



Department
for Education

NUMERACY PROFESSIONAL SKILLS TEST PRACTICE TEST 3

First name

Surname

Date of test / /

This non-interactive practice material is intended to help you to practise answering questions and become familiar with the format of the paper-based versions of the Skills Tests.

In your actual paper-based test you will be provided with a guidance sheet and instructions for each section before you start the test. You will be able to refer to these throughout the test. Similar guidance is included below for your reference.

If you will be taking your actual test on computer, you are recommended to practise using the on screen practice tests.

Instructions

For the actual test, you will be provided with blank paper which you can use to record any working out.

The test contains two sections: mental arithmetic questions and written data and arithmetic questions. The practice test is designed to help you practise answering questions and become familiar with the format of the test. The questions are similar, but not identical, in structure to questions in the actual test.

A mark scheme is included at the end of the test which shows the correct answer for each question. At the end of this document there is guidance on how to answer each question in the test; for your reference during or after the test.

Mental Arithmetic Questions

The first section contains one practice question and 12 mental arithmetic questions.

- The first question is a practice question which will not contribute to your overall mark. All other questions are worth one mark each.
- You are allowed 55 seconds to read and answer each mental arithmetic question. For the actual test, if you do not have any hearing impairments, your test administrator will read out each question twice to you. This takes place **within** the time limit for each mental arithmetic question.
- You should note any instructions given in questions about the format of your answer, e.g. "correct to one decimal place".
- The question text is included in the space for each question.
- You should write your answer in the answer space for that question.
- You are not allowed to return to the mental arithmetic questions once they have been completed. In the actual test, this section will be removed once it has been completed.
- Decimal numbers should be written using a 'full stop' for the decimal point, for example '12.5'.
- Use of a calculator is **not** allowed in this section.

Written Data and Arithmetic Questions

The second section contains 16 questions worth one mark each. You are allowed 36 minutes to complete this section.

- You may answer the questions in any order.
- Some written questions share the same context.
- Decimal numbers should be written using a 'full stop' for the decimal point, for example '12.5'.
- A question may require you to:
 - write your answer in the answer space;
 - indicate the correct area(s) on a table, chart or graph by circling or ticking;
 - tick the correct answer option(s) from a list;
 - copy given value(s) into empty spaces in sentences, tables or charts.
- You are allowed to use a four-function calculator for questions in this section. For your actual test your test centre will provide the calculator.
- For your actual test, your invigilator will advise you when there are 5 minutes remaining until the end of your test.

Mental Arithmetic

Write your answers in the spaces.

Practice question

In a mathematics exam $\frac{3}{4}$ of the total marks come from a written paper and $\frac{1}{4}$ of the marks from coursework.

In the written paper $\frac{1}{4}$ of the marks come from a mental test.

What fraction of the total marks come from the mental test?

Answer: $\frac{\boxed{}}{\boxed{}}$

Question 1

In a year group of 110 pupils, 66 pupils have school dinners.

What proportion of the year group do not have school dinners?

Give your answer as a decimal.

Answer: _____

Question 2

In a year group of 120 pupils, 75% achieved a Level 4 or Level 5 in Key Stage 2 English. 65 pupils achieved a Level 4.

How many pupils achieved a Level 5?

Answer: _____ pupils

Question 3

In a year group of 120 pupils, 15 achieved an A* in GCSE English.

What percentage of the year group achieved an A* in GCSE English?

Answer: _____ %

Question 4

A pupil entering a Year 6 class has an actual age of 10 years 11 months.
The report from his previous school states that his reading age is
15 months above his actual age.

What is the pupil's reading age in years and months?

Answer: _____ years _____ months

Question 5

A sixth form group raises £82.50 for charity.

The money will be equally divided between three charities.

How much money will each charity receive from the group?

Answer: £ _____

Question 6

A teacher attends a consortium meeting. The journey is 7.5 miles each way.
Travel expenses may be claimed at 40p per mile.

How much is the teacher entitled to claim for travel expenses?

Answer: £ _____

Question 7

A primary school has 60 pupils in Year 6. Twenty-four of these pupils achieved three Level 5s in the Key Stage 2 tests.

What proportion of the year group achieved three Level 5s?
Give your answer as a decimal.

Answer: _____

Question 8

A teacher plans a school trip which includes a 152-kilometre coach journey in France. As an approximation, 8 kilometres is equal to 5 miles.

Using this approximation, how long is the journey in miles?

Answer: _____ **miles**

Question 9

For a practical task, a primary teacher needs 25 millilitres of liquid for each pupil. There are 28 pupils in the class.

How many millilitres of liquid are needed?

Answer: _____ millilitres

Question 10

A group activity contains two tasks. In the first task all 5 members of a group achieve 3 marks each.

In the second task 2 members achieve 4 marks each and the other 3 members achieve 3 marks each.

What is the total number of marks achieved by the group?

Answer: _____ marks

Question 11

A school trip is planned for 56 pupils.

There must be at least one adult for every 8 pupils.

What is the minimum number of people on the trip?

Answer: _____ people

Question 12

A lesson begins at 11:40. The teacher prepares a 10-minute introduction followed by a 15-minute video clip and then a 25-minute activity.

At what time does the activity end?

Answer: : hours

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Written Data and Arithmetic

Question 13

A sixth form tutor organises a sponsored swim.

Five students in the tutor group take part in the swim and they decide to donate the money to two charities, X and Y, in the ratio 2 : 1.

The tutor records the number of lengths they swim and the amount of money they raise.

Student	Number of lengths	Amount of money raised (£)
A	10	9.50
B	9	11.20
C	10	13.20
D	8	10.05
E	9	12.15

How much money is given to charity X?

£18.70

£28.05

£37.40

£56.10

Question 14

A sixth form tutor organises a sponsored swim.

Five students in the tutor group take part in the swim and

they decide to donate the money to two charities, X and Y, in the ratio 2 : 1.

The tutor records the number of lengths they swim and

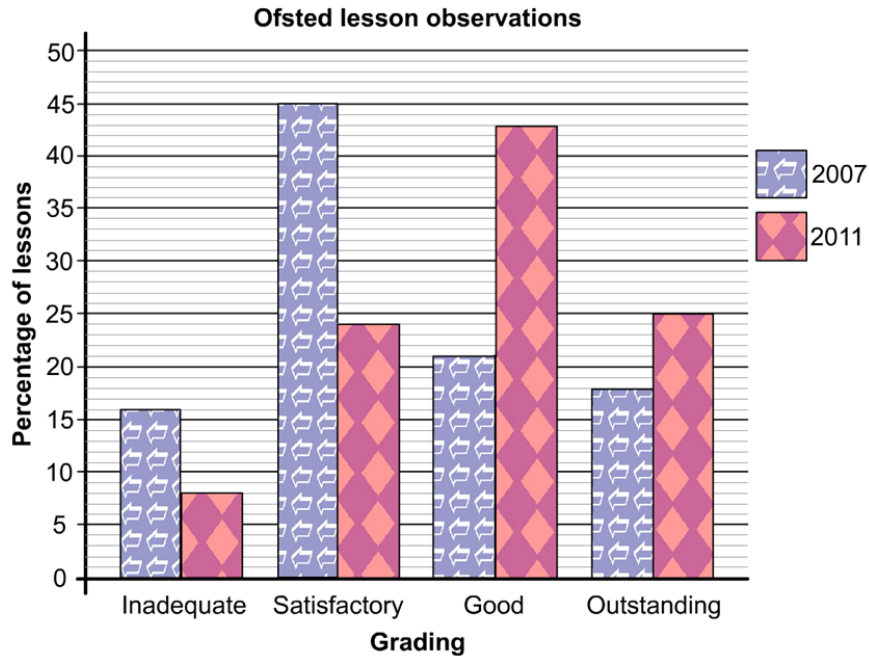
the amount of money they raise.

Circle the student who raised the most money per length.

Student	Number of lengths	Amount of money raised (£)
A	10	9.50
B	9	11.20
C	10	13.20
D	8	10.05
E	9	12.15

Question 15

At a staff meeting, the headteacher presents a bar chart comparing the outcome of Ofsted lesson observations for 2007 and 2011.



Tick all the true statements:

- 68% of observed lessons were graded 'Good' or 'Outstanding' in 2011.
- In 2011 the percentage of lessons that were graded 'Good' or 'Outstanding' was twice the percentage of lessons that were graded 'Good' or 'Outstanding' in 2007.
- The percentage of lessons graded 'Inadequate' was halved between 2007 and 2011.

Question 16

A teacher researches the cost of 15 packs of wooden shapes to use for a problem solving activity.

Source	Cost per pack (£)	Offers	Postage (£)	Total (£)
Catalogue	3.40	5 packs for the price of 4	No postage charge	
Internet	2.50	None	1.60 per 5 packs	

Copy the total cost for each source from the list below to correctly complete the table.

37.50

40.80

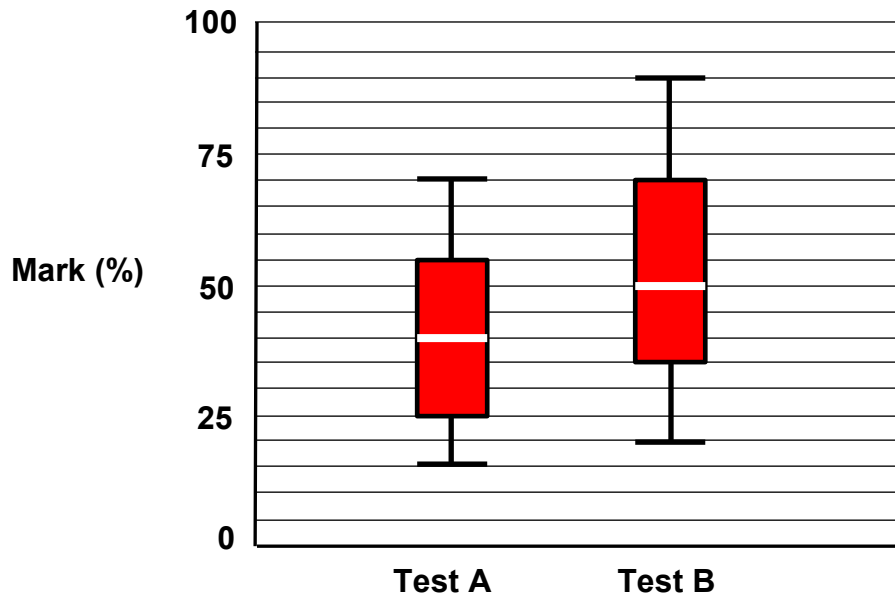
41.60

42.30

51.00

Question 17

A geography teacher uses a box-and-whisker graph to compare the performance of his class in two tests.

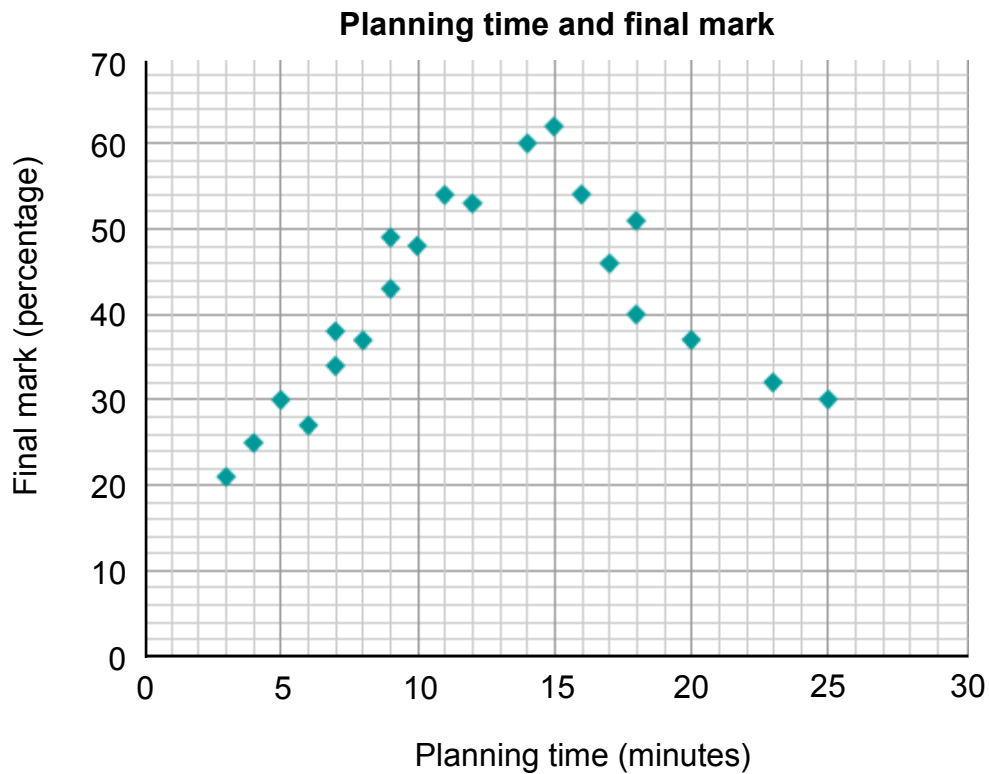


Tick all the true statements:

- The range of marks in Test A was greater than in Test B.
- The median mark in Test B was approximately 10 percentage points higher than the median mark in Test A.
- In Test B one-quarter of the pupils achieved 75% or more.

Question 18

A teacher asks pupils to record their planning time in a practice task-based assessment. To compare the pupils' planning time against their final mark, the teacher prepares a scatter-graph of the data. There are 21 pupils in the class.



Tick all the true statements:

- Two-thirds of the pupils spent 15 minutes or less on planning.
- The range of time used for planning was 22 minutes.
- The pupil with the median planning time achieved a final mark of 54.

Question 19

In a portfolio-based science course, there are three grades: pass, merit and distinction. To select an appropriate sample from each class for internal moderation, the school uses a formula:

For each grade, select one portfolio for every five students.

Round the number of students in each class at each grade upwards to the nearest five before making the selection.

For example, with 8 students at a pass grade select 2 portfolios.

Number of Students

Class	Pass	Merit	Distinction
A	13	9	5
B	6	12	9

How many portfolios altogether should be included in the internal moderation sample for both classes?

11

12

13

14

Question 20

A Year 6 primary teacher asks pupils to record the finish time, to the nearest minute, for a practice Key Stage 2 writing test. Thirty pupils do the test. The maximum time allowed for the test is 50 minutes. To inform a staff discussion on pupils' performance in the test, the teacher prepares a cumulative frequency graph showing the time pupils took to complete the test.

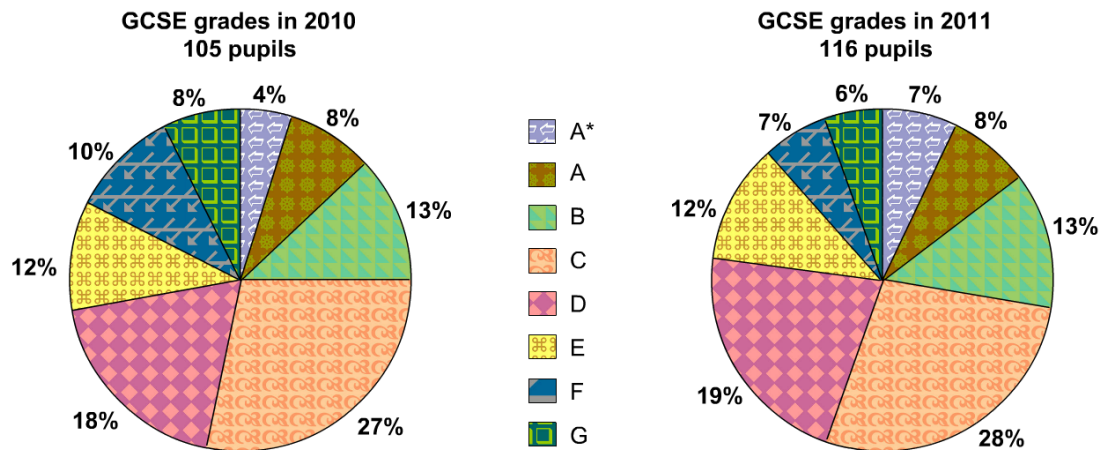


Tick all the true statements:

- All the pupils completed the test within the maximum time allowed.
- The median time taken was 40 minutes.
- No pupils recorded a time less than 29 minutes.

Question 21

For a departmental meeting, the head of modern languages produces pie charts of the GCSE results for the previous two years.



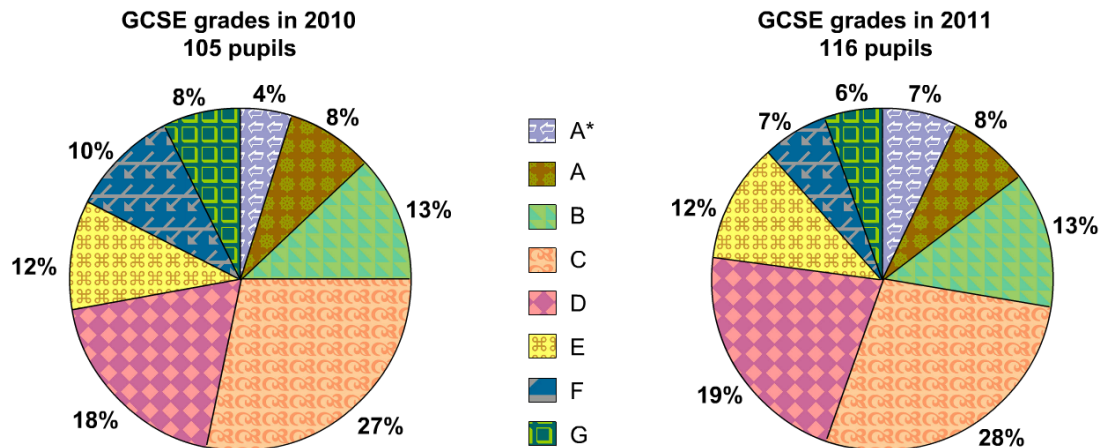
Percentages rounded to nearest whole number.

What is the percentage point improvement from 2010 to 2011 for grades A* - C?

Answer: _____ %

Question 22

For a departmental meeting, the head of modern languages produces pie charts of the GCSE results for the previous two years.



Percentages rounded to nearest whole number.

How many more pupils achieved a grade A* in 2011 than in 2010?

- 2
- 3
- 4
- 5

Question 23

A teacher is planning a weekend visit to Snowdonia with a group of students. The headteacher has given permission for the teacher to use the school minibus.

- The round trip will be approximately 350 miles.
- The minibus handbook gives the fuel consumption as 32 miles per gallon.
- The minibus uses diesel fuel which costs £1.13 per litre.
- 1 gallon = 4.546 litres.

What is the estimated fuel cost for the weekend trip?
Give your answer to the nearest pound.

Answer: £ _____

Question 24

The percentages of pupils gaining five or more A* - C grades in GCSE over a six-year period at a federation of schools are shown in the table.

Circle the school(s) that show a continual trend of improvement over the six years.

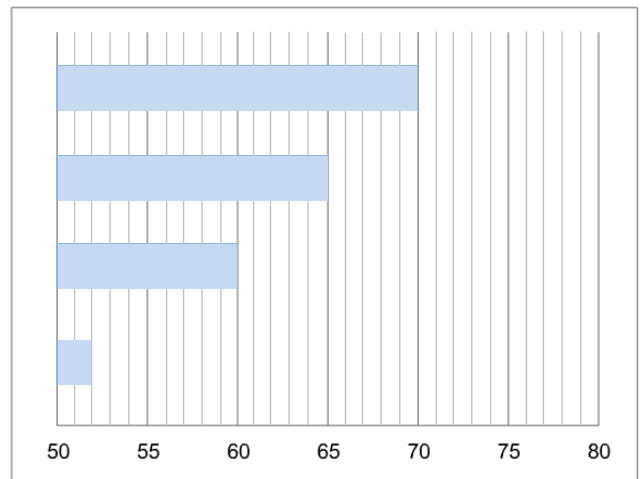
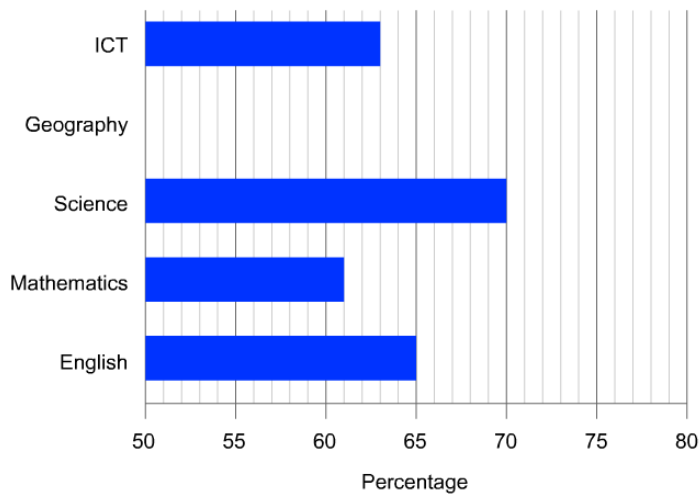
School	2006	2007	2008	2009	2010	2011
A	37.4	38.1	44.2	44.1	45.3	47.9
B	44.1	44.3	44.5	44.7	44.9	45.1
C	55.6	54.8	53.8	53.2	53.0	52.5
D	47.8	48.6	48.0	48.8	48.2	49.0
E	39.2	44.2	46.5	53.1	53.2	53.3

Question 25

A teacher prepares a bar chart to compare the percentage of pupils achieving grades A* - C in GCSE Geography with other GCSE subjects.

Eighty pupils sat the GCSE Geography examination, in which 52 pupils achieved grades A* - C.

Which of the bars on the right is the correct length to represent the GCSE Geography results in the bar chart on the left? Circle this bar.



Question 26

An ICT teacher compares the cost of building a paper-based ICT portfolio with the cost of using commercial e-portfolio software. The number of pupils on the course is 125.

On average, each paper-based portfolio includes 75 printed pages.

Costs are: printing - 2.5p per page
 ring binder - 75p.

The total cost of the e-portfolio software is £250.00 per year.

How much money would the school save by using the e-portfolio software?
Give your answer to the nearest pound.

Answer: £ _____

Question 27

A primary teacher monitors the reading age for a group of 9 pupils over a six-month period.

In each month, she records reading age minus actual age for each pupil.

Circle the pupil(s) who show a consistent trend of improvement in reading age minus actual age over the six-month period.

Pupil	Reading age minus actual age (months)					
	Jan	Feb	Mar	Apr	May	Jun
A	5	7	7	8	7	10
B	9	9	9	9	9	9
C	-7	-7	-5	-6	-4	-5
D	0	1	2	3	4	5
E	4	3	3	3	4	5
F	2	2	2	2	3	2
G	8	7	6	8	8	8
H	-7	-5	-3	-1	1	3
I	-8	-8	-7	-8	-6	-4

Question 28

A primary teacher monitors the reading age for a group of 9 pupils over a six-month period.

In each month, she records reading age minus actual age for each pupil.

Pupil	Reading age minus actual age (months)					
	Jan	Feb	Mar	Apr	May	Jun
A	5	7	7	8	7	10
B	9	9	9	9	9	9
C	-7	-7	-5	-6	-4	-5
D	0	1	2	3	4	5
E	4	3	3	3	4	5
F	2	2	2	2	3	2
G	8	7	6	8	8	8
H	-7	-5	-3	-1	1	3
I	-8	-8	-7	-8	-6	-4

What fraction of the group shows an overall increase in reading age minus actual age over the six-month period?

Give your answer in its lowest terms.

Answer: $\frac{\boxed{}}{\boxed{}}$

END OF TEST

Mark Scheme

Mental Arithmetic Section

Question Number	Correct Answer (1 mark)	Also Accept (1 mark)	Do Not Accept (0 marks)
Practice	$\frac{3}{16}$	<ul style="list-style-type: none">$\frac{03}{16}$	
1	0.4	<ul style="list-style-type: none">0.40	
2	25	<ul style="list-style-type: none">25.0	
3	12.5	<ul style="list-style-type: none">12.50	
4	12 years 2 months		
5	27.50	<ul style="list-style-type: none">27.5	<ul style="list-style-type: none">27.500
6	6 or 6.00	<ul style="list-style-type: none">6.0	<ul style="list-style-type: none">6.000
7	0.4	<ul style="list-style-type: none">0.40	
8	95	<ul style="list-style-type: none">95.0	
9	700	<ul style="list-style-type: none">700.0	
10	32	<ul style="list-style-type: none">32.0	
11	63	<ul style="list-style-type: none">63.0	
12	12:30		<ul style="list-style-type: none">12:3

Written Data and Arithmetic Section

Question Number	Test Section	Correct Answer (1 mark)	Also Accept (1 mark)	Do Not Accept (0 marks)
13	WA	£37.40		
14	WA	Student E		
15	WD	Options A and C		
16	WA	Catalogue: £40.80 Internet: £42.30		
17	WD	Option B		
18	WD	Options A, B and C		
19	WA	13		
20	WD	Options A and B		
21	WD	4	• 4.0	
22	WD	4		
23	WA	56 or 56.00	• 56.0	• 56.000
24	WD	Schools B and E		
25	WD	Bar B (65%)		
26	WA	78 or 78.00	• 78.0	• 78.000
27	WD	Pupils D and H		
28	WA	$\frac{2}{3}$	• $\frac{02}{03}$	

Guidance for Answering the Questions

Mental Arithmetic Questions

Practice question

The proportion of the total marks given to the written paper is: $\frac{3}{4}$.

The proportion of these marks given to the mental test is $\frac{1}{4}$.

The proportion of the overall marks given to the mental test is:

$$\frac{3}{4} \times \frac{1}{4} = \frac{3}{16}$$

Further help

To obtain a fraction of a fraction, you multiply the fractions together.

To do this, multiply the top numbers and then multiply the bottom numbers.

Question 1

The total number of pupils is 110.

The number having school dinners is 66.

The number not having school dinners is: $110 - 66 = 44$.

The proportion not having school dinners is $\frac{44}{110}$.

This can be simplified, by dividing the top and bottom of the fraction by 11, to $\frac{4}{10}$. Expressed as a decimal, this is 0.4.

Further help

A common error is to use the number **having** rather than **not having** dinners.

In order to express the answer as a decimal you need to simplify the proportion, 44 over 110, so that 10 becomes the lower number.

Both numbers can be divided by 11, resulting in 4 over 10.

Question 2

The number of pupils achieving a Level 4 or Level 5 = 75% of 120 = 90.

The number of pupils achieving a Level 4 = 65.

The number of pupils achieving a Level 5 = 90 – 65 = 25.

Further help

75% is equivalent to $\frac{3}{4}$.

$\frac{1}{4}$ of 120 = 30.

$\frac{3}{4}$ of 120 = 3 × 30 = 90.

The number achieving Level 4 is stated in the question.

The number achieving Level 4 has to be subtracted from the number achieving Level 4 and Level 5 in order to calculate the number achieving just Level 5.

Question 3

The fraction achieving a grade A* = $\frac{15}{120}$.

Simplifying this fraction as far as possible produces: $\frac{1}{8}$.

Multiplying the top number by 100 produces $\frac{100}{8} = \frac{25}{2} = 12.5\%$.

Further help

Simplify the fraction by dividing the top and bottom number by 3 and then by 5. The resulting bottom number will be 8. As you cannot easily multiply this up to 10, you need another method to convert your fraction to a percentage.

To convert the fraction to a percentage, multiply the top number by 100, and then you can simplify the resulting fraction.

Question 4

Reading age enhancement = 15 months = 1 year & 3 months.

Actual age = 10 years & 11 months.

Reading age = 10 years & 11 months + 1 year & 3 months = 12 years & 2 months.

Further help

Remember to **add** the 15 months not **subtract**.

Adding 3 months to 11 years and 11 months can be done mentally by adding 1 month first (to reach 12 years) and then adding the remaining 2 months (to reach 12 years and 2 months).

Question 5

To divide 82.50 by 3, select a nearby multiple of 3.

Method 1: Select 90

$$90 \div 3 = 30$$

$$90 - 82.50 = 7.50$$

$$7.50 \div 3 = 2.50$$

$$\text{Final answer: } 30 - 2.50 = 27.50$$

Alternative method 2: Select 75

$$75 \div 3 = 25$$

$$82.50 - 75 = 7.50$$

$$7.50 \div 3 = 2.50$$

$$\text{Final answer: } 25 + 2.50 = 27.50$$

Further help

You may prefer to imagine this sum as a long division.

8 divided by 3 equals 2 with 2 carried forward.

22 divided by 3 equals 7 with 1 carried forward.

15 divided by 3 equals 5.

0 divided by 3 equals 0.

Place the decimal point in the right place (i.e. between 7 and 5)

to get the answer 27.50.

Question 6

Total **return** journey = 15 miles.

Total claim allowable: = 15 miles \times 40p = 600p = £6.00.

Further help

A common error is to calculate the claim arising from a single journey as opposed to the full return journey.

The claims for each journey can be worked out separately and then added together but this method takes longer.

Question 7

The fraction of the year group achieving 3 Level 5s = $\frac{24}{60}$.

Simplified to its lowest terms = $\frac{2}{5}$.

$\frac{2}{5}$ written as a decimal = 0.4.

Further help

The fraction of the year group can be simplified by dividing both the top and the bottom numbers by 12 (or 2 then 2 then 3).

To convert $\frac{2}{5}$ to a decimal: re-write it as $\frac{4}{10}$.

$\frac{4}{10}$ written as a decimal is 0.4.

Question 8

8km is approximately 5 miles.

16km is approximately 10 miles.

160km is approximately 100 miles.

152 is: 160 – 8.

So, 152km is approximately 100 – 5 or 95 miles.

Further help

Alternatively: 152 divided by 8 equals 19.

19 multiplied by 5 equals 95.

Question 9

Method 1

$$28 \times 25 = (28 \times 20) + (28 \times 5) = 560 + 140 = 700$$

Method 2

Multiply 25 by 4 (to get to 100) and compensate by dividing 28 by 4, so

$$25 \times 28 = 100 \times 7 = 700$$

Further help

Method 1 helps the mental multiplication process by breaking down the calculation into easier numbers.

Method 2 makes use of the fact that multiplying by 100 is very straightforward.

Question 10

The total marks achieved in first task = $5 \times 3 = 15$.

Total marks achieved in second task = $(2 \times 4) + (3 \times 3) = 17$.

Overall total = $15 + 17 = 32$.

Further help

Be careful to ensure that both parts of the calculation for the second task are included.

Question 11

8 pupils require at least 1 adult supervisor.

56 pupils require at least 7 adult supervisors.

Minimum number of people is: $56 + 7 = 63$.

Further help

A common error is to forget to include the pupils in total.

Question 12

Method 1

Time at start is 11:40.

Time after 10-minute introduction is 11:50.

Time after 15-minute video is 12:05.

Time after 25-minute activity is 12:30.

Method 2

Total lesson time = $10 + 15 + 25$ minutes = 50 minutes.

End time of lesson = $11:40 + 50$ minutes = 12:30.

Further help

Method 1

The most difficult step is the 15 minutes from 11:50.

It takes 10 minutes to get to 12:00.

Then add the remaining 5 minutes to take the time to 12:05.

Method 2

To add 50 minutes on to 11:40, add 20 minutes to get to 12:00.

Then add the remaining 30 minutes to take the time to 12:30.

Written Questions

Question 13

Total amount raised = $9.50 + 11.20 + 13.20 + 10.05 + 12.15 = 56.10$.

The total of the terms of a 2 : 1 ratio is: $2 + 1 = 3$.

Divide the total amount raised by the total of the terms $56.10 \div 3 = 18.70$.

The proportion for Charity X is 2 times this amount:

$2 \times 18.70 = 37.40 = \text{Answer C}$.

Further help

To apportion the allocations, you need to add together the individual numbers (or terms) within each ratio, e.g. a ratio of 2 : 3 produces a total of 5.

Then divide the total amount to be apportioned by 5.

The larger portion is 3 times this amount (or $\frac{3}{5}$ of the total).

The smaller portion is 2 times this amount (or $\frac{2}{5}$ of the total).

Question 14

The right-hand column of the table shows the amount raised per length by each student.

Student	Number of lengths	Amount of money raised (£)	Amount raised per length (£) (to the nearest penny)
A	10	9.50	0.95
B	9	11.20	1.24
C	10	13.20	1.32
D	8	10.05	1.26
E	9	12.15	1.35

Student E raised the largest amount per length.

Further help

To calculate the amount per length, divide the total amount raised by the number of lengths in each case.

Question 15

Statement 1: 68% of observed lessons were graded 'Good' or 'Outstanding' in 2011.

Percentage of lessons rated good in 2011 = 43%.

Percentage of lessons rated outstanding in 2011 = 25%.

Percentage of lessons rated good or outstanding in 2011 = 43 + 25 = 68%.

Statement 1 is *True*.

Statement 2: In 2011 the percentage of lessons that were graded 'Good' or 'Outstanding' was twice the percentage of lessons that were graded 'Good' or 'Outstanding' in 2007.

Percentage of lessons rated good in 2007 = 21%.

Percentage of lessons rated outstanding in 2007 = 18%.

Percentage of lessons rated good or outstanding in 2007 = $21 + 18 = 39\%$.

Percentage of lessons rated good or outstanding in 2011
(calculated in Statement 1) = 68%.

Percentage for 2011 is not twice the percentage for 2007.

Statement 2 is *False*.

Statement 3: The percentage of lessons graded 'Inadequate' was halved between 2007 and 2011.

Percentage of lessons graded inadequate in 2007 = 16%.

Percentage of lessons graded inadequate in 2011 = 8%.

8 is half of 16.

The percentage of lessons graded inadequate halved between
2007 and 2011.

Statement 3 is *True*.

Further help

Take care when you take a reading from the vertical axis.

Take note of the darker lines every 5% up the vertical axis.

Question 16

5 packs from the catalogue would cost: $4 \times \text{£}3.40 = \text{£}13.60$.

15 packs from the catalogue would cost: $3 \times \text{£}13.60 = \text{£}40.80$.

Postage cost = $\text{£}0.00$.

Total cost = $\text{£}40.80$.

15 packs from the internet would cost: $15 \times \text{£}2.50 = \text{£}37.50$.

Postage for 5 packs = $\text{£}1.60$.

Postage for 15 packs = $3 \times \text{£}1.60 = \text{£}4.80$.

Total cost if ordered over the internet: $\text{£}37.50 + \text{£}4.80 = \text{£}42.30$.

Further help

You can combine the first two steps of the catalogue cost calculations by multiplying $\text{£}3.40$ by 12. However, multiplying by 12 mentally requires some work that might lead to errors.

A common error is to leave out the postage costs.

Question 17

Statement 1: The range of marks in Test A was greater than in Test B.

The range of marks in Test A = $70 - 15 = 55$.

The range of marks in Test B = $90 - 20 = 70$.

The range of marks in Test A is less than the range of marks in Test B.

Statement 1 is *False*.

Statement 2: The median mark in Test B was approximately 10 percentage points higher than the median mark in Test A.

Each division on the vertical axis is 5 percentage points.

The median mark in Test B is approximately 2 divisions, or 10 percentage points, higher than the median mark in Test A.

Statement 2 is *True*.

Statement 3: In Test B one-quarter of the pupils achieved 75% or more.

The upper quartile in Test B starts at 70%.

$\frac{1}{4}$ of the pupils achieved 70% or more.

It cannot be said that $\frac{1}{4}$ of the pupils achieved 75% or more.

Statement 3 is *False*.

Further help

The box-and-whisker diagram shows:

- the median (white line)
- the upper and lower quartiles (top and bottom of the box)
- the maximum and minimum values
(horizontal lines at the ends of the whiskers)

for two distributions.

Question 18

Statement 1: Two-thirds of the pupils spent 15 minutes or less on planning.

Number of students that spend 15 minutes or less = 14.

Total number of students = 21.

Fraction of students = $\frac{14}{21} = \frac{2}{3}$.

Statement 1 is *True*.

Statement 2: The range of time used for planning was 22 minutes.

Maximum planning time = 25 minutes.

Minimum planning time = 3 minutes.

Range of planning times: $25 - 3 = 22$ minutes.

Statement 2 is *True*.

Statement 3: The pupil with the median planning time achieved a final mark of 54.

Total number of students = 21.

The median student is in position 11 in rank order.

The score for this student is 54.

Statement 3 is *True*.

Further help

Statement 1: The fraction $\frac{14}{21}$ can be simplified by dividing both the top and the bottom numbers by 7.

Statement 3: The median is the middle student when all the planning times are arranged in order.

Question 19

The number of pupils in each class at each level is shown in the table.

The table also shows the number portfolios required in each case.

Class	Pass	Portf.	Merit	Portf.	Distn.	Portf.
A	13	3	9	2	5	1
B	6	2	12	3	9	2

The total number of portfolios required is 13.

Further help

To work out the numbers of portfolios required in each case divide the number of pupils by 5 and then round up. The total number of portfolios required is the sum of the numbers in the portfolio boxes in the table.

Question 20

Statement 1: All the pupils completed the test within the maximum time allowed.

The number of pupils in the class is 30.

The maximum number of pupils recorded on the vertical axis is 30.

All pupils are accounted for and completed the test in less than 50 minutes.

Statement 1 is *True*.

Statement 2: The median time taken was 40 minutes.

The maximum number of pupils is 30.

The median pupil is 15th in order of time.

The time recorded by this pupil is 40 minutes.

Statement 2 is *True*.

Statement 3: No pupils recorded a time less than 29 minutes.

The shortest time recorded by any pupil is 25 minutes.

Statement 3 is *False*.

Further help

Statement 2: To find the median, locate the point on the vertical axis that is halfway to the maximum number of pupils (in this case, halfway to 30 is 15).

Then read across to the curve and drop vertically downwards to the horizontal axis. The point reached will be the median value.

Statement 3: The shortest time is found by reading horizontally across from 1 on the vertical axis, reaching the curve, and then dropping vertically downwards to the horizontal axis. The point reached will be the shortest recorded time.

Question 21

Percentage of pupils achieving each grade:

Grade	2010	2011
A*	4	7
A	8	8
B	13	13
C	27	28
A* - C	52	56

The increase in the percentage of pupils achieving Grades A* – C is 4%.

Further help

Make sure to include the A* grades as well as the A grades in the total.

Question 22

Number of pupils achieving an A* grade in 2010 = 4% of 105 pupils
= 4 pupils (to the nearest whole number).

Number of pupils achieving an A* grade in 2011 = 7% of 116 pupils
= 8 pupils (to the nearest whole number).

The increase in the number of pupils achieving an A* grade is 4 pupils.

Further help

Be careful to take note of the different sized year groups.

To calculate a percentage of an amount on a calculator,
multiply the two numbers together and then divide by 100.

e.g. 8% of 250 = $8 \times 250 \div 100 = 20$

Question 23

Journey distance = 350 miles.

Fuel consumption = 32 miles per gallon.

Number of gallons required = $350 \div 32 = 10.938$ (to 3 d.p.).

One gallon is approximately 4.546 litres.

Amount of fuel required is 10.938×4.546 litres = 49.724 litres (to 3 d.p.).

Cost of fuel = $49.724 \times \text{£}1.13 = \text{£}56$ (to the nearest pound).

Further help

You can do the steps in a different order without affecting the time taken to answer the question.

Question 24

School	Does the percentage go up every year?	Is there is continual trend of improvement?
A	No	No
B	Yes	Yes
C	No	No
D	No	No
E	Yes	Yes

Further help

A trend of continual improvement only exists when a school's percentage scores increase every year throughout the 6 year period.

Question 25

Number of pupils achieving grades A*–C in geography is 52.

Number of pupils taking the subject is 80.

Percentage of pupils achieving grades A*–C in geography is 65%.

The bar which represents the percentage of pupils achieving A*–C in geography is 2nd from the top.

Further help

To calculate the percentage on a calculator, divide 52 by 80 and then multiply by 100.

Question 26

Printing costs for one portfolio: = $75 \times 2.5\text{p} = 187.5\text{p} = \text{£}1.875$.

Additional cost of binder = 75p.

Total cost of one portfolio = $\text{£}2.625$.

Total cost of 125 portfolios = $125 \times \text{£}2.625 = \text{£}328$ (to the nearest pound).

Amount saved by using e-portfolio software = $\text{£}78$.

Further help

Be careful not to round up the cost of one portfolio before multiplying by 125.

This will lead to an incorrect answer.

Question 27

The table describes the trend for each pupil.

Pupil	Trend of improvement
A	None
B	None
C	None
D	+1 each month
E	None
F	None
G	None
H	+2 each month
I	None

The pupils showing a consistent trend of improvement are D and H.

Further help

To be a consistent trend of improvement the scores must improve by the same amount each month.

Question 28

The table shows which pupils had an overall increase in their reading age minus their actual age over the 6 month period.

Pupil	Increase over 6 months?
A	Yes
B	No
C	Yes
D	Yes
E	Yes
F	No
G	No
H	Yes
I	Yes

Proportion of pupils with an overall increase $\frac{6}{9} = \frac{2}{3}$.

Further help

To give the proportion in its lowest terms
divide both the top and bottom numbers by 3.