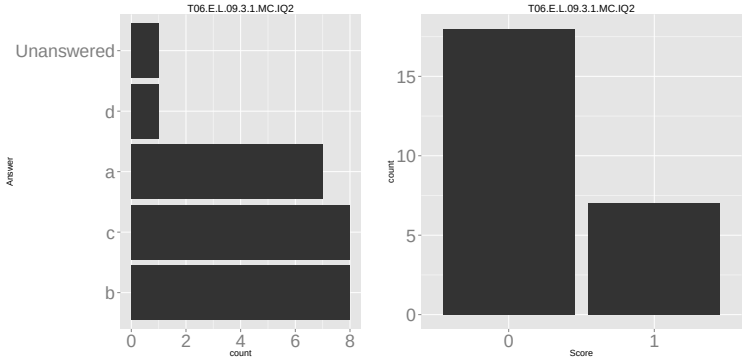
Summary	Value
Mean	0.36
Std.dev	0.49
Min	0.00
Median	0.00
Max	1.00

(43) Question "T06.E.L.09.3.1.MC.IQ2" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 25 out of the total of 100 students. The average score was 0.28 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. According to the Empirical Rule or 68-95-99.7 Rule, the middle 68% of all adults will have an IQ score between 90 and _____ points.

*a. 110
b. 100
c. 120
d. 130



Answer	Count
b	8
c	8
a	7
d	1
Unanswered	1

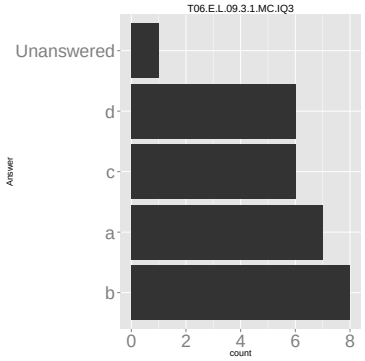
Summary	Value
Mean	0.28
Std.dev	0.46
Min	0.00
Median	0.00
Max	1.00

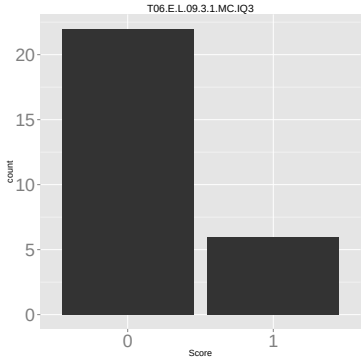
(44) Question "To6.E.L.09.3.1.MC.IQ3" is given on the right. This question was selected from the question set with a frequency of 0.33. The question was administered to 28 out of the total of 100 students. The average score was 0.21 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. According to the Empirical Rule or 68-95-99.7 Rule, the middle 99.7% of all adults will have an IQ score between 70 and _____ points.

a. 110
b. 100
c. 120
*d. 130



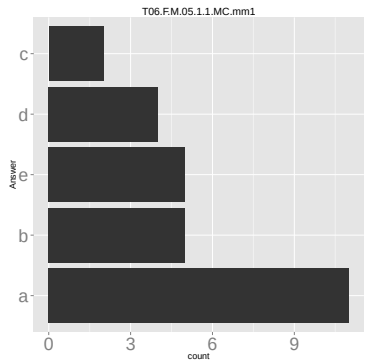


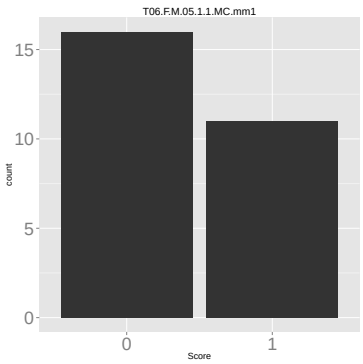
Answer	Count
b	8
a	7
c	6
d	6
Unanswered	1

Summary	Value
Mean	0.21
Std.dev	0.42
Min	0.00
Median	0.00
Max	1.00

(45) Question "To6.F.M.05.1.1.MC.mm1" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 27 out of the total of 100 students. The average score was 0.41 out of 1.

(Back to the question summary Table 7.)





Answer	Count
a	11
b	5
e	5
d	4
c	2

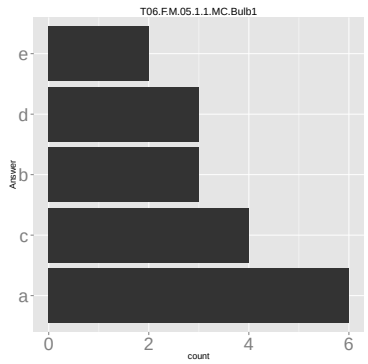
Summary	Value
Mean	0.41
Std.dev	0.50
Min	0.00
Median	0.00
Max	1.00

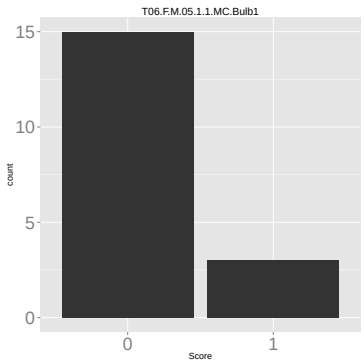
For the remaining questions, use either a z-table or an applet or both to do the calculations. Depending on the method used, the final answer could be subject to a small amount of rounding error. Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. The weight on the label of these M&M bags is 47.9 grams. What percentage of all M&M bags have a weight below the label weight?

*a. 1.79%
b. 98.21%
c. 1.39%
d. 2.28%
e. 97.72%

(46) Question "T06.F.M.05.1.1.MC.Bulb1" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 18 out of the total of 100 students. The average score was 0.17 out of 1.

(Back to the question summary Table 7.)





Answer	Count
a	6
c	4
b	3
d	3
e	2

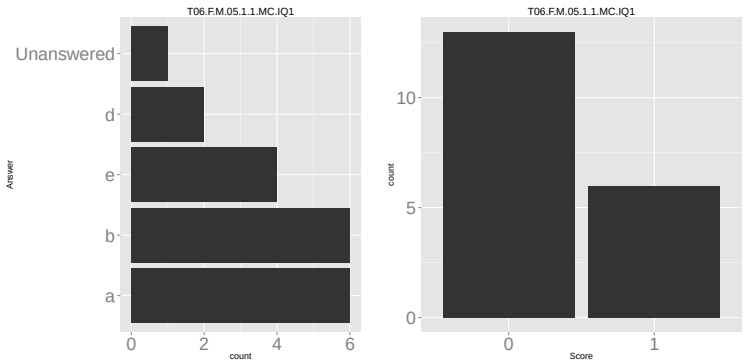
Summary	Value
Mean	0.17
Std.dev	0.38
Min	0.00
Median	0.00
Max	1.00

For the remaining questions, use either a z-table or an applet or both to do the calculations. Depending on the method used, the final answer could be subject to a small amount of rounding error. Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. What percentage of light bulbs produced by Bright Inc. will survive less than 200 days?

a. 99.38%
*b. 0.62%
c. 96.49%
d. 12.3%
e. 2.02%

(47) Question "T06.F.M.05.1.1.MC.IQ1" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 19 out of the total of 100 students. The average score was 0.32 out of 1.

(Back to the question summary Table 7.)



Answer	Count
a	6
b	6
e	4
d	2
Unanswered	1

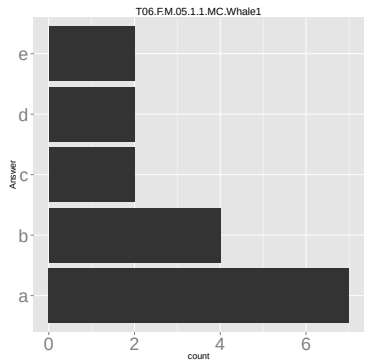
Summary	Value
Mean	0.32
Std.dev	0.48
Min	0.00
Median	0.00
Max	1.00

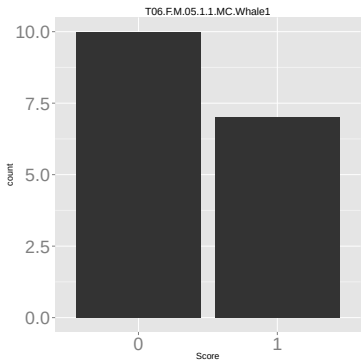
For the remaining questions, use either a z-table or an applet or both to do the calculations. Depending on the method used, the final answer could be subject to a small amount of rounding error. Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. What percentage of adults have an IQ score of less than 87 points?

*a. 9.68%
b. 15.15%
c. 4.46%
d. 90.32%
e. 84.85%

(48) Question "To6.F.M.05.1.1.MC.Whale1" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 17 out of the total of 100 students. The average score was 0.41 out of 1.

(Back to the question summary Table 7.)





Answer	Count
a	7
b	4
c	2
d	2
e	2

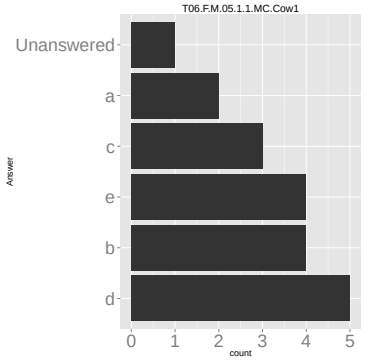
Summary	Value
Mean	0.41
Std.dev	0.51
Min	0.00
Median	0.00
Max	1.00

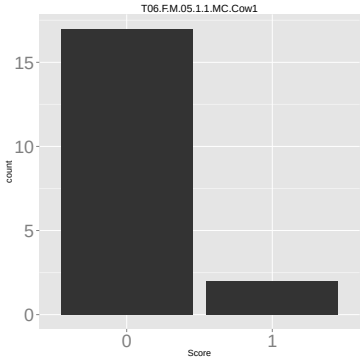
For the remaining questions, use either a z-table or an applet or both to do the calculations. Depending on the method used, the final answer could be subject to a small amount of rounding error. Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. What percentage of female humpback whales will be shorter than 13 meters in length?

*a. 8.08%
b. 91.92%
c. 14.92%
d. 85.08%
e. 0.82%

(49) Question "To6.F.M.05.1.1.MC.Cow1" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 19 out of the total of 100 students. The average score was 0.11 out of 1.

(Back to the question summary Table 7.)





Answer	Count
d	5
b	4
e	4
c	3
a	2
Unanswered	1

Summary	Value
Mean	0.11
Std.dev	0.32
Min	0.00
Median	0.00
Max	1.00

For the remaining questions, use either a z-table or an applet or both to do the calculations. Depending on the method used, the final answer could be subject to a small amount of rounding error. Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. What percentage of cows from this breed will weigh less than 680 kg?

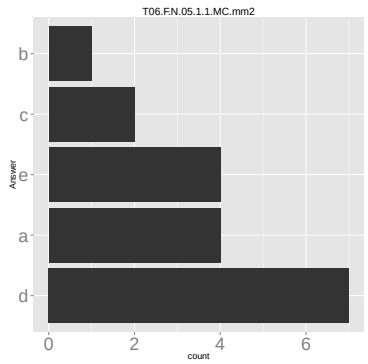
*a. 0.99%
b. 99.01%
c. 2.12%
d. 97.88%
e. 0.38%

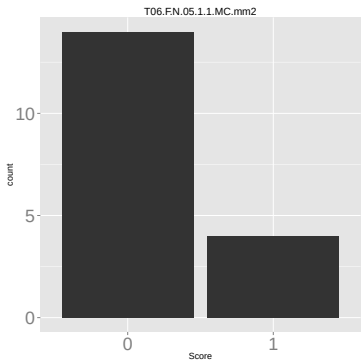
(50) Question "To6.F.N.05.1.1.MC.mm2" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 18 out of the total of 100 students. The average score was 0.22 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. What percentage of all M&M bags will have a weight below 51.5 grams?

*a. 93.32%
b. 6.68%
c. 85.31%
d. 14.69%
e. 90.32%





Answer	Count
d	7
a	4
e	4
c	2
b	1

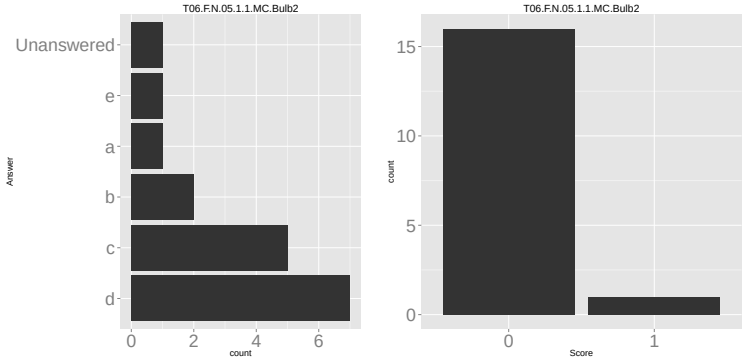
Summary	Value
Mean	0.22
Std.dev	0.43
Min	0.00
Median	0.00
Max	1.00

(51) Question "T06.F.N.05.1.1.MC.Bulb2" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 17 out of the total of 100 students. The average score was 0.06 out of 1.

(Back to the question summary Table 7.)

Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. What percentage of light bulbs produced by Bright Inc. will survive less than 405 days?

*a. 99.57%
b. 0.43%
c. 99.09%
d. 0.91%
e. 94.84%



Answer	Count
d	7
c	5
b	2
a	1
e	1
Unanswered	1

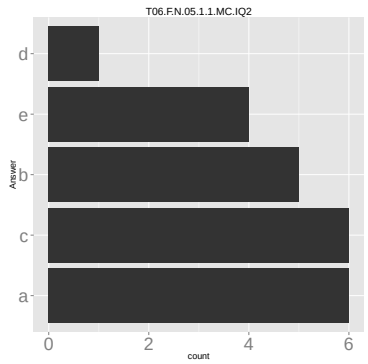
Summary	Value
Mean	0.06
Std.dev	0.24
Min	0.00
Median	0.00
Max	1.00

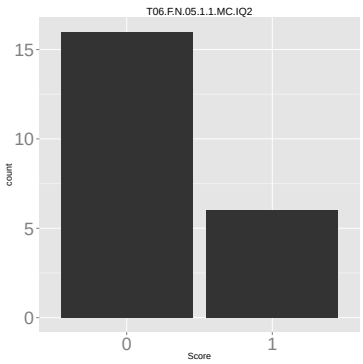
(52) Question "To6.F.N.05.1.1.MC.IQ2" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 22 out of the total of 100 students. The average score was 0.27 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. What percentage of adults have an IQ score of less than 107 points?

*a. 75.8%
b. 24.2%
c. 72.3%
d. 85.7%
e. 14.3%





Answer	Count
a	6
c	6
b	5
e	4
d	1

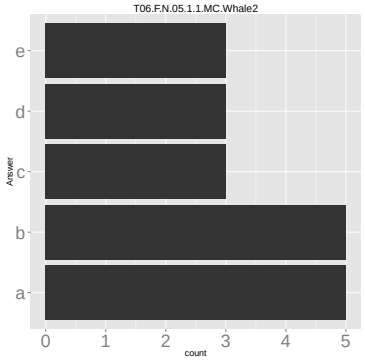
Summary	Value
Mean	0.27
Std.dev	0.46
Min	0.00
Median	0.00
Max	1.00

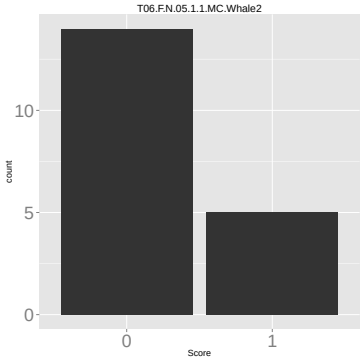
(53) Question "T06.F.N.05.1.1.MC.Whale2" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 19 out of the total of 100 students. The average score was 0.26 out of 1.

(Back to the question summary Table 7.)

Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. What percentage of female humpback whales will be shorter than 14 meters in length?

a. 77.04%
*b. 72.57%
c. 27.43%
d. 68.44%
e. 22.96%





Answer	Count
a	5
b	5
c	3
d	3
e	3

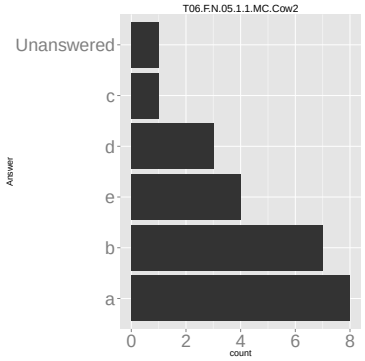
Summary	Value
Mean	0.26
Std.dev	0.45
Min	0.00
Median	0.00
Max	1.00

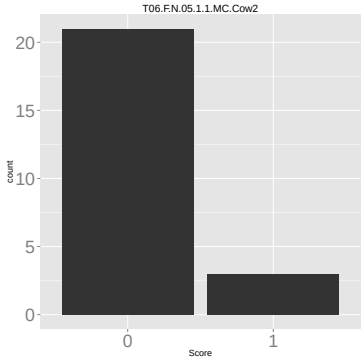
(54) Question "T06.F.N.05.1.1.MC.Cow2" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 24 out of the total of 100 students. The average score was 0.12 out of 1.

(Back to the question summary Table 7.)

Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. What percentage of cows from this breed will weigh less than 790 kg?

a. 6.81%
b. 86.21%
c. 93.19%
*d. 90.82%
e. 9.18%





Answer	Count
a	8
b	7
e	4
d	3
c	1
Unanswered	1

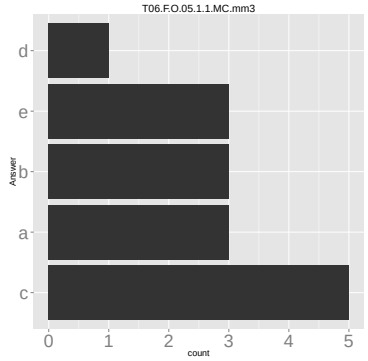
Summary	Value
Mean	0.12
Std.dev	0.34
Min	0.00
Median	0.00
Max	1.00

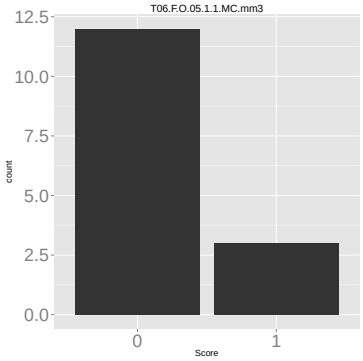
(55) Question "To6.F.O.05.1.1.MC.mm3" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 15 out of the total of 100 students. The average score was 0.2 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. What percent of M&M bags will have a weigh more than 48.5 grams?

a. 6.68%
*b. 93.32%
c. 86.64%
d. 1.5%
e. 98.5%





Answer	Count
c	5
a	3
b	3
e	3
d	1

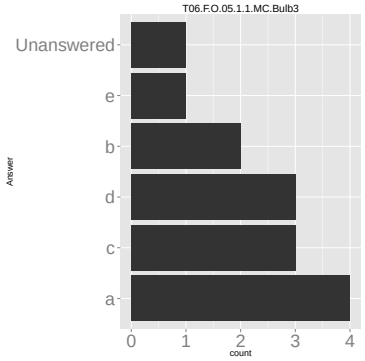
Summary	Value
Mean	0.20
Std.dev	0.41
Min	0.00
Median	0.00
Max	1.00

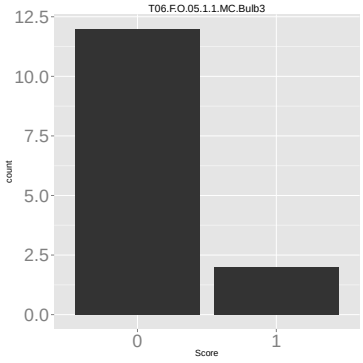
(56) Question "To6.F.O.05.1.1.MC.Bulb3" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 14 out of the total of 100 students. The average score was 0.14 out of 1.

(Back to the question summary Table 7.)

Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. What percentage of light bulbs produced by Bright Inc. will survive longer than 225 days?

a. 3.01%
*b. 96.99%
c. 14.01%
d. 85.99%
e. 98.08%





Answer	Count
a	4
c	3
d	3
b	2
e	1
Unanswered	1

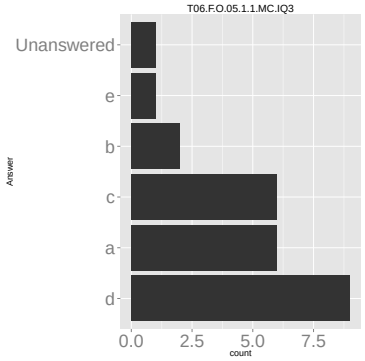
Summary	Value
Mean	0.14
Std.dev	0.36
Min	0.00
Median	0.00
Max	1.00

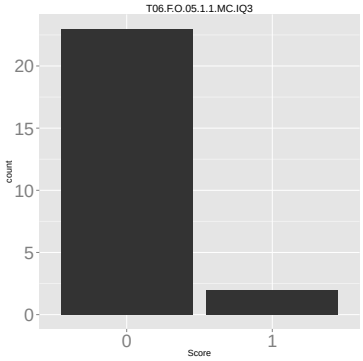
(57) Question "T06.F.O.05.1.1.MC.IQ3" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 25 out of the total of 100 students. The average score was 0.08 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. What percentage of adults have an IQ score higher than 88 points?

a. 11.51%
*b. 88.49%
c. 15.39%
d. 84.61%
e. 89.80%





Answer	Count
d	9
a	6
c	6
b	2
e	1
Unanswered	1

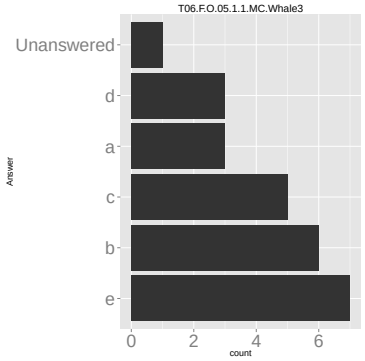
Summary	Value
Mean	0.08
Std.dev	0.28
Min	0.00
Median	0.00
Max	1.00

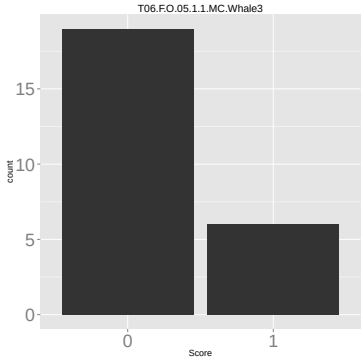
(58) Question "To6.F.O.05.1.1.MC.Whale3" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 25 out of the total of 100 students. The average score was 0.24 out of 1.

(Back to the question summary Table 7.)

Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. What percentage of female humpback whales are longer than 12.1 meters?

a. 0.07%
*b. 99.93%
c. 98.61%
d. 1.39%
e. 94.52%





Answer	Count
e	7
b	6
c	5
a	3
d	3
Unanswered	1

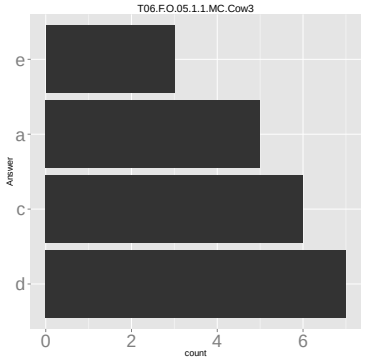
Summary	Value
Mean	0.24
Std.dev	0.44
Min	0.00
Median	0.00
Max	1.00

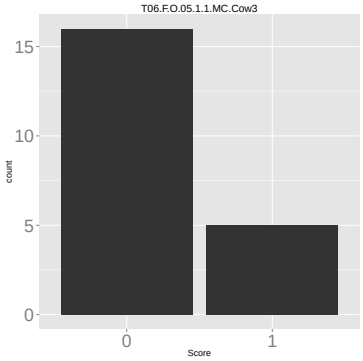
(59) Question "T06.F.O.05.1.1.MC.Cow3" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 21 out of the total of 100 students. The average score was 0.24 out of 1.

(Back to the question summary Table 7.)

Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. What percentage of cows from this breed will weigh more than 675 kg?

*a. 99.38%
b. 0.62%
c. 97.98%
d. 2.02%
e. 93.32%





Answer	Count
d	7
c	6
a	5
e	3

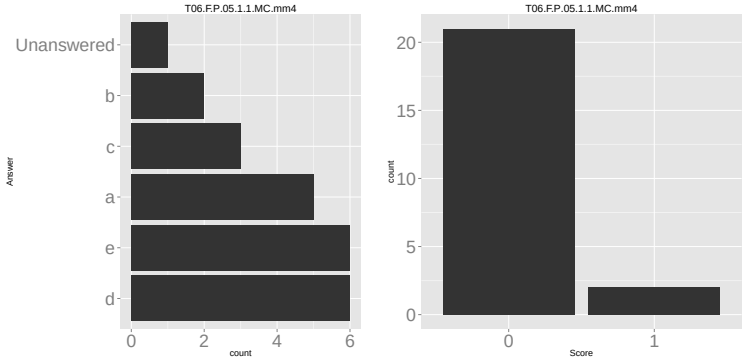
Summary	Value
Mean	0.24
Std.dev	0.44
Min	0.00
Median	0.00
Max	1.00

(60) Question "To6.F.P.05.1.1.MC.mm4" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 23 out of the total of 100 students. The average score was 0.09 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. What percent of M&M bags will weigh more than 52.3 grams?

a. 98.93%
*b. 1.07%
c. 2.30%
d. 97.70%
e. 9.68%



Answer	Count
d	6
e	6
a	5
c	3
b	2
Unanswered	1

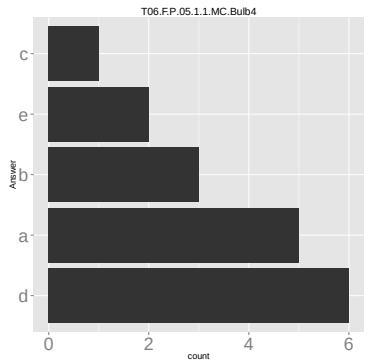
Summary	Value
Mean	0.09
Std.dev	0.29
Min	0.00
Median	0.00
Max	1.00

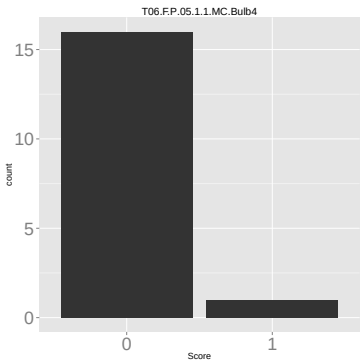
(61) Question "To6.F.P.05.1.1.MC.Bulb4" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 17 out of the total of 100 students. The average score was 0.06 out of 1.

(Back to the question summary Table 7.)

Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. What percentage of light bulbs produced by Bright Inc. will survive longer than 365 days?

a. 2.94%
b. 94.84%
*c. 5.16%
d. 9.34%
e. 90.68%





Answer	Count
d	6
a	5
b	3
e	2
c	1

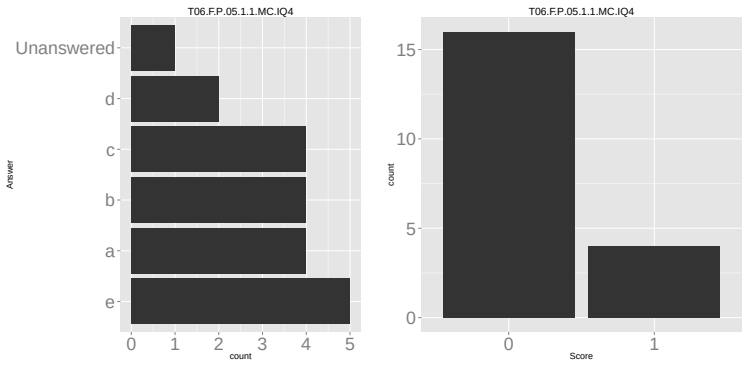
Summary	Value
Mean	0.06
Std.dev	0.24
Min	0.00
Median	0.00
Max	1.00

(62) Question "To6.F.P.05.1.1.MC.IQ4" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 20 out of the total of 100 students. The average score was 0.2 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. What percentage of adults have an IQ score higher than 128 points?

a. 99.74%
*b. 0.26%
c. 89.97%
d. 0.56%
e. 10.03%



Answer	Count
e	5
a	4
b	4
c	4
d	2
Unanswered	1

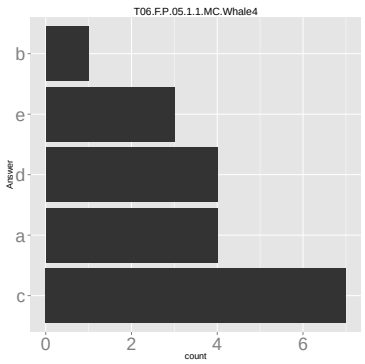
Summary	Value
Mean	0.20
Std.dev	0.41
Min	0.00
Median	0.00
Max	1.00

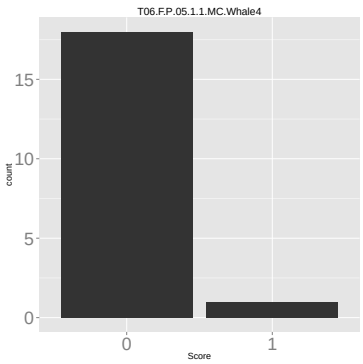
(63) Question "T06.F.P.05.1.1.MC.Whale4" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 19 out of the total of 100 students. The average score was 0.05 out of 1.

(Back to the question summary Table 7.)

Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. What percentage of female humpback whales are longer than 14.3 meters?

a. 14.46%
*b. 11.51%
c. 13.14%
d. 88.49%
e. 85.54%





Answer	Count
c	7
a	4
d	4
e	3
b	1

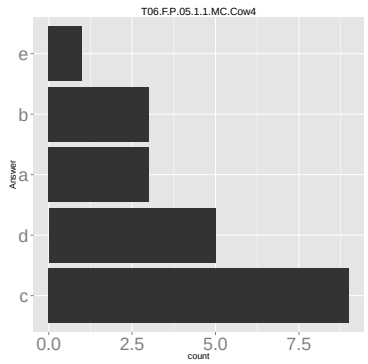
Summary	Value
Mean	0.05
Std.dev	0.23
Min	0.00
Median	0.00
Max	1.00

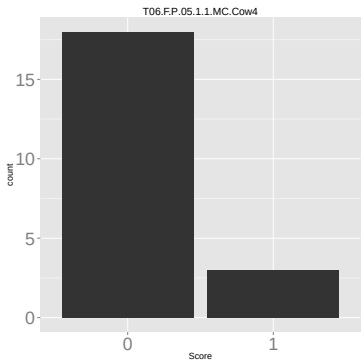
(64) Question "To6.F.P.05.1.1.MC.Cow4" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 21 out of the total of 100 students. The average score was 0.14 out of 1.

(Back to the question summary Table 7.)

Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. What percentage of cows from this breed will weigh more than 770 kg?

*a. 25.14%
b. 31.21%
c. 74.86%
d. 27.09%
e. 68.79%





Answer	Count
c	9
d	5
a	3
b	3
e	1

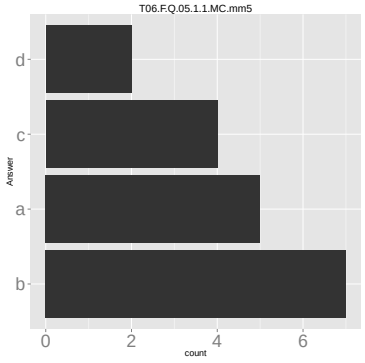
Summary	Value
Mean	0.14
Std.dev	0.36
Min	0.00
Median	0.00
Max	1.00

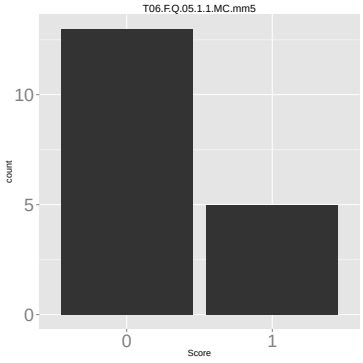
(65) Question "To6.F.Q.05.1.1.MC.mm5" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 18 out of the total of 100 students. The average score was 0.28 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. What percent of M&M bags will have a weight between 49.5 and 51.5 grams?

*a. 62.47%
b. 97.72%
c. 24.17%
d. 84.13%





Answer	Count
b	7
a	5
c	4
d	2

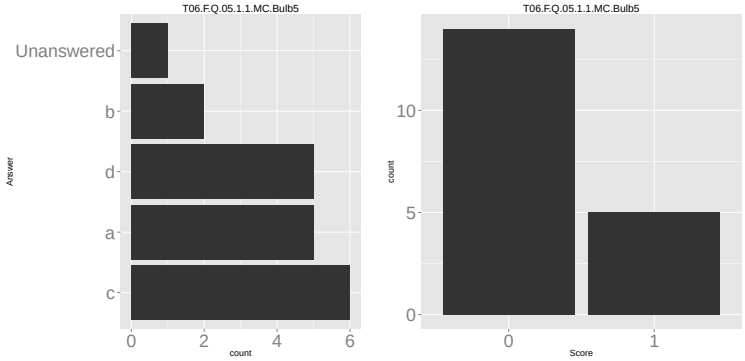
Summary	Value
Mean	0.28
Std.dev	0.46
Min	0.00
Median	0.00
Max	1.00

(66) Question "To6.F.Q.05.1.1.MC.Bulb5" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 19 out of the total of 100 students. The average score was 0.26 out of 1.

(Back to the question summary Table 7.)

Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. What percentage of light bulbs produced by Bright Inc. will survive for between 230 days and 330 days?

*a. 73.33%
b. 99.38%
c. 62.55%
d. 34.46%



Answer	Count
c	6
a	5
d	5
b	2
Unanswered	1

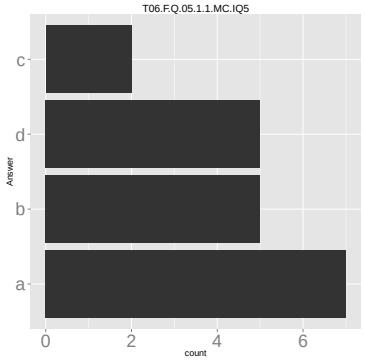
Summary	Value
Mean	0.26
Std.dev	0.45
Min	0.00
Median	0.00
Max	1.00

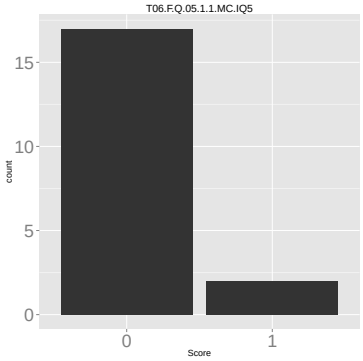
(67) Question "T06.F.Q.05.1.1.MC.IQ5" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 19 out of the total of 100 students. The average score was 0.11 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. What percentage of adults have an IQ score between 92 and 112 points?

a. 97.72%
b. 77.4%
*c. 67.3%
d. 63.2%





Answer	Count
a	7
b	5
d	5
c	2

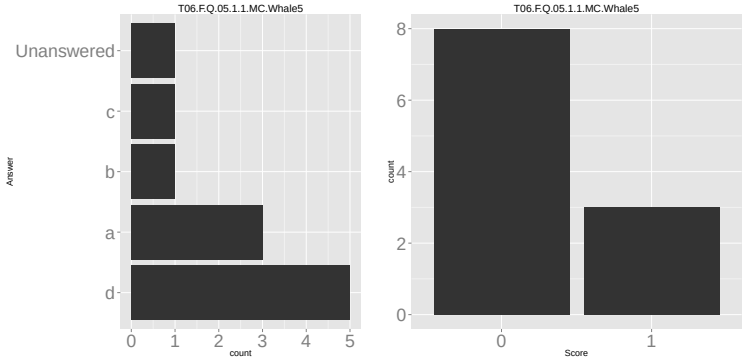
Summary	Value
Mean	0.11
Std.dev	0.32
Min	0.00
Median	0.00
Max	1.00

(68) Question "To6.F.Q.05.1.1.MC.Whale5" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 11 out of the total of 100 students. The average score was 0.27 out of 1.

(Back to the question summary Table 7.)

Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. What percentage of female humpback whales are between 12.5 and 14.7 meters in length?

*a. 96.90%
b. 99.91%
c. 65.54%
d. 91.92%



Answer	Count
d	5
a	3
b	1
c	1
Unanswered	1

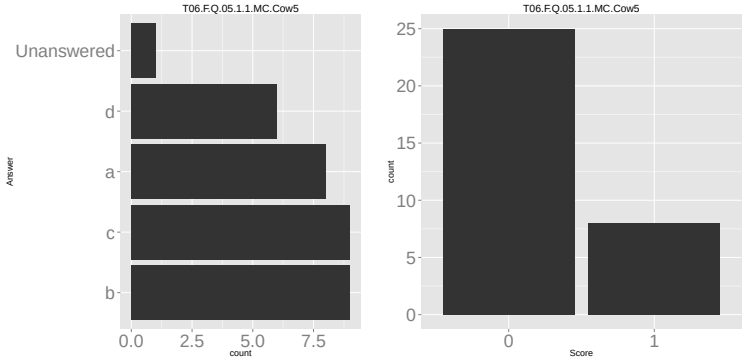
Summary	Value
Mean	0.27
Std.dev	0.47
Min	0.00
Median	0.00
Max	1.00

(69) Question "To6.F.Q.05.1.1.MC.Cow5" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 33 out of the total of 100 students. The average score was 0.24 out of 1.

(Back to the question summary Table 7.)

Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. What percentage of cows from this breed will weigh between 725 kg and 785 kg?

*a. 67.57%
b. 97.72%
c. 63.31%
d. 53.59%



Answer	Count
b	9
c	9
a	8
d	6
Unanswered	1

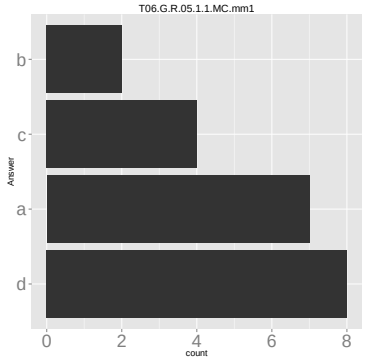
Summary	Value
Mean	0.24
Std.dev	0.44
Min	0.00
Median	0.00
Max	1.00

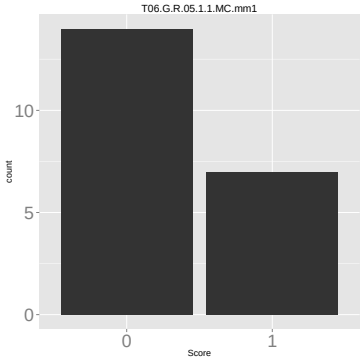
(70) Question "T06.G.R.05.1.1.MC.mm1" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 21 out of the total of 100 students. The average score was 0.33 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. The Mars Company that manufacturers M&Ms wants to set the label weight so that only 2% of all bags of this size are under the label weight. What should they make the label weight?

*a. 47.95 grams
b. 49.16 grams
c. 50.51 grams
d. 50.58 grams





Answer	Count
d	8
a	7
c	4
b	2

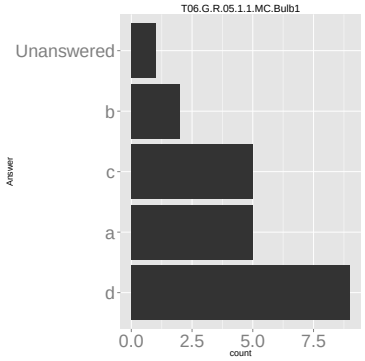
Summary	Value
Mean	0.33
Std.dev	0.48
Min	0.00
Median	0.00
Max	1.00

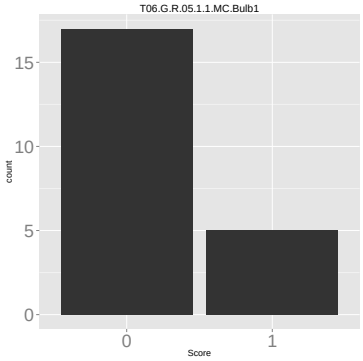
(71) Question "To6.G.R.05.1.1.MC.Bulb1" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 22 out of the total of 100 students. The average score was 0.23 out of 1.

(Back to the question summary Table 7.)

Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. 20% of light bulbs produced by Bright Inc. survive less than how many days?

*a. 266.4 days
b. 218.0 days
c. 248.8 days
d. 273.2 days





Answer	Count
d	9
a	5
c	5
b	2
Unanswered	1

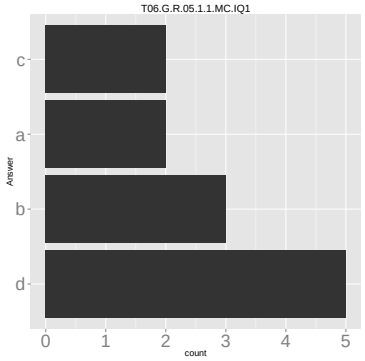
Summary	Value
Mean	0.23
Std.dev	0.43
Min	0.00
Median	0.00
Max	1.00

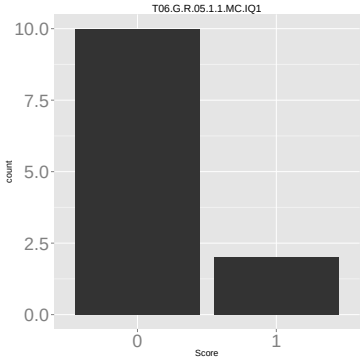
(72) Question "T06.G.R.05.1.1.MC.IQ1" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 12 out of the total of 100 students. The average score was 0.17 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. 25% of adults have an IQ score lower than what value?

a. 100.3 points
b. 89.1 points
*c. 93.3 points
d. 97.8 points





Answer	Count
d	5
b	3
a	2
c	2

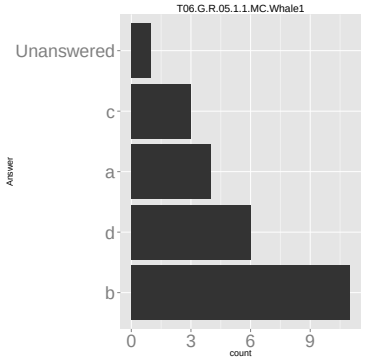
Summary	Value
Mean	0.17
Std.dev	0.39
Min	0.00
Median	0.00
Max	1.00

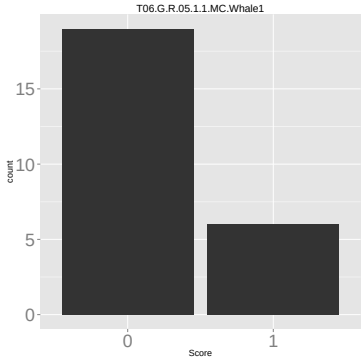
(73) Question "T06.G.R.05.1.1.MC.Whale1" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 25 out of the total of 100 students. The average score was 0.24 out of 1.

(Back to the question summary Table 7.)

Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. 15% of female humpback whales are shorter than what length?

a. 14.79 meters
b. 12.62 meters
c. 14.22 meters
*d. 13.18 meters





Answer	Count
b	11
d	6
a	4
c	3
Unanswered	1

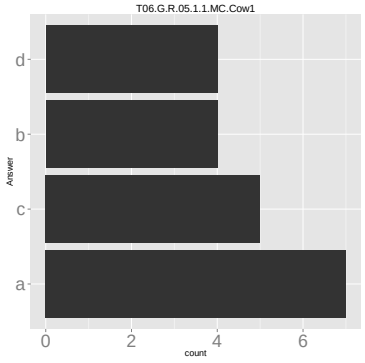
Summary	Value
Mean	0.24
Std.dev	0.44
Min	0.00
Median	0.00
Max	1.00

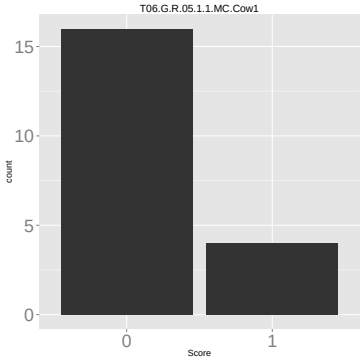
(74) Question "To6.G.R.05.1.1.MC.Cow1" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 20 out of the total of 100 students. The average score was 0.2 out of 1.

(Back to the question summary Table 7.)

Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. 35% of cows from this breed will weigh less than what weight?

a. 703.2 kg
b. 802.3 kg
c. 751.2 kg
*d. 738.3 kg





Answer	Count
a	7
c	5
b	4
d	4

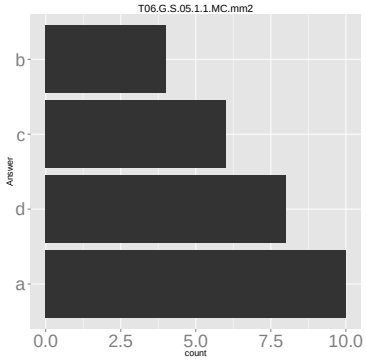
Summary	Value
Mean	0.20
Std.dev	0.41
Min	0.00
Median	0.00
Max	1.00

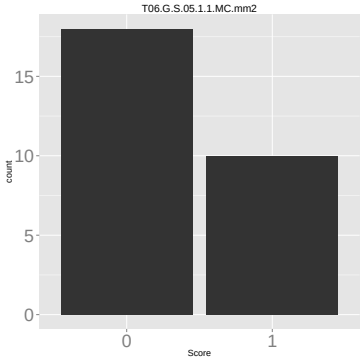
(75) Question "T06.G.S.05.1.1.MC.mm2" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 28 out of the total of 100 students. The average score was 0.36 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. 80% of all bags will have a weight under what value?

*a. 50.84 grams
b. 51.28 grams
c. 50.67 grams
d. 51.65 grams





Answer	Count
a	10
d	8
c	6
b	4

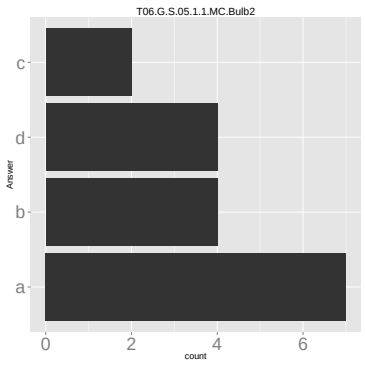
Summary	Value
Mean	0.36
Std.dev	0.49
Min	0.00
Median	0.00
Max	1.00

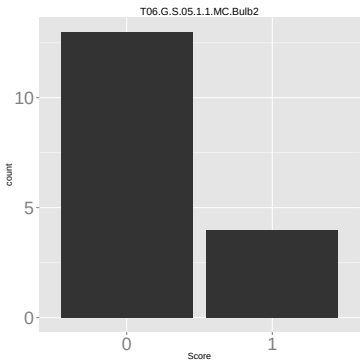
(76) Question "T06.G.S.05.1.1.MC.Bulb2" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 17 out of the total of 100 students. The average score was 0.24 out of 1.

(Back to the question summary Table 7.)

Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. 95% of light bulbs produced by Bright Inc. survive less than how many days?

a. 359.1 days
b. 331.2 days
c. 394.4 days
*d. 365.8 days





Answer	Count
a	7
b	4
d	4
c	2

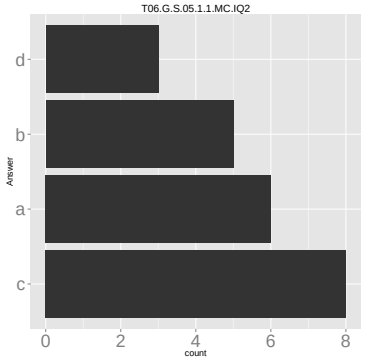
Summary	Value
Mean	0.24
Std.dev	0.44
Min	0.00
Median	0.00
Max	1.00

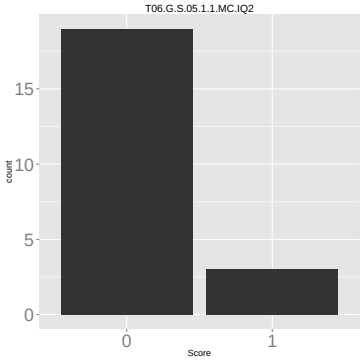
(77) Question "T06.G.S.05.1.1.MC.IQ2" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 22 out of the total of 100 students. The average score was 0.14 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. 90% of adults will have an IQ score lower than what value?

a. 126.9 points
b. 109.8 points
c. 115.6 points
*d. 112.8 points





Answer	Count
c	8
a	6
b	5
d	3

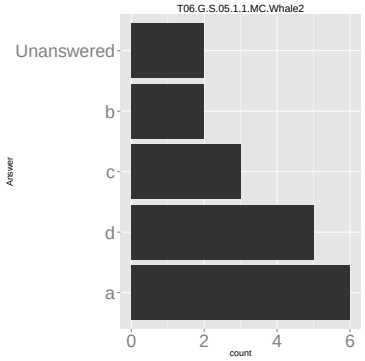
Summary	Value
Mean	0.14
Std.dev	0.35
Min	0.00
Median	0.00
Max	1.00

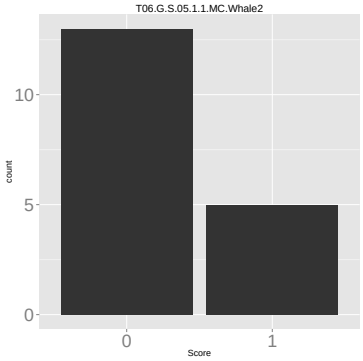
(78) Question "To6.G.S.05.1.1.MC.Whale2" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 18 out of the total of 100 students. The average score was 0.28 out of 1.

(Back to the question summary Table 7.)

Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. 65% of female humpback whales are shorter than what length?

a. 14.65 meters
b. 13.51 meters
c. 14.07 meters
*d. 13.90 meters





Answer	Count
a	6
d	5
c	3
b	2
Unanswered	2

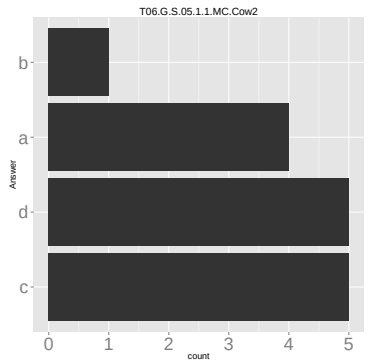
Summary	Value
Mean	0.28
Std.dev	0.46
Min	0.00
Median	0.00
Max	1.00

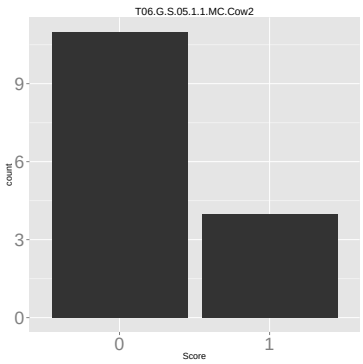
(79) Question "T06.G.S.05.1.1.MC.Cow2" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 15 out of the total of 100 students. The average score was 0.27 out of 1.

(Back to the question summary Table 7.)

Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. 70% of cows from this breed will weigh less than what weight?

*a. 765.6 kg
b. 770.1 kg
c. 775.2 kg
d. 788.4 kg





Answer	Count
c	5
d	5
a	4
b	1

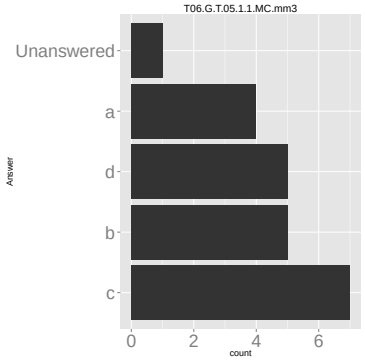
Summary	Value
Mean	0.27
Std.dev	0.46
Min	0.00
Median	0.00
Max	1.00

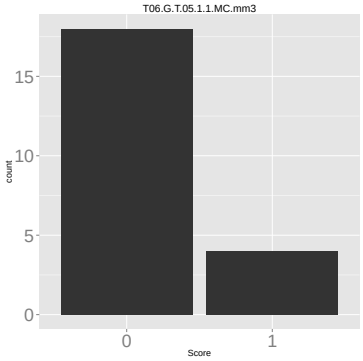
(80) Question "T06.G.T.05.1.1.MC.mm3" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 22 out of the total of 100 students. The average score was 0.18 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. 20% of all M&M bags will weigh more than what weight?

*a. 50.84 grams
b. 49.16 grams
c. 50.20 grams
d. 49.80 grams





Answer	Count
c	7
b	5
d	5
a	4
Unanswered	1

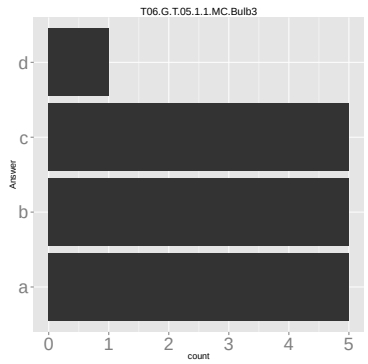
Summary	Value
Mean	0.18
Std.dev	0.39
Min	0.00
Median	0.00
Max	1.00

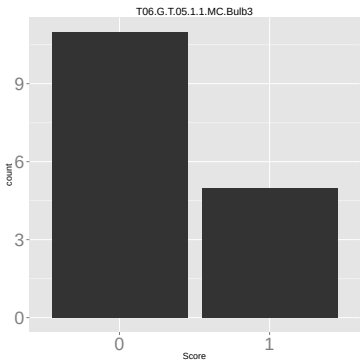
(81) Question "To6.G.T.05.1.1.MC.Bulb3" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 16 out of the total of 100 students. The average score was 0.31 out of 1.

(Back to the question summary Table 7.)

Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. 5% of light bulbs produced by Bright Inc. survive more than how many days?

*a. 366.0 days
b. 378.4 days
c. 351.2 days
d. 341.6 days





Answer	Count
a	5
b	5
c	5
d	1

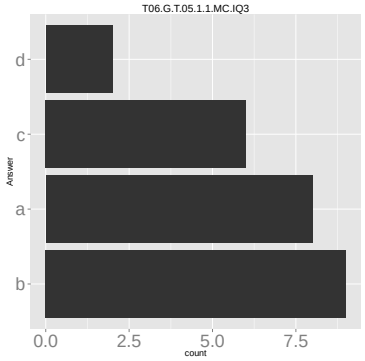
Summary	Value
Mean	0.31
Std.dev	0.48
Min	0.00
Median	0.00
Max	1.00

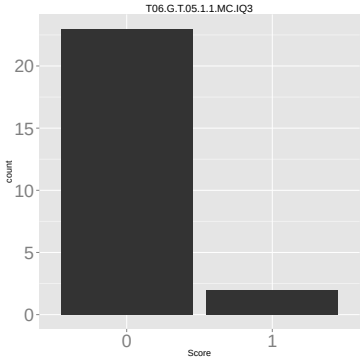
(82) Question "T06.G.T.05.1.1.MC.IQ3" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 25 out of the total of 100 students. The average score was 0.08 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. 30% of adults will have an IQ score higher than what value?

a. 109.1 points
b. 116.6 points
c. 98.6 points
*d. 105.2 points





Answer	Count
b	9
a	8
c	6
d	2

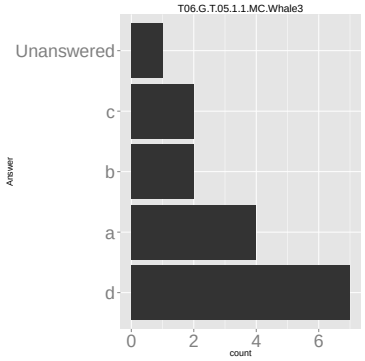
Summary	Value
Mean	0.08
Std.dev	0.28
Min	0.00
Median	0.00
Max	1.00

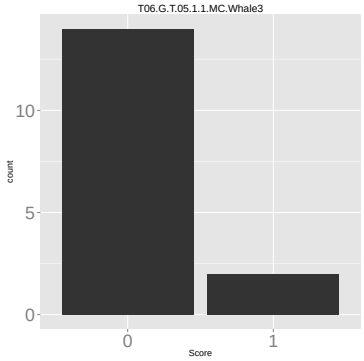
(83) Question "T06.G.T.05.1.1.MC.Whale3" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 16 out of the total of 100 students. The average score was 0.12 out of 1.

(Back to the question summary Table 7.)

Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. 40% of female humpback whales are longer than what length?

a. 13.90 meters
b. 14.06 meters
*c. 13.83 meters
d. 11.95 meters





Answer	Count
d	7
a	4
b	2
c	2
Unanswered	1

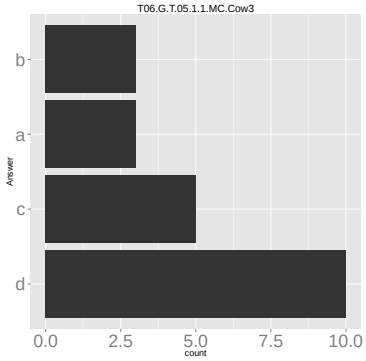
Summary	Value
Mean	0.12
Std.dev	0.34
Min	0.00
Median	0.00
Max	1.00

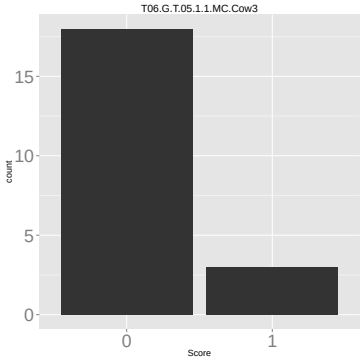
(84) Question "T06.G.T.05.1.1.MC.Cow3" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 21 out of the total of 100 students. The average score was 0.14 out of 1.

(Back to the question summary Table 7.)

Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. 45% of cows from this breed will weigh more than what weight?

a. 772.0 kg
*b. 753.9 kg
c. 761.3 kg
d. 758.9 kg





Answer	Count
d	10
c	5
a	3
b	3

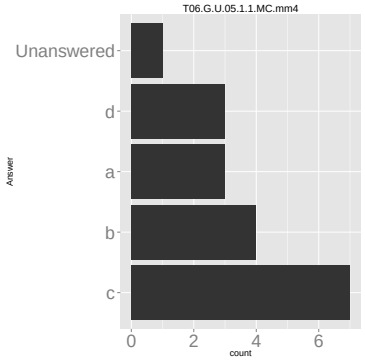
Summary	Value
Mean	0.14
Std.dev	0.36
Min	0.00
Median	0.00
Max	1.00

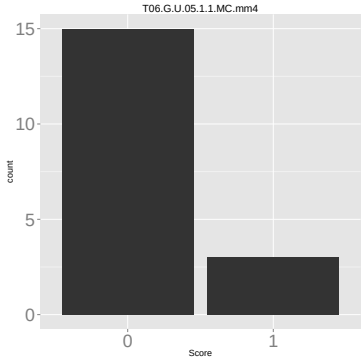
(85) Question "T06.G.U.05.1.1.MC.mm4" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 18 out of the total of 100 students. The average score was 0.17 out of 1.

(Back to the question summary Table 7.)

Assume the weight of bags of M&Ms can be modeled with the normal distribution with mean 50 grams and standard deviation 1 gram. 65% of all M&M bags will weigh more than what weight?

*a. 49.61 grams
b. 50.39 grams
c. 50.35 grams
d. 49.65 grams





Answer	Count
c	7
b	4
a	3
d	3
Unanswered	1

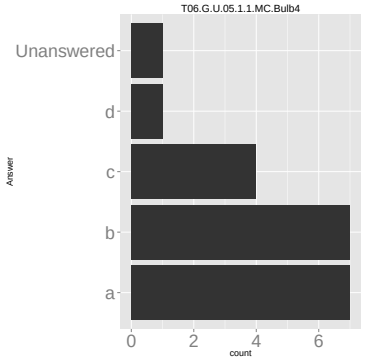
Summary	Value
Mean	0.17
Std.dev	0.38
Min	0.00
Median	0.00
Max	1.00

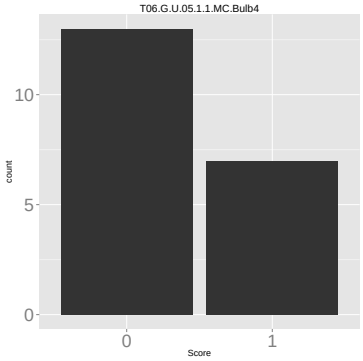
(86) Question "To6.G.U.05.1.1.MC.Bulb4" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 20 out of the total of 100 students. The average score was 0.35 out of 1.

(Back to the question summary Table 7.)

Assume the lifespan of light bulbs manufactured by Bright Inc. can be modeled with a normal distribution with a mean of 300 days and a standard deviation of 40 days. 70% of light bulbs produced by Bright Inc. survive longer than how many days?

*a. 279.2 days
b. 303.2 days
c. 281.0 days
d. 263.5 days





Answer	Count
a	7
b	7
c	4
d	1
Unanswered	1

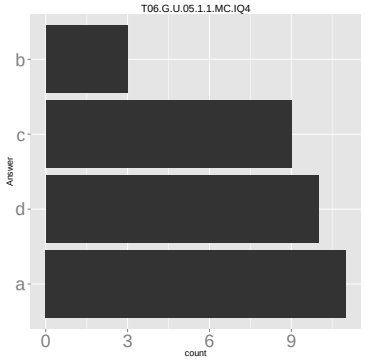
Summary	Value
Mean	0.35
Std.dev	0.49
Min	0.00
Median	0.00
Max	1.00

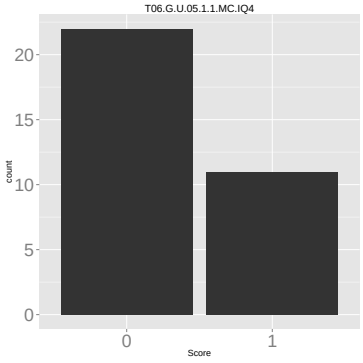
(87) Question "T06.G.U.05.1.1.MC.IQ4" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 33 out of the total of 100 students. The average score was 0.33 out of 1.

(Back to the question summary Table 7.)

Assume the distribution of IQ scores for adults can be modeled with a normal distribution with a mean score of 100 points and a standard deviation of 10 points. 90% of adults will have an IQ score higher than what value?

*a. 87.2 points
b. 112.8 points
c. 91.0 points
d. 109.0 points





Answer	Count
a	11
d	10
c	9
b	3

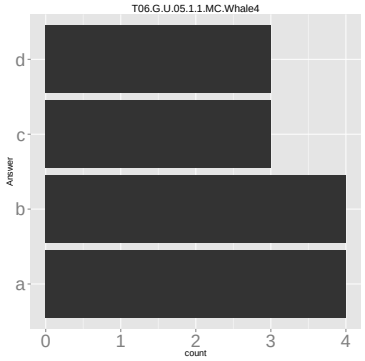
Summary	Value
Mean	0.33
Std.dev	0.48
Min	0.00
Median	0.00
Max	1.00

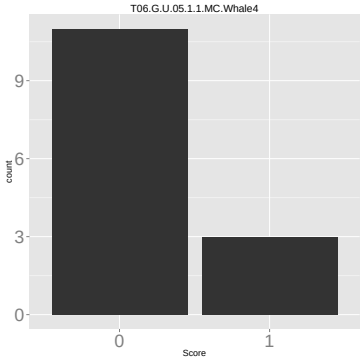
(88) Question "T06.G.U.05.1.1.MC.Whale4" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 14 out of the total of 100 students. The average score was 0.21 out of 1.

(Back to the question summary Table 7.)

Assume the length of female humpback whales can be modeled with a normal distribution with a mean of 13.7 meters and a standard deviation of 0.5 meters. 75% of female humpback whales are longer than what length?

a. 13.90 meters
b. 14.05 meters
*c. 13.37 meters
d. 14.04 meters





Answer	Count
a	4
b	4
c	3
d	3

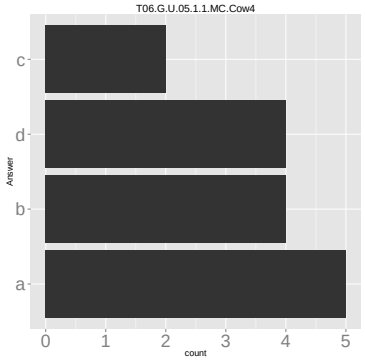
Summary	Value
Mean	0.21
Std.dev	0.43
Min	0.00
Median	0.00
Max	1.00

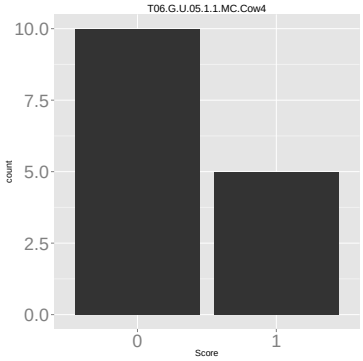
(89) Question "To6.G.U.05.1.1.MC.Cow4" is given on the right. This question was selected from the question set with a frequency of 0.2. The question was administered to 15 out of the total of 100 students. The average score was 0.33 out of 1.

(Back to the question summary Table 7.)

Assume the weight of a certain breed of cow can be modeled with a normal distribution with a mean of 750 kg and a standard deviation of 30 kg. 85% of cows from this breed will weigh more than what weight?

*a. 718.8 kg
b. 781.2 kg
c. 775.5 kg
d. 724.5 kg





Answer	Count
a	5
b	4
d	4
c	2

Summary	Value
Mean	0.33
Std.dev	0.49
Min	0.00
Median	0.00
Max	1.00

Acknowledgement

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