



GSS Online Test Guidance and Practice Pack

GSS Online Multiple Choice Test

Once you have submitted your application form you will receive an email asking you to complete an online multiple choice test.

The online multiple choice test will test your basic numerical and statistical concepts and techniques and your ability to apply these to practical problems. For some questions you may wish to use a calculator.

You will have 45 minutes to complete the test. For every correct answer you will score 3 marks but 1 mark will be deducted for each incorrect answer. An unanswered question will score zero.

When you click to start the test please ensure you read the first and second page on screen. The first page will provide you with some guidance and the second page will present you with the following practice questions and answers.

Two sample questions are:

- 1) An event promoter has scheduled an outdoor concert and expects to make a £12,000 profit if it does not rain. If it does rain she expects to make a £5,000 loss. The probability of rain on the day of the event is estimated to be 0.3. What is the promoter's expected profit?
A £100
B £3,500
C £6,900
D £7,000

The correct answer is C. The expected profit is $£12,000 \times 0.7 - £5,000 \times 0.3 = £6,900$.

- 2) A particular car achieves, on average, 35 miles per gallon. Taking 8 Km as equivalent to 5 miles, and one gallon as the same as four and a half litres, which of the following is the consumption figure, expressed in litres per 100 Km?
A: 7.56
B: 8.04
C: 10.53
D: 12.48

The correct answer is B. 35 miles is 56Km, so we get $56/4.5$ Km/litre. So the number of litres consumed in 100 Km is $100/(56/4.5) = 8.04$.

Please note that if you do not complete the test within the time allowed the system will automatically time you out and submit your responses. For GIS candidates you will need to click the 'Help required' we will then add additional time for you to complete the test if this is required.

If you are unable to complete the online test for any reason e.g. not having access to a computer please contact us on GSS.recruitment@ons.gsi.gov.uk

There will be a deadline for you to complete the online multiple choice test. Following this date you will be notified whether you have been unsuccessful or successful and your application will be progressed to the next stage of the process.

GOOD LUCK

GSS Multiple Choice Practice Test

Enter the correct option in the box on the right of each question. If you do not know the correct answer, leave the box blank. **A correct answer will score 3 marks, 1 mark will be deducted for an incorrect answer and an unanswered question will score zero.**

Please note: The answers to the test can be found at the bottom of this document

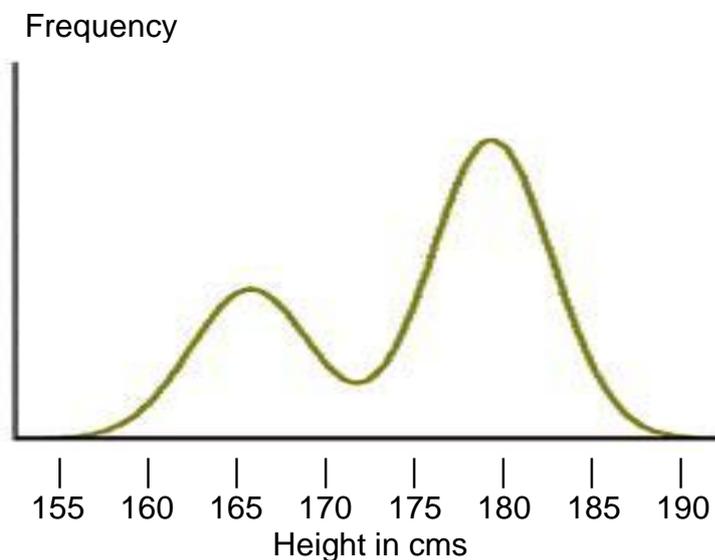
You have **20 minutes** to complete the test

<p>1) The solid cylindrical column in Nelson's Column in Trafalgar Square is approximately 105 feet high and 10 feet diameter. Which of the following is closest to its volume in cubic feet? (The formula for the volume of a cylinder is $\pi \times r^2 \times h$, where $\pi = 3.14$ approximately, r is the radius and h is the height).</p> <p>A: 1,650 B: 3,300 C: 8,250 D: 32,950</p>	<input type="text"/>
<p>2) In a hypothesis test a "p-value" (or significance probability) is quoted as being 1%. Which of the following is correct?</p> <p>A: The probability that the null hypothesis is true is 1 in 100 B: The probability that the null hypothesis is false is 1 in 100 C: The probability that the alternative hypothesis is true is 1 in 100 D: None of the above</p>	<input type="text"/>

3) A random sample of 500 is taken from a much larger population and the 95% confidence interval for the population mean is calculated as 32.2 ± 2.8 . A further and independent random sample of 500 is taken from the same population and a new 95% confidence interval for the population mean calculated on the combined sample of size 1,000. Which of the following is the most plausible new confidence interval?

- A: 32.1 ± 2.0
- B: 32.2 ± 1.4
- C: 32.3 ± 2.8
- D: 32.2 ± 5.6

4) The following graph shows the frequency distribution of the heights of a large sample of males and females aged 18 years.



Which one of the following conclusions CANNOT be made about the sample from this graph?

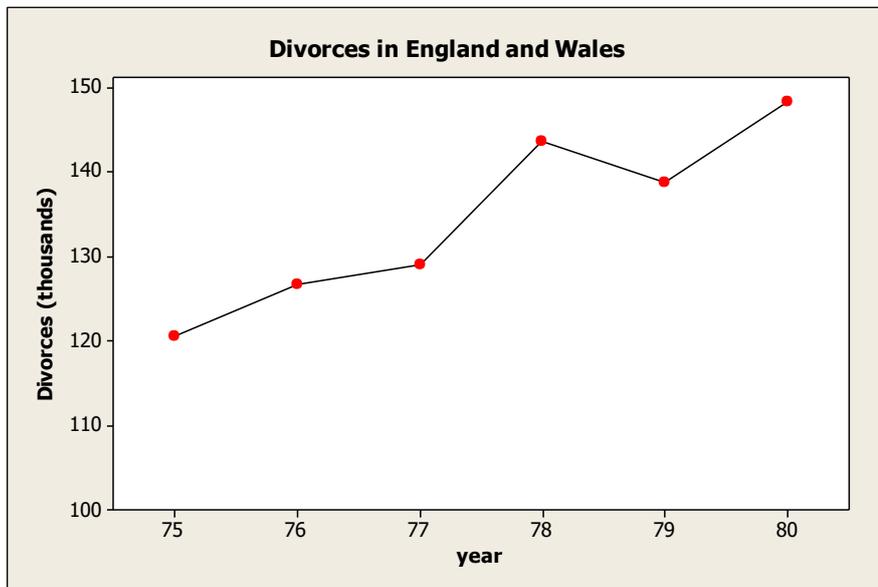
- A: The mean height is greater than 172cms
- B: The mode of the heights of females is approximately 165cms and that of males is approximately 180cms
- C: The median height is greater than the mean height
- D: The difference between the upper and lower quartiles is less than 30cms

<p>5) Two events X and Y have probabilities of 0.5 and 0.8 respectively. Which one of the following statements is always correct?</p> <p>A: The probability that both X and Y occur is less than 0.5 B: If X occurs then the probability that Y occurs is less than 0.8 C: The probability that both X and Y occur is at least 0.3 D: The probability that neither X or Y occurs is zero</p>	<input type="checkbox"/>
<p>6) Suppose the rate of interest on a savings account is 4% per annum, added to the account at the end of each year. How many years will it be before a sum of money deposited in the account has increased by a quarter?</p> <p>A: 5 B: 6 C: 7 D: 8</p>	<input type="checkbox"/>
<p>7) X and Y are independent random variables. X has mean 80 and standard deviation 8. Y has mean 40 and standard deviation 6. What are the mean and standard deviation of $(X-Y)$?</p> <p>A: Mean 40, standard deviation 10 B: Mean 60, standard deviation 7 C: Mean 40, standard deviation 2 D: Mean 40, standard deviation 14</p>	<input type="checkbox"/>
<p>8) For which one of the following intentions is the method of quota sampling specifically useful?</p> <p>A: To give all members of the population equal chances of being chosen. B: To fix the total sample size to client specification. C: To ensure that the sample has members from specified subgroups of the population. D: To simplify the coding of responses, prior to entering the data on a computer</p>	<input type="checkbox"/>

<p>9) Meteorites contain a percentage of rust that generally increases with the age of the meteorite. What type of graph would be most suitable for investigating the relationship between age and rust percentage for a sample of 500 meteorites?</p> <p>A: Histogram B: Comparative boxplot C: Scatterplot D: Line graph</p>	
<p>10) Data are collected on a sample of girls aged from 5 to 11 years. Their age x, in years and their height y in cms are recorded and found to be consistent with a linear relationship. The regression line of height on age is $y = 75 + 5x$. Which one of the following is a correct conclusion?</p> <p>A: The average height of the girls in the sample at age 15 is expected to be 150cms B: The regression line of age on height can be found by rearranging the equation to give $x = 0.2y - 15$ C: The maximum height of the girls in the sample is 130cms D: Over the next three years we would expect a 6 year old girl in the sample to grow by about 15cms</p>	
<p>11) The price of a television is £240 including Value Added Tax (VAT) at 20%. What would the price be before VAT is applied?</p> <p>A: £220 B: £200 C: £192 D: £190</p>	

<p>12) Which one of the following statements about any sample of data is always correct?</p> <ul style="list-style-type: none">A: If the mean and median are equal then the mode also takes their common valueB: The mean will fall somewhere between the upper and lower quartilesC: If the data are skewed to the right (positive skewness) the mean will not be lower than the medianD: If the data are not symmetric the upper and lower quartiles will not be equidistant from the median <p>A.</p>	<input type="checkbox"/>
<p>13) In which of the following circumstances would you expect stratification to be most useful, in helping to select a suitable sample?</p> <ul style="list-style-type: none">A: Within each stratum, the quantity of interest has a small varianceB: Within each stratum, the quantity of interest has a large varianceC: All the strata have roughly the same sizeD: The proposed strata have widely varying sizes.	<input type="checkbox"/>

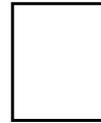
14) The following line graph shows how the number of divorces in England and Wales changed over the period from 1975 to 1980.



How many of the following statements about England and Wales can be deduced just from the data in this graph?

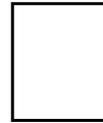
- The number of divorces rose by nearly one quarter between 1975 and 1980
- There were more than 750 thousand divorces in the six years from 1975 to 1980
- The probability of a marriage ending in divorce increased between 1975 and 1980
- The average length of a marriage fell over the period from 1975 to 1980

- A: 1
B: 2
C: 3
D: 4



15) The correlation between two variables, x and y , based on a random sample, is found to be $+0.4$. Which one of the following is correct?

- A: If x increases by 10 units, then y is expected to increase by 4 units.
- B: The least squares regression line of y on x has a positive slope.
- C: The correlation coefficient differs significantly from zero.
- D: Statements A, B and C are all false



Practice Test Answers

Question	Correct answer
1.	C
2.	D
3.	A
4.	B
5.	C
6.	B
7.	A
8.	C
9.	C
10.	D
11.	B
12.	C
13.	A
14.	B
15.	B

