An instructor designed a very difficult 100-question True/False exam. The instructor wants to see whether the class performed significantly better than chance levels (Note: Guessing on a True/False test would yield roughly a 50% average).

a. Describe the hypothesis:

| **Circle one below:** | **Write out the alternative hypothesis:** |
| --- | --- |
| Directional/Non-Directional |  |

**NULL:**

b. The design is (circle one): non-experimental / experimental

c. What analysis would you run?

| **Circle one below:** | **Circle one below:** |
| --- | --- |
| One-tailed/Two-tailed | One-sample T-test  / Paired-Samples T-test / Independent Samples T-test |

**2.** A social worker learned about a new memory technique that might help their clients who struggle with forgetting to do things. To test whether the technique may actually be effective, the social worker decides to assign half their clients to follow the technique for the next month, and does not tell the other half of clients about it. At the end of the month, the social worker counts up how many problems the clients reported with their forgetting. The social worker is hoping that the clients using the technique will report forgetting less than the clients without the technique.

a. Describe the hypothesis:

| **Circle one below:** | **Write out the alternative hypothesis:** |
| --- | --- |
| Directional/Non-Directional | The technique will prove a significant effect, with clients using the technique forgetting less than those without the technique. |

NULL:

b. The design is (circle one): experimental / non-experimental

(circle one): within-subjects / between subjects

c. What is the predictor/independent variable?

use of the memory technique (use the technique vs. don’t use it)

d. What is the outcome/dependent variable?

How many problems reported about forgetting

e. What analysis would you run?

| **Circle one below:** | **Circle one below:** |
| --- | --- |
| One-tailed/Two-tailed | One-sample T-test  / Paired-Samples T-test / Independent Samples T-test |

Pasted below is our workthrough of the HW4 questions:

3. Just as in lab, please complete the following for the research question below using the data we collected from our online study.

**Descriptive Statistics**

* 1. Describe ratings for liking of chocolate desserts:

We asked 21 participants to rate their liking of chocolate desserts on a scale of 1(dislike a great deal) – 7(like a great deal). our sample gave a mean rating of 5.67 with a standard deviation of 1.461.

1. How many students were in the small anchor condition? (provide frequency and relative frequency)

Frequency Tables

| AnchorCondition | | Frequency | | Percent | | Valid Percent | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Large |  | 10 |  | 47.619 |  | 47.619 |  |
| Small |  | 11 |  | 52.381 |  | 52.381 |  |
| Missing |  | 0 |  | 0.000 |  |  |  |
| Total |  | 21 |  | 100.000 |  |  |  |

1. What is the average Biology size estimate (BioEst) for ONLY those in the small anchor condition?
   1. 112.182

**Inferential Statistics**

|  |  |  |
| --- | --- | --- |
| **Do students prefer one type of flavored dessert (chocolate vs. vanilla) over the other?** | | |
| a. State the Null and Alternative Hypotheses: | | |
| *H0*: | There will be no significant difference in the flavor ratings. | |
| *HA*: | There will be a significant difference in the flavor ratings. | |
| b. Is this hypothesis: **☐** directional **☐** non-directional | | |
| c. What variable/s are you including in your analysis? (Use the variable names from the dataset) | | |
| Variable/s: | Flavors\_1 and Flavors\_2 | |
| d. What test should you use? (indicate both tailed-ness and the type of test) | | Two-tailed paired-sample t-test |
| e. Which of the following did you select when running your analysis? (Should match the tailed-ness you indicated above)  **☐** ≠ **☐** > **☐**  < | | |
| f. Please copy the information from your output | | |

## Paired Samples T-Test

| *Paired Samples T-Test* | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Measure 1 | |  | | Measure 2 | | t | | df | | p | |
| flavors\_1 |  | - |  | flavors\_2 |  | 0.335 |  | 20 |  | 0.741 |  |
|  | | | | | | | | | | | |
| Note.  Student's t-test. | | | | | | | | | | | |

. Was there a statistically significant difference in preferences toward chocolate vs. vanilla desserts?

There was no significant difference.

h. Write your results in APA style.

We performed a two tailed paired-sample t-test to compare students preferences towards chocolate or vanilla desserts,

The results showed that there was no significant difference between the students preferences towards flavors of desserts. Students preferences for vanilladesserts (M=5.81, SD=1.08) and preferences for chocolate desserts(M=5.67, SD=1.46) did not have any significant variation when their scores were measured, t(20)=0.335, p=0.741, d=0.11

**JASP output🡪 what do the different components indicate**

**Design questions🡪 within/between**

**Analysis decisions🡪 Z-test, one-sample t-test, paired samples t-test, independent samples**

Panera wants to know whether putting photos of the food on the menu leads people to spend  
more money on food than having menus without the photos. They assign some locations to have  
the photo menu and some to have the traditional menu without photos and then compare the  
amount in sales made.

They are comparing sales for the menus with photos compared to the menus without photos.

Directional / Non-directional

Non-experimental design / Experimental design

Between / within-subjects design

Z-test, one-sample t-test, paired samples t-test, independent samples t-test

Predictor/independent variable: Menu type (traditional vs. photo version)

Outcome/dependent variable: Amount in sales

**A teacher examines whether students report differing levels of confidence if wrong answers get marked in red or blue ink. She marks some students’ assignments using a red pen, other students’ assignments using a blue pen, and then asks everyone to rate their confidence on a scale from 1 (not at all confident) to 7 (extremely confident).**

Directional / Non-directional

Non-experimental design / Experimental design

Between / within-subjects design

Z-test, one-sample t-test, paired samples t-test, independent samples t-test

Predictor/independent variable: ink/pen color (red vs. blue)

Outcome/dependent variable: student confidence

A researcher is going to study how socially anxious individuals perform on a task. First, the researcher needs to determine if his sample is socially anxious. The researcher concludes that a score of 7 (out of 10) or greater on the social anxiety questionnaire would indicate social anxiety, so he tests whether his sample has a score greater than 7.

Directional / Non-directional

Non-experimental design / Experimental design

Z-test, one-sample t-test, paired samples t-test, independent samples t-test

Variable: Social anxiety ratings

A street musician wants to know whether people will throw more money into their donation box when they play upbeat songs versus slower (more melancholy) songs. They alternate playing the two types of songs to the same audience and keep track of how much money got thrown in for each song.

Directional / Non-directional

Non-experimental design / Experimental design

Between / within-subjects design

Z-test, one-sample t-test, paired samples t-test, independent samples t-test

Predictor/independent variable: song type

Outcome/dependent variable: how much money is earned

|  |
| --- |
|  |