

AQA Psychology

Maths Revision work booklet

Name:

Mark:

Y12 Mathematical content – Specification details

Overall, at least 10% of the marks in assessments for Psychology will require the use of mathematical skills. These skills will be applied in the context of AS Psychology and will be at least the standard of higher tier GCSE mathematics.

Mathematical skills	Exemplification of mathematical skill in the context of AS Psychology
Arithmetic and numerical computation	
Recognise and use expressions in decimal and standard form.	For example, converting data in standard form from a results table into decimal form in order to construct a pie chart.
Use ratios, fractions and percentages.	For example, calculating the percentages of cases that fall into different categories in an observation study.
Estimate results.	For example, commenting on the spread of scores for a set of data, which would require estimating the range.
Handling data	
Use an appropriate number of significant figures.	For example, expressing a correlation coefficient to two or three significant figures.
Find arithmetic means.	For example, calculating the means for two conditions using raw data from a class experiment.
Construct and interpret frequency tables and diagrams, bar charts and histograms.	For example, selecting and sketching an appropriate form of data display for a given set of data.

Mathematical skills		Exemplification of mathematical skill in the context of AS Psychology
Understand simple probability.		For example, explaining the difference between the 0.05 and 0.01 levels of significance.
Understand the principles of sampling as applied to scientific data.		For example, explaining how a random or stratified sample could be obtained from a target population.
Understand the terms mean, median and mode.		For example, explaining the differences between the mean, median and mode and selecting which measure of central tendency is most appropriate for a given set of data. Calculate standard deviation.
Use a scatter diagram to identify a correlation between two variables.		For example, plotting two variables from an investigation on a scatter diagram and identifying the pattern as a positive correlation, a negative correlation or no correlation.
Use a statistical test.		For example, calculating a non-parametric test of differences using the data from a given experiment.
Make order of magnitude calculations.		For example, estimating the mean test score for a large number of participants on the basis of the total overall score.
Know the characteristics of normal and skewed distributions.		For example, being presented with a set of scores from an experiment and being asked to indicate the position of the mean (or median, or mode).
Understand measures of dispersion, including		For example, explaining why the standard deviation might be a more useful measure of dispersion for a

Mathematical skills		Exemplification of mathematical skill in the context of AS Psychology
standard deviation and range.		given set of scores, e.g. where there is an outlying score.
Understand the differences between qualitative and quantitative data.		For example, explaining how a given qualitative measure (for example, an interview transcript) might be converted into quantitative data.
Understand the difference between primary and secondary data.		For example, stating whether data collected by a researcher dealing directly with participants is primary or secondary data.

Algebra

Understand and use the symbols: $=$, $<$, \ll , \gg , $>$, ∞ , \sim .	For example, expressing the outcome of an inferential test in the conventional form by stating the level of significance at the 0.05 level or 0.01 level by using symbols appropriately.
Graphs	
Translate information between graphical, numerical and algebraic forms.	For example, using a set of numerical data (a set of scores) from a record sheet to construct a bar graph.
Plot two variables from experimental or other data.	For example, sketching a scatter diagram using two sets of data from a correlational investigation.

Sections of the table that are scored out like this “Statistical tests” are not needed for the test in transition week.

For revision, you can complete these questions. If you wish to time yourself, it should take one hour. Total marks: 50. You can use a calculator.

1. The following data is from an experiment on reaction times, and represents the number of times a button was pressed within half a second of being shown an object on the screen:

5, 3, 6, 7, 7, 4, 8, 5, 4, 4, 5, 3, 4, 8, 17

Calculate the:

- a) Mean: (1 mark)
- b) Median: (1 mark)
- c) Mode: (1 mark)
- d) Range: (1 mark)

2. The following are individual participants' scores on a memory test:

14, 8, 12, 10, 8, 8, 7, 6, 13, 11, 6, 6, 6, 14, 15, 13, 8, 14, 8, 11

Calculate the:

- a) Mean: (1 mark)
- b) Median: (1 mark)
- c) Mode: (1 mark)
- d) Range: (1 mark)

3. What is the missing number? $\frac{2}{3} = \frac{?}{15}$ (1 mark)

4. What is the missing number? $\frac{3}{4} = \frac{9}{?}$ (1 mark)

5. What is the missing number? $\frac{24}{36} = \frac{?}{3}$ (1 mark)

6. Simplify $\frac{24}{30}$ (1 mark)

7. Simplify $\frac{25}{30}$ (1 mark)

8. What's $\frac{3}{4}$ of 72? (1 mark)

9. What's $\frac{5}{8}$ of 40? (1 mark)

10. Write 40p as a fraction of £1 (1 mark)

11. Write 20mm as a fraction of 40mm (1 mark)

12. Express 0.02 as a fraction (1 mark)

13. Express 0.05 as a fraction (1 mark)

14. Write 40% as a fraction (1 mark)

15. If there were 120 participants in a study and 40 were in condition A, what percentage of participants was this? (Give your answer to two significant figures) (2 marks)

16. What percentage of participants (in Q16) were in condition B? (Give your answer to one significant figure) (2 marks)

17. Write the following fraction $\frac{30}{100}$ as a percentage and a decimal (2 marks)

18. What ratio is equivalent to 2:3? (1 mark *circle the correct answer*)

4:7

5:10

6:9

19. Write 14:35 in its simplest form? (1 mark)

20. In a psychology study 4 experimenters are required to run a study with 32 participants. How many experimenters will be required for 40 participants? (1 mark)

21. What is 7.994 to two significant figures? (1 mark)

22. What would you get if you wrote 0.0000058763 correct to 2 significant figures? (1 mark)

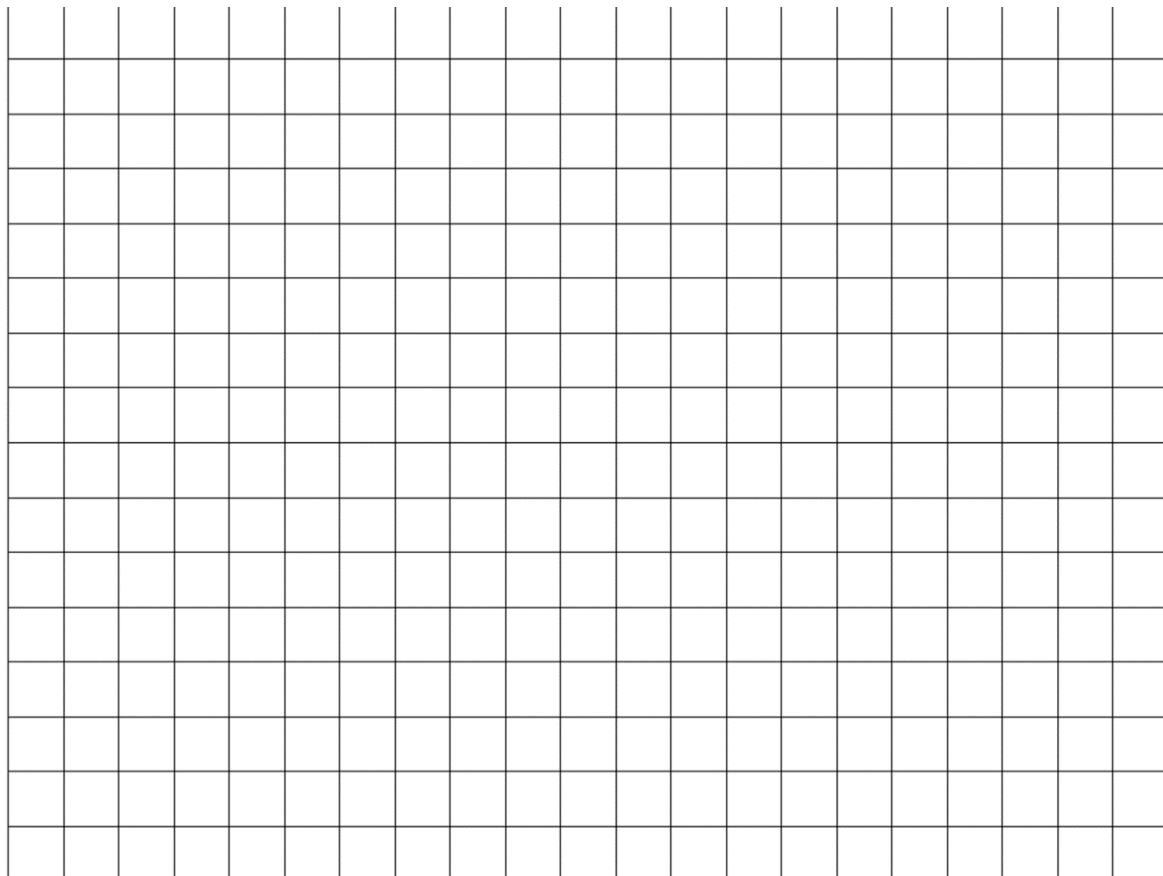
Psychology exam questions from exam papers

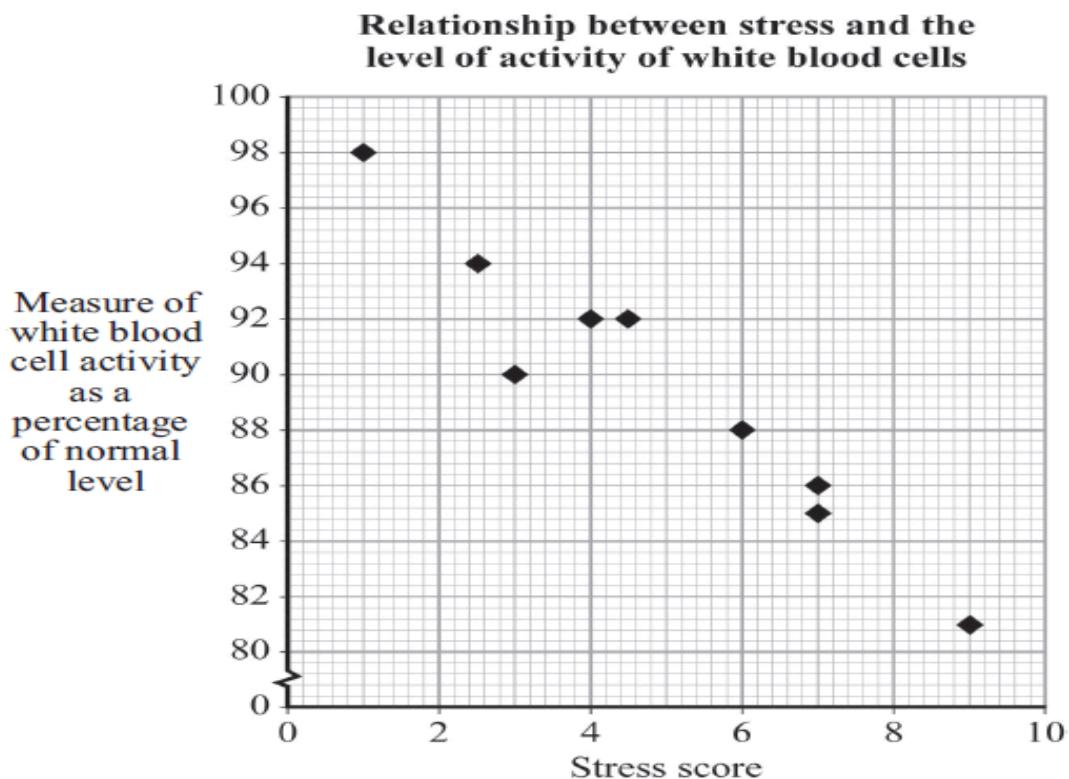
23. The table below shows the results of an obedience study.

	Boys	Girls
Obeyed	36	24
Disobeyed	52	64

- a. What percentage of participants did not obey?(1 mark)
- b. What percentage of participants who obeyed were boys?(1 mark)
- c. What percentage of participants who did not obey were girls?(1 mark)

24. Draw a bar chart showing the percentage obedience for boys and girls from the table above. Use the graph paper on the next page. You get marks for a title, labelling the axes and accurate plotting. (4 marks)



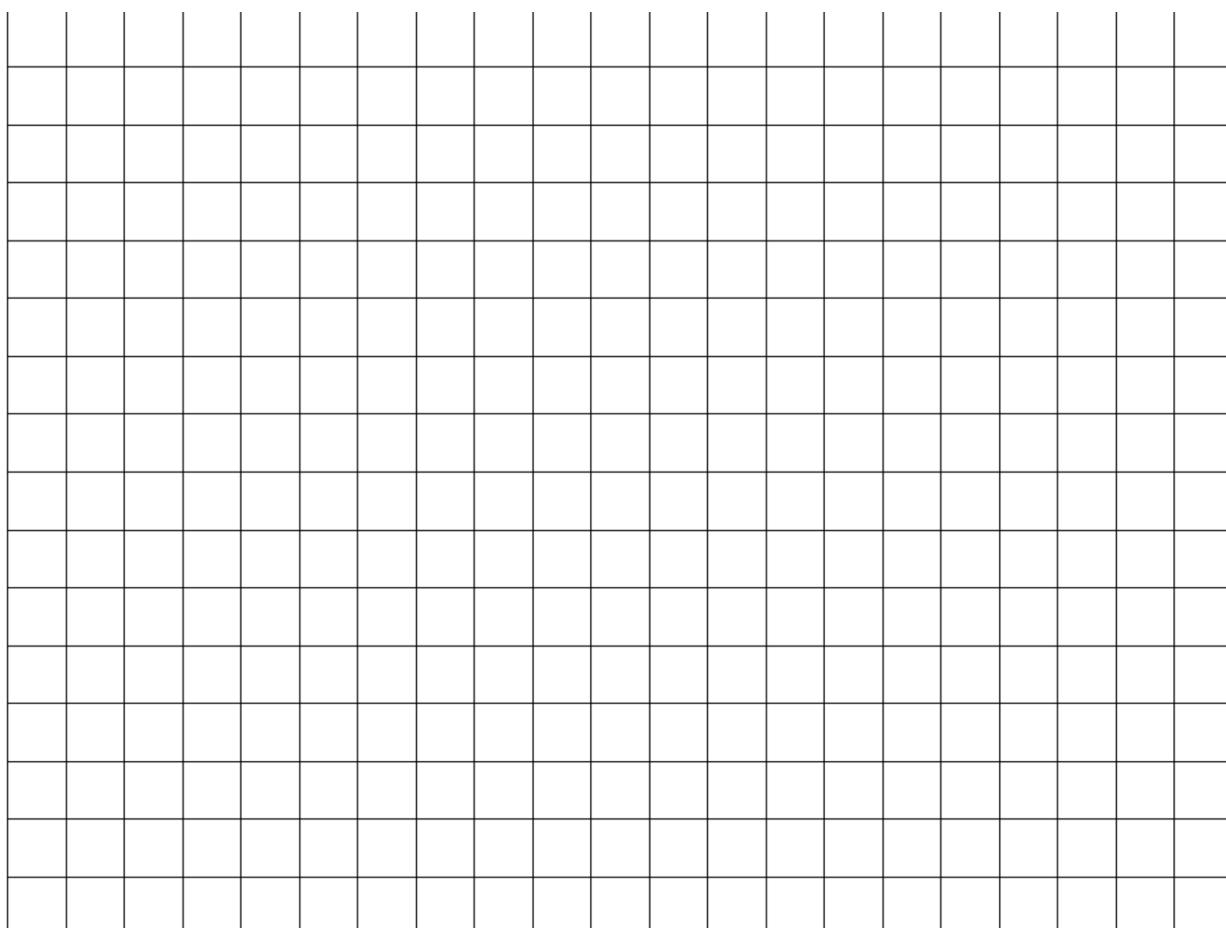


25. Psychologists did a study which looked at the relationship between stress and white blood cell activity. The graph below shows the results:

- How many participants did they use in their study? (1 mark)
- Does it show a positive or negative correlation? (1 mark)
- Strong or moderate or weak correlation? (1 mark)
- Describe this correlation in words (2 marks)

25. Gill is investigating the relationship between height and scores on a depression index. The results are shown in the table below. Draw a scattergram for this data on the next page. You get marks for a title, labelling the axes and accurate plotting. (4 marks)

Height (cm)	Depression Score
150	20
164	32
100	10
130	18
140	30



26. What does your scatter gram above show? (2 marks)

27. Explain what the following expression means: 'The number of girls < number of boys'

.....
.....(1 mark)