**Mark scheme -Level 5 Yr 1 research methods exam practice**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table two** | | | | |
| **Table of critical values of the sign test (S)**  Calculated value of S must be ≤  than the critical value to be significant. | | | | |
| **Level of significance for a one tailed test** | | | | |
|  | **.05** | **.025** | **.01** | **.005** |
| **Level of significance for a two-tailed test** | | | | |
|  | **.10** | **.05** | **.02** | **.01** |
| **N** |  |  |  |  |
| **5** | **0** |  |  |  |
| **6** | **0** | **0** |  |  |
| **7** | **0** | **0** | **0** |  |
| **8** | **1** | **0** | **0** | **0** |
| **9** | **1** | **1** | **0** | **0** |
| **10** | **1** | **1** | **0** | **0** |
| **11** | **2** | **1** | **1** | **0** |

A psychologist was investigating the difference between a person’s concentration levels before and after exercise. Previous research had been inconclusive with some research showing an effect whilst others no effect. 24 participants were gathered by the researcher. They gathered the sample from a local office block where they found that the majority of workers were male and so to represent this in the sample gathered selected 18 men and 8 women from a list of all workers in the building using a random number generator. Participants were then timed completing a concentration test before being made to do a 30 minute run and then were timed completing the same concentration test after a 30 minute run. The findings of the research are shown in table one.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table one** | | |  |
| Participant | Before exercise (seconds) | After exercise (seconds) |  |
| 1 | 36 | 36 | = |
| 2 | 22 | 11 | + |
| 3 | 23 | 23 | = |
| 4 | 45 | 35 | + |
| 5 | 22 | 22 | = |
| 6 | 21 | 21 | = |
| 7 | 34 | 33 | + |
| 8 | 51 | 51 | = |
| 9 | 35 | 36 | - |
| 10 | 55 | 57 | - |
| 11 | 11 | 11 | = |
| 12 | 33 | 30 | + |
| 13 | 42 | 42 | = |
| 14 | 34 | 36 | - |
| 15 | 66 | 66 | = |
| 16 | 22 | 25 | - |
| 17 | 25 | 31 | - |
| 18 | 45 | 45 | = |
| 19 | 41 | 41 | = |
| 20 | 44 | 48 | - |
| 21 | 22 | 22 | = |
| 22 | 55 | 55 | = |
| 23 | 33 | 33 | = |
| 24 | 25 | 26 | - |

1. Write an appropriate and fully operationalised hypothesis (3 marks)

*If the hypothesis is not non directional then this immediately gets 0/3. It states the research was “inconclusive” so must be non- directional.*

*1 mark- basic, confused*

*2 marks- Clear but only on part of the IV or not fully operationalised*

*3 marks- clear, testable, operationalised ( see below)*

*There will be a difference in the amount of seconds it takes for participants to complete a concentration task before running for 30 minutes and after running for 30 minutes.*

1. What type of sampling did the researchers use? (1 mark)

*Stratified sampling*

1. Outline one disadvantage of using this type of sampling in **this** piece of research (2 marks)

*It states in this research so is not in context, i.e. linked to this research then 0 marks*

*2 marks- One disadvantage of using stratified sampling is that the 18 men and 8 women selected might not actually agree to take part once they have been selected.*

***OR***

*one disadvantage of using stratified sampling is that it can be more time consuming for the researcher than for example opportunity sampling. For example in this situation they would have had to know how many men and women were working in the office and have access to all of their names whereas for opportunity they would just ude whoever was available.*

1. What was the percentage of men that were used in the sample? Show all of your workings (2 marks)

*18/24x100 (1 mark)*

*= 75% (1 mark)*

*No workings means you lose 1 mark.*

1. Identify the experimental design used in the piece of research? (1 mark)

*Repeated measures (1 mark)*

1. Outline one advantage of this type pf experimental design. (2 marks)

*One advantage of repeated measures is that it avoids the issues with participants variables because the same people take part in both conditions. (2 marks)*

1. Using table one, what is the calculated value for the data above? Show your workings (2 marks)

*There are 4 +, 7 – (and 13=) (1 mark)*

*S is always the value with the sign with the lowest scores so the calculated value of S=4 (1 mark)*

1. Using the critical value table (table two) were the findings significant? **Fully justify your answer** (4 marks)

*1 mark- the critical value is 1*

*2nd mark- now fully justify… because the level of significance is 0.05, N=11 and it is 2 tailed (****YOU MUST*** *show how you got your critical value)*

*3rd mark- S ≤the critical value to be significant, here S=4 which is larger than the critical value of 1 so the results are NOT SIGNIFICANT*

*4th mark- NOW link back to the hypothesis, so…… this means that doing 30 minutes of exercise had NO effect on the participants concentration levels.*

1. The researcher attempted to put many controls in place during the research. Identify one element of the research that was **not** controlled however and state what could be done to improve on this issue. (1+ 2 marks)

*If not linked to the scenario then 0 marks*

*The same concentration test was used in both conditions and so order effects may have been an issue (1 mark)*

*To address this issue you would need to use a different concentration test on each conditions but of similar difficulty to avoid the issue with participants doing better on the test the second time because they have practiced. (2 marks)*

**Counterbalancing would normally be another correct answer but in this case you couldn’t do that as is “before and after” exercise so couldn’t have ½ doing after then before as that’s impossible to do!**

Another researcher and her 3 assistants (also investigating concentration levels) decided to do an observation in the same office block. They each used the CCTV of one floor of the building, without the participants knowing, and made their observations every 15 minutes through one eight hour working day by ticking an observation schedule. Before the observation began the researcher carried out a pilot study and also trained her assistants.

1. What type of observation did the researcher carry out? (3 marks)

Note it is worth 3 so you need the FULL type of observation.

*Naturalistic, covert, non-participant ( 3 marks)*

1. What type of sampling was used? (1 mark)

*Time sampling (1 mark)*

1. How many total observations should each researcher have made? Show all of your workings (2 marks)

*15 ÷ 60= 4 observations every hour, 4x8= (1 mark for workings out)*

*Answer is* ***32*** *observations in total per researcher ( 1 mark for the answer)*

1. Identify one way the researcher ensured the reliability **AND** the validity of the research (1+1 marks)

Reliability- used 4 observers (1 mark) used CCTV so could rewatch and recheck (1 mark) trained the researchers.

Validity- did a pilot study to make sure the categories were valid/made sense/fully operationalised

1. What would be the most appropriate measure of central tendency to use with this data? Justify your answer (2 mark)

*As the data is nominal (i.e. ticking an observation schedule) then the only measure of central tendency that can be used is the mode. (2 mark)*

Your mini mock will only be out of 24 marks. There are only 30 marks here to give you more practice

Total - /30 marks

Now mark **AND** correct your answers. Very similar styles of questions will be asked in your mini mock so it is a total waste of time to just answer and not mark and correct. You aren’t level 5 ing at all.