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# Numeracy Professional Skills Practice Test 1 - Answers

**www.sigma-network.ac.uk Numeracy Professional Skills Test 1 – Answers**

## Mark Scheme

### Mental Arithmetic Section

|  |  |  |  |
| --- | --- | --- | --- |
| **Question Number** | **Correct Answer**  **(1 mark)** | **Also Accept**  **(1 mark)** | **Do Not Accept**  **(0 marks)** |
| 1 |  |  |  |
| 2 | **or** |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 | **or** |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |
| 11 | **years and months** |  |  |
| 12 |  |  |  |

### Written Data and Arithmetic Section

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Question Number** | **Test Section** | **Correct Answer**  **(1 mark)** | **Also Accept**  **(1 mark)** | **Do Not Accept**  **(0 marks)** |
| 13 | WD |  |  |  |
| 14 | WD | **(actual age: ,**  **reading age: )** |  |  |
| 15 | WA |  |  |  |
| 16 | WA |  |  |  |
| 17 | WD | **Options B and C** |  |  |
| 18 | WA | **Tuesday** |  |  |
| 19 | WA |  |  |  |
| 20 | WD | **Options A, B, and C** |  |  |
| 21 | WA | **A, E, I, J** |  |  |
| 22 | WA |  |  |  |
| 23 | WA | **or** |  |  |
| 24 | WD | **Option A** |  |  |
| 25 | WD | **C, F** |  |  |
| 26 | WA |  |  |  |
| 27 | WA | **Options A and C** |  |  |
| 28 | WA |  |  |  |

## Guidance for Answering the Questions

### Mental Arithmetic Questions

#### Question 1

The number of pupils in a class is .

The number of pupils who attend the maths club after school is .

The number of pupils who do NOT attend the maths club after school is .

out of is equivalent to: out of , which is equivalent to out of .

So the answer is .

#### Question 2

The total entrance cost was euros.

The exchange rate is is equal to euros.

The total entrance cost in pounds is: .

*Alternative method:*

Scale the ratio by multiplying both currencies by the same amount:

Basic exchange rate: euros equals pound.

Multiply by euros equals pounds.

Multiply by euros equals pounds.

#### Question 3

The number of pupils in a class is .

The amount of milk each pupil drinks is millilitres.

The total amount of milk needed is: mililitres.

The amount of milk in each bottle is millilitres.

The number of bottles of milk needed is: bottles.

The number needs to be rounded up to the nearest whole number i.e. as one cannot buy of a bottle.

*Further help*

To calculate times , think of as .

Firstly multiply by and then multiply by :

.

Then add these two results to get the final answer: .

#### Question 4

The number to be multiplied is .

Two hundred is .

The answer is: .

#### Question 5

A registration period is minutes.

The number of lessons is .

Each lesson is minutes.

The total time for the lessons is: minutes.

The length of the break is minutes.

The lunch itself is hour ( minutes) long.

The time spent on registration, lessons, break, and lunch totals:

minutes hours and minutes.

A school day starts at .

The lunch finishes at: hrs mins + hrs mins = (-hour clock).

*Further help*

Think of minutes as minutes.

Since hour is minutes, minutes is hours.

hours after is .

Adding an extra minutes to is .

#### Question 6

The total number of apples brought by five pupils: .

The total number of bananas brought by six pupils: .

The total number of nectarines brought by three pupils: .

The total number of pieces of fruit brought by all pupils: .

#### Question 7

The number of questions answered is .

The sponsorship for each correctly answered question is .

The number of pounds raised for charity is:

.

*Further help*

To multiply by first divide the first number by and multiply the second by giving: so there are no decimal places but the result is still equivalent to the original one.

Now think of as and multiply both by :

.

Then add these two results to get the final answer: .

#### Question 8

The number of pupils in Year is .

The number of pupils who have at least one sibling in the same school is .

The proportion of the year group that has at least one sibling in the school:

out of is equivalent to out of (both numbers divided by ), which as a decimal is .

*Further help*

To simplify a fraction/proportion, look for a number that divides both numbers (the numerator and the denominator).

In the example, both and can be divided by (divisor) giving and respectively (i.e. the proportion out of ).

#### Question 9

The number of journeys is .

The distance of one journey is kilometres.

The total distance travelled is: kilometres.

kilometre is equivalent to of a mile.

The total distance travelled in miles is: .

#### Question 10

The number of pupils in a class is .

The proportion of pupils who have a attendance is .

The number of pupils with a attendance is: .

#### Question 11

A reading age in Year is years and months.

A reading age in Year was months ( year and months) lower.

A reading age in Year was: years and months year and months = years and months.

*Further help*

Remember that one year has months.

First subtract year to be left with years and months months.

years and months is the same as years and months.

After you subtract months the answer is years and months.

#### Question 12

The number of pupils in a class is .

The fraction of the class who are girls is .

The number of girls in the class is: .

The fraction of girls who have blue eyes is .

The number of girls with blue eyes is: .

The fraction of girls with blue eyes in a class is: .

### Written Questions

#### Question 13

Each point on the scatter graph represents one of the pupils in the class.

The bolds lines represent years, whereas the thin lines represent months.

A horizontal line at years and months corresponds to the reading age of years and months – you need to draw it.

Count the points above the line to get the answer.

The answer is .

#### Question 14

The diagonal line shows points where the reading ages and actual ages are the same as each other.

The points above the line represent pupils with the reading age higher than the actual age.

To find the point (pupil) with the reading age higher than the actual age by exactly months you have to find the point which is horizontal lines away from the diagonal line when staying on a single vertical line.

The point that has the reading age higher than the actual age by exactly months is for the actual age of years and months and the reading age of years and months.

#### Question 15

The number of pupils/children is .

The number of adults/parents/teachers is .

Prices for children and adults:

* Group offer:
* Single tickets:

The group offer should be chosen.

At the group offer, tickets for children and tickets for adults can be bought (both numbers cannot exceed the required number of tickets and should be as close to them as possible).

The number of tickets required at a single price:

* Children:
* Adults:

The total amount for the admission fee:

#### Question 16

The school day starts at .

The school day ends at .

The school day is hours and minutes.

The school day is minutes long.

The short break is minutes long.

The lunch break is minutes long.

The total time for breaks is: minutes.

The percentage of a school day allocated to breaks is:

.

*Alternative method:*

Work could be done in hours instead of minutes.

The school day is hours and minutes. minutes is a quarter of an hour ( as a decimal). Therefore, the school day is hours.

The total time for breaks is minutes hour.

The percentage of a school day allocated to breaks is:

.

#### Question 17

*Statement 1: The median time spent on a journey to school was minutes.*

The number of pupils is .

The median journey time is the time for the 16th pupil.

The journey time to school spent by this pupil is minutes.

Statement 1 is False.

*Statement 2: of pupils take minutes or less to get to school.*

The number of pupils is .

of pupils is .

The time recorded by the 8th pupil is . Therefore, pupils take minutes or less to get to school.

Statement 2 is True.

*Statement 3: One pupil takes minutes to get to school.*

The number of pupils is .

The maximum time recorded is minutes.

The time recorded by pupil is minutes.

The time recorded by pupil is minutes.

Only one pupil takes minutes to get to school.

Statement 3 is True.

*Further help*

Statement 1: To find the median, locate the point on the vertical axis that is halfway to the maximum number of pupils (in our case it is ). Then read across to the curve and drop vertically downwards to the horizontal axis. The point reached will be the median value.

Statement 2: To find the time recorded by of pupils ( pupils), first locate on the vertical axis. Then read across to the curve and drop vertically downwards to the horizontal axis. The point reached will be your answer.

Statement 3: To find the time recorded by the and pupil, locate these points on the vertical axis. Then read across to the curve and drop vertically downwards to the horizontal axis. You will see that the pupil takes minutes whereas the takes minutes to get to school. Since there are only pupils, only one takes minutes.

#### Question 18

The formula to calculate the distance (D) when time (T) and speed (S) are given is:

.

Distance cycled on each day:

* Monday: 5 kilometres
* Tuesday: kilometres
* Wednesday: kilometres

The longest distance was cycled on Tuesday.

#### Question 19

The total number of pupils is .

Missing figures for the total number of lengths (third column in the table) are:

The total number of lengths is .

The mean number of lengths is rounded to the whole number is .

#### Question 20

*Statement 1: The average result for the Chemistry mock exam was the best predictor of the final GCSE exam result for that subject.*

The differences between the mock and final GCSE exams were as follows:

* Maths:
* English:
* Geography:
* Physics:
* Chemistry:

The subject for which the average mock exam result was the best predictor of the final GCSE exam for that subject was the subject with the smallest difference, i.e. Chemistry.

Statement 1 is True.

*Statement 2: The final English GCSE exam score was better than the mock for that subject.*

The mock English GCSE exam result is .

The final English GCSE exam result was .

of is which is equivalent to the difference between the final and mock English GCSE exam results.

Statement 2 is True.

*Alternative method*

The percentage change between final and mock results is: .

*Statement 3: The average score for all five subjects in the mock GCSE exams was greater than .*

Statement 3 is True.

#### Question 21

The tests are marked out of .

of is .

The table below shows the difference between English and Maths results.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Pupils' marks out of** | | |
| **Pupil** | **Maths** | **English** | **Difference** |
| **A** |  |  |  |
| **B** |  |  |  |
| **C** |  |  |  |
| **D** |  |  |  |
| **E** |  |  |  |
| **F** |  |  |  |
| **G** |  |  |  |
| **H** |  |  |  |
| **I** |  |  |  |
| **J** |  |  |  |

Pupils who scored at least percentage points ( marks in the table) less in English than they did in Maths are pupils A, E, I, and J.

*Further help*

Only pupils with an English mark lower than the mark for Maths should be considered.

Out of these, pupils with a difference of at least marks should be counted to give the correct answer.

#### Question 22

The number of pupils is .

The number of pupils who did better in English than they did in Maths is: .

The fraction of pupils who did better in English than they did in Maths is:

*Further help*

Only pupils B and D did better in English than they did in Maths.

out of pupils did better in English than they did in Maths which as a fraction is

To simplify a fraction, look for a number that divides both numerator (top number) and denominator (bottom number). In the example, and can be divided by .

In its lowest terms:

#### Question 23

The ratio of children to adults is .

The number of children is .

The number of portions for children is .

One portion is .

The number of portions for adults is .

The number of adults is: .

The price of an adult ticket is: .

The price of a child ticked is: .

The total money collected from the ticket sale is:

#### Question 24

*Statement 1: The median mark in Test B was approximately percentage points lower than the median mark in Test A.*

The median mark in Test A is .

The median mark in Test B is .

The median mark in Test B is percentage points lower than the median mark in Test A.

Statement 1 is True.

Statement 2: The range of percentage marks was greater in Test A.

The maximum value in Test A is .

The minimum value in Test A is .

The range of percentage marks in Test A is .

The maximum value in Test B is .

The minimum value in Test B is .

The range of percentage marks in Test B is .

Statement 2 is False.

*Statement 3: of pupils achieved or more in Test A.*

in Test A is the upper quartile.

The values from the upper quartile to the maximum values represent of the marks, not .

Statement 3 is False.

*Further help*

The box-and-whisker diagram consists of five main parts. The box indicates the marks achieved by the middle half of the pupils. The upper and lower quartiles are the top and bottom of the box. The vertical lines above and below the box are the extreme values (maximum and minimum value) and the difference between them is called the range. The horizontal line inside the box is the median mark.

#### Question 25

|  |  |  |
| --- | --- | --- |
| **Pupil** | **Does the time achieved go down in every training?** | **Is there a continual trend of improvement?** |
| A | No | No |
| B | No | No |
| C | Yes | Yes |
| D | No | No |
| E | No | No |
| F | Yes | Yes |

*Further help*

To have a trend of continual improvement in time achieved when running, the time achieved should be decreasing from one training to the next one throughout the 5 training sessions.

#### Question 26

Each of pupils on average collected .

The total amount of money collected by pupils is .

The sixteenth pupil collected .

The total amount of money collected by pupils is .

The new mean amount of money collected by one pupil is .

#### Question 27

*Statement 1: All pupils achieved at least in Mathematics.*

The value for the mode indicates that at least one pupil achieved a percentage mark of .

The range of marks is .

So the lowest mark in Mathematics cannot be lower than: .

Statement 1 is True.

*Statement 2: Some pupils achieved at least in English.*

The value for the mode indicates that at least one pupil achieved a percentage mark of .

The range of marks is .

So the highest mark in English cannot be greater than: .

Statement 2 is False.

*Statement 3: At least one pupil achieved less than in Science.*

The highest mark possible is .

The range of marks is .

If someone obtained then the lowest mark in the class would be .

If the highest score in the class was below then the lowest mark would

be lower than .

So, whatever the highest score for the class, the lowest mark will be less than .

Statement 3 is True.

#### Question 28

The area of a triangle is given by .

The base of triangle A is .

The height of triangle A is .

The area of triangle A is .

The base of triangle B is .

The height of triangle B is .

The area of triangle B is .

The base of triangle C is .

The height of triangle C is .

The area of triangle C is .

The total area of three triangles is .

This resource was produced by the **sigma** Network Employability Special Interest Group whose members are:

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