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Functional Skills Mathematics at Level 2

Externally set and marked exam (4748-04)

Guidance for Delivery

Contents

1. Introduction

The following document is intended to support tutors with the delivery of the post 2019 Functional Skills Mathematics qualification at Level 2.

This Guidance for Delivery must be read in conjunction with the

- 4748-04 City & Guilds Level 1 & 2 Functional Skills Mathematics Qualification Handbook which contains the DfE Subject content for Functional Skills Mathematics

2. Understanding the Functional Skills Mathematics Subject content

All current Functional Skills Mathematics qualifications (regardless of awarding organisation) are derived from Subject Content published in 2018 by the Department for Education (DfE).

The Subject Content for Level 2 have been incorporated into City & Guilds' Functional Skills qualification handbook (along with the assessment weightings and other aspects of the qualification specifications); nevertheless, the original DfE document can also be found on the Functional Skills (4748) qualification documents webpage.

At Level 2, candidates are required to demonstrate a sound grasp of the mathematical skills set out in the Subject Content Statements (SCS1-28), as well as the ability to recognise and obtain mathematical solutions to complex problems in the workplace and other real life situations.

The Level 2 subject content subsumes **all** of the levels below, so it is important that teachers/tutors preparing candidates for Level 2 are also familiar with the requirements at Entry 1, Entry 2, Entry 3 and Level 1

There is a broad emphasis on work-based contexts and financial literacy within all Functional Skills Mathematics exams at levels1and 2, although these are not specific to any particular vocational sector.

The subject content is split into three areas:

- using numbers and the number system;
- using common measures, shape and space;
- handling information and data / statistics.

There is naturally much overlap between each of these and drawing on different areas should be encouraged when preparing candidates for assessment.

3. Structure of the assessment

Level 2 Functional Mathematics papers comprise two sections: a short section where the use of a calculator is not permitted and a longer section in which a calculator is permitted. Within both sections there are context-free questions testing underpinning skills and knowledge and there are problem solving questions requiring candidates to tackle problems in more complex contexts, ie, problems requiring a multistep process, some planning and working through at least two connected steps.

Candidates will be required to analyse the problems to decide suitable approaches, tackle the problems, achieve solutions and explain findings. Problem-solving questions will account for 75% of the marks on each paper.

The exams are available in two formats, both available 'on demand':

- On-screen (via the e-volve system)
- a paper-based test

As the examination is summative, candidates should only be entered for the examinations once they have completed a period of learning and have successfully completed practice papers.

4. Time allowance

The total time allowance for Functional Skills Mathematics at Level 2 is 1 hour and 45 minutes comprising.

- Section 1 (non-calculator) 25 minutes.
- Section 2 (calculator permitted) 1 hour and 20 minutes.

5. Permitted equipment

The following are **not permitted**:

- A calculator is not permitted in Section 1.
- A protractor is not permitted at Level 2.

For the paper-based exams, candidates will need:

Level 2	• Pen • Pencil • Eraser • 30 cm ruler • Calculator (Section 2 only)

6. Using sample papers and navigation tests

Candidates should be given plenty of opportunity to familiarise themselves with the format and structure of these assessments before attempting a live exam. A range of sample papers are available to facilitate this – in both PDF format (where candidates intend to complete a paper-delivered live exam) and in our OpenAssess platform to simulate the on-screen testing environment (where candidates intend to take their live exam via the e-volve system). Mark schemes can be found alongside the PDFs, although the on-screen format sample tests have the same content.

Familiarisation with the on-screen layout (eg work/answer boxes) and tools (eg graph/chart/table creators) is especially important where candidates are preparing to use the e-volve system.

In addition to the 'full test' on-screen samples, there is a familiarisation test that enables candidates to practise using these. Practice with options 1 (calculator and work box), 5 (table), 7 (diagram), 8 - 11 (charts and graphs) will be of particular value to candidates at level 2.

7. Recording answers and showing workings

In all cases candidates must ensure they record their answers in the spaces provided (on paper or on-screen); they should also show their workings where a space is provided for this (especially if the question is worth more than one mark), as this may enable them to access 'compensation marks' if their final answer is incorrect.

8. Calculators

Candidates are only permitted to use a calculator during Section 2 of the exam.

The on-screen (e-volve) system has a inbuilt calculator that candidates are only able to access once they have completed Section 1 and move on to Section 2.

In the case of paper-delivered exams, access to a calculator must be controlled/monitored by the invigilator; we do not specify any particular type of calculator, and than that it should be non-programmable hand-held non-programmable calculator (excluding mobile phones or other devices with access other other data/application) may be used. . Candidates may use a scientific calculator but a basic calculator is sufficient.

9. Underpinning skills and problem solving

Both Section 1 and Section 2 contain a balance of problem solving and underpinning skills questions.

Section	Marks		
	Problem solving	**Underpinning skills**	**Total**
1 – non-calculator	5	10	15
2 – calculator permitted	40	5	45

Overall 25% of the marks will be for Underpinning skills and 75% for problem solving.

Underpinning skills questions

The first 10 marks in Section 1 and the first 5 marks in Section 2 are for underpinning skills. These questions will normally have no context or a very limited context and minimal reading demand. They are designed to assess standard mathematical processes for the level.

Problem-solving questions

The final 5 marks in Section 1 and the final 40 marks of Section 2 assess problem solving. Each question will be a single realistic problem based on a topic that (some) people might reasonably meet in everyday life or work. They will not be specific to a particular vocational area of job role.

The Functional Skills Mathematics Subject Content defines a problem as

- having **little or no scaffolding**: there is little guidance given to the student beyond a start point and a finish point. **Questions do not explicitly state the mathematical process(es) required** for the solution.
- The **information is not given in mathematical form or in mathematical language**; or there is a need for the results to be interpreted or methods evaluated, for example, in a real-world context.

Candidates will be expected to choose an appropriate approach and methods as well as carry out calculations. They will also be given opportunities to interpret information.

Introduction to questions.

In order to tackle questions, candidates need to carefully access the instructions given in the introduction and select relevant data from the data given. A number of candidates

appear to neglect to read the detail of the requirements of each question and its overall purpose, and some clearly failed to access all required data (information given, e.g. in tables or charts, will be there for the purpose of answering the question), with some candidates completely ignoring given data.

Format. Problem-solving questions will generally not have specific instructions that give the method like 'Work out the total cost.' or 'What is the volume of paint required?' or 'Work out the mean and range of the data'
The challenge for candidates is to infer the calculations and method required to find a solution to a problem couched in terms such as:
e.g. A business owner thinks his company has made more profit this year
Figures provided for this year and last year.
Is he correct? Explain your answer.

e.g. A student has an interview at 4:15. She needs to know what time to leave home.
Timetables and travel times on different transport provided.
Decide which travel options are best for her. Explain your decisions.

e.g. A manager of a call centre installs a new rota system. She expects the change to improve the average time taken to deal with calls and the consistency across the staff.
Data provided for different staff before and after changes.
Did the changes improve staff performance? Explain your decision.

Candidates will be expected to choose an appropriate approach and methods as well as carry out calculations. They will also be given opportunities to interpret information.

10. Question types

Each paper contains a mixture of 'fixed response' questions (where there is one correct answer) and 'open response' (which might include a number of steps and range of appropriate responses).

Some of the fixed response questions are multiple choice in format, whereas others will be looking for candidates to provide a specific answer.

Some of the open response questions will involve

- producing an appropriate graphical or tabular representation
- providing an explanation or rationale for the answer given.

Drawing graph/chart items Where a candidate is required to construct a chart or graph OR diagram, they will have to choose titles and axis labels; choose a suitable scale and plot bars or lines.

Drawing diagram items A paper may require the candidate to draw a diagram instead of a graph or chart.

It is strongly recommended that candidates taking the E-volve papers practise drawing charts, graphs and diagrams with the online tools in advance of sitting the paper.

11. Sample papers

Sample assessments can be found on the City & Guilds website at the following link:

www.cityandguilds.com/what-we-offer/centres/maths-and-english/functional-skills

12. Tips

Subject content

Centres should be aware of all the detailed subject content specified for Level 2 in the DfE Subject content document (DfE Subject content functional skills: Mathematics) and be aware that Level 2 content also subsumes all level content below Level 2.(see appendix 2)

Particular attention is drawn to the following significant 'upgrading' from previous Level 2 specifications (numbers refer to DfE Subject content):

19. Use coordinates in 2-D, positive and negative, to specify the positions of points

21. Draw 3-D shapes to include plans and elevations

22. Calculate values of angles and/or coordinates with 2-D and 3-D shapes

24. Estimate the mean of a grouped frequency distribution from discrete data

26. Work out the probability of combined events including the use of diagrams and tables including two-way tables

28.Draw and interpret scatter diagrams and recognise positive and negative correlation

General calculation issues

Candidates must understand order of operations conventions (BIDMAS) and apply them to calculations. Online Candidates should be aware that the E-volve calculator currently does not automatically apply BIDMAS.

They must also be able to apply these rules when using formulae, including algebraic equations.

Candidates should use estimation and approximation techniques when required, including checking calculations.

Explanations / comments needed for problem solving questions

Problem solving questions may specify a requirement for explanation (comments). Candidates must be aware that, although marks will be awarded for relevant calculations, full marks will require suitable explanation using their results, preferably with reference to numerical values calculated: The explanation should link with (refer back to) the problem stated. Simple explanations are all that is required.

e.g. (1) ***Problem****: a man wants to buy the best value paint*

Result of calculation: *option A £19.00 option B £23.50*

Answer: *man should buy option A*

Explanation: *option A is cheaper by £4.50*

e.g., (2) ***Problem****: a holiday maker wants to choose the warmest place to go*

Result of calculation: *mean temperature for place A is 26°C and place B is 19°C*

Answer: *she should choose place A*

Explanation: *A is warmer than B average temperature for A is 26°C > 19°C for B*

Candidates must also be prepared to explain why a given answer is sensible (or not) based on mathematical process/understanding rather than calculated results.

e.g. a student works out that the average temperature in Manchester for December is 65°C

Response: *The answer is not sensible****,*** *65°C is far too high*

e.g. recognise whether an interpretation of data presented as a chart is accurate

e.g. recognise whether (or not) appropriate amounts or units are used (65ml will not fill a swimming pool; 100m is too big for the width of a door)

Candidates should be taught the distinction between averages and range and how to use each in explanations in context.

Presentation of results / workings

The importance of showing working on the assessments, ie to show calculations and methods used, should be stressed, particularly so that potential compensation marks, in the event of incorrect answers, are accessible to the candidate. This should be emphasised to online candidates who may use 'pencil and paper' methods initially to formulate their solutions.

Candidates need to understand the use of scales in scale diagrams and be prepared to construct scale diagrams, including plans and elevations.

Candidates should be taught to use a variety of presentation methods to summarise results, including graphs, charts and tables. They must understand that a table is not a chart (and vice versa). Summary tables should be systematically constructed to include rows and columns with appropriate headings.

Level 2 candidates must be prepared to construct scattergraphs and to draw and understand trend lines.

Additionally they may require presentation methods listed in the Level 1 subject content (27), ie line graphs, bar charts and pie charts.

Candidates who choose to access assessment online need to be prepared not only in terms of the prescribed Functional Skills Specification, but also in terms of using the E-volve platform. They must be well practised in the use of the presentation tools (tables, diagrams, charts and graphs) including how to insert sufficient text, keys and the use of sensible scales.

Appendix 1 Amplification of Subject content

1.1 Overview of Level 2 Functional Mathematics Subject Content

Centres should use the outline presented below in conjunction with the subject content statements (SCS).

<table>
<tr><td></td><td></td></tr>
<tr><td>Use of numbers and the number system
Students at Level 2 are expected to be able to use numbers of any size; read, write and make use of positive and negative integers of any size; use, order and compare integers, fractions, decimals, percentages and ratios as well as recognise the value of a digit in any whole or decimal number. They can use numerical and spatial patterns for a purpose and calculate with, and convert between, numbers written as fractions, decimals, percentages and ratios.</td><td rowspan="3">Solving mathematical problems and decision making
Students at Level 2 are expected to be able to use knowledge and skills to recognise and obtain a solution or solutions to a complex problem. A complex problem is one which requires a multistep process, typically requiring planning and working through at least two connected steps or processes. Individual problems are based on a combination of the knowledge and/or skills from the mathematical content areas (number and the number system; measures, shape and space; information and data). At Level 2 it is expected that the student will be able to address individual problems some of which draw upon a combination of all three mathematical areas and require students to make connections between those content areas.
The context of individual problems at this level will require interpretation and analysis in order for the student to be able independently to identify and carry out an appropriate mathematical process or processes.</td></tr>
<tr><td>Use of measures, shape and space
Students at Level 2 are expected to be able to handle relationships between measurements of various kinds, use angles and coordinates when involving position and direction and make use of geometric properties in calculations with 2-D and 3-D shapes and understand the relationships between them.</td></tr>
<tr><td>Handle information and data:
Students at Level 2 are expected to be able to construct, interpret and evaluate a range of statistical diagrams. They can calculate and interpret probabilities. They can calculate, analyse, compare and interpret appropriate data sets, tables, diagrams and statistical measures such as common averages (mean, median, mode) and spread (range), and use statistics to compare sets of data. They can identify</td></tr>
</table>

patterns and trends from data as well as recognise simple correlation.	

1.2 Subject Content statements (SCS)

1. Read, write, order and compare positive and negative numbers of any size

- large and small numbers written as numbers, words or powers of 10
  million (m) = 10^6 = 1 000 000
  billion (bn) = 10^9 = 1 000 000 000 (one thousand million as used in finance eg $4bn)

- put the following in increasing order:
  3050 *three hundred and sixty two* $3x10^3$ −351 0 −3

2. Carry out calculations with numbers up to one million including strategies to check answers including estimation and approximation.

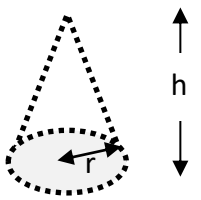
- add, subtract, multiply, divide, use indices
  10^3 x 10^2 = 10^5 (=100 000) 10^3 + 10^2 = 1100
- $\frac{1}{3}$ x 21 is 21 ÷ 3
- round numbers to the nearest 1, 10, 100, 1000
  15 to nearest 10 = 20, 2.6 to the nearest 1 = 3
- understand when rounding up and rounding down is appropriate
  eg round up 14.6 to 15 (rolls of wall paper)
  e.g. round down (truncation)
- check by approximation eg 25 x 50 = 1250 checks 24 x 48 = 1152
- check by reverse calculation eg 1152 ÷ 48 = 24 checks 24 x 48 = 1152

3. Evaluate expressions and make substitution in given formulae in words and symbols.

- simple algebraic equations
  $a + 2b^2 = 36$ what is b if a = 4 (b = 4)
  3xy = 12 what is y if x = 4 (y = 1)

- know the difference: xy (represents x multiplied by y) is not same as x+y (x added to y)
  and similarly 2y is 2 multiplied by y and $\frac{y}{2}$ is the same as $\frac{1}{2}y$ (y divided by 2)

- substitute values into formulae in symbols
  eg $V = \frac{\pi r^2 h}{3}$ for volume of cone



- substitute values into word formulae
  eg $monthly\ payment = \frac{total\ cost + 13.5\%}{period\ of\ loan\ in\ months}$ for repayment of bank loan

4. Identify and know the equivalence between fractions, decimals and percentages.

- equivalence $\frac{1}{10}$ = 10% = 0.1 = 10^{-1} $\frac{1}{100}$ = 1% = 0.01 = 10^{-2}
- percentages as decimals 5% = 0.05 50% = 0.5
- fractions as decimals eg $\frac{3}{16}$ = 3 ÷ 16 (on calculator) = 0.1875
- decimals rounded to given number decimal places (dp) eg 0.1875 to 2dp = 0.19
- fractions expressed in simplest form $\frac{44}{121} = \frac{4}{11}$
- put the following in decreasing order $\frac{1}{30}$ 0.3 $\frac{1}{300}$ 33%

5. Work out the percentages of amounts and express one amount as a percentage of another

- percentages of amounts
  6% of 250 = 15 from 0.06 x 250 (calculator) or 250 ÷ 100 x 6 (non calculator)
- amount as a percentage of another
  18 as a percentage of 120 = 15%

6. Calculate percentage change (any size increase and decrease) and original value after percentage change

- percentage increase
  200 increased by 40% = 280 from 200x 1.4 (derived from 1 + 0.4)
- percentage decrease
  200 decreased by 40% = 120 from 200 x 0.6 (derived from 1 – 0.4)
- percentage change

£720
Including 20% VAT

find price before VAT added = £600
from $\frac{720}{120}$ x 100 = 600

Company results		
year	2019	2020
profit	£8 000	£10 000

find the percentage increase in profit = 25%
from $\frac{10000-8000}{8000}$ x 100 = 25

7. Order, add, subtract and compare amounts or quantities using proper and improper fractions and mixed numbers

To find original value- e.g. find original number has been reduced 20% to 70. Use the inverse decimal and the inverse sign (divide instead of multiply) $70 / 0.8 = 87.50$.

Must know how to find the size of angles in a regular shape. Formula for external angles is 360/ n. n= number of sides

Minus this number from 180° to find internal angles.

Should be able to convert harder fractions with calculator, e.g.

Millionth 10^{-6} (0.000001), billionth 10^{-9} (0.000000001) , trillionth 10^{-12} (0.000000000001)

To find original value- e.g. find original number has been reduced 20% to 70. Use the inverse decimal and the inverse sign (divide instead of multiply) $70 / 0.8 = 87.50$.

Proper fractions- greater than 0 but less than 1, e.g. 3/4.

Improper fractions- greater than 1, e.g. 4/3

Mixed numbers- e.g. 4/3 would = 1 1/3

Example (order fractions)- order (smallest to largest)- 1/2, 7/3, 1 1/3, 9/2, 1/5

Answer 1/5, ½, 1 1/3, 7/3, 9/2.

Example (adding/subtracting) - 1 5/7 – 3/8. Make them the same denominator: 12/5 – 3/8 i.e. 96/40 – 15/40 = 81/40 or 2 1/40.

8. Express one number as a fraction of another.

Evaluate the size of one number compared to another, e.g, 2 is 1/10 of 20.

Example what fraction of 250 is 50?

Answer 1/5

Must to able to give fractions in the simplest form, e.g 20/240 is 1/12.

9. Order, approximate and compare decimals.

Must be able to approximate decimals from fractions, e.g. ¼ is 0.25 and from percentages, e.g 15% is 0.15.

Find one number as a decimal of another, e.g, 20 is 0.5 of 100.

10. Add, subtract, multiply and divide decimals up to 3 decimal places
Example (add/ subtract)- 0.65 + 0.345 = 0.995

0.735 – 0.21 = 0.525

Example (multiply/ divide)- 0.5/ 0.125 = 4

0.6x 0.18 = 0.108

11. Understand and calculate using ratios, direct proportion and inverse proportion.

Direct proportion- as one number increases, the other increases proportionally. Use the equation y = kx.

Example y and x are directly proportional when y = 125 and x =40. What does y equal when x= 20?

Answer

125 = k40.

125/40 = 3.125 = k

y = 20 x 3.125 = 62.5

Inverse proportion- as one number increases, the other decreases. Use the equation y = k/x

Example y and x are inversely proportional when y = 30 and x = 100. What does x equal when y= 90?

Answer

30 = k/100

30x100 = 3000 = k

90 = 3000/x

3000/90 = 33.3.

Should be able to simplify a ratio, e.g 4:8 = 1:2

Should be able to use a ratio to calculate amounts.

Example Lily has £36. The money Mathilda and Lily have is split in the ratio 6:13. How much money does Mathilda have?

Answer £36 / 6 = £6.

12.Follow the order of precedence of operators using indices.
When working through a mathematical equation, it is an order that must be followed for the operations.

1. Exponentiation and roots (e.g. x^2 or $\sqrt{x}$)
2. Multiplication or division
3. Addition of subtraction

This is followed unless brackets are used.

Example $3^4 + 7 \times 3 - 9$

Answer $(3^4) + (7x3) - 9 =$

81 + 21 – 9 =93

13.Calculate amounts of money, compound interest, percentage increases, decreases and discounts tax and simple budgeting

Compound interest- the accumulated interest over a period of time (interest is added to each new amount). Use the formula new amount = original amount x interest$^{\text{time elapsed.}}$

Example John put £5000 in a bank and earns 1.5% interest on it each year. How much will he have after 5 years?

Answer $5000 \times 1.015^5 = £5386.42$

Percentage increase/ decrease of money following a discount or added tax.

300 increased by 30% = £300 x 0.3 = £90. £300 + £90 = £390.

To decrease £300 by 30%, multiply £300 x 0.3 = £90. £300 - £90 = £210.

Discount tax- calculating the initial value of an item, using the inverse sign (divide) and the inverse decimal.

Example A t-shirt has been reduced by 30% so it now costs £63. What was the original amount?

Answer sales price = 70% of original price

£63 / 0.7 = £90

14. Convert between metric and imperial units of length, weight and capacity using a) a conversion factor and b) a conversion graph

15. Calculate using compound measures including speed, density and rates of pay

16. Calculate perimeters and areas of 2-D shapes including triangles and circles and composite shapes including non-rectangular shapes (formulae given except for triangles and circles)

17. Use formulae to find volumes and surface areas of 3-D shapes including cylinders (formulae to be given for 3-D shapes other than cylinders)

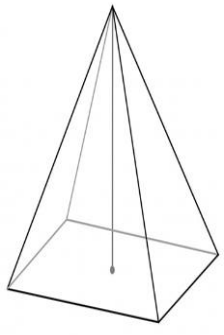
- know how to substitute into and calculate with given formulae
  formulae will be **given** for 3-D shapes **except** cuboids and cylinders

eg $V = \frac{LBH}{3}$ or $V = \frac{1}{3}LBH$ for volume of tetrahedron (4-sided pyramid)

$A = 4\pi r^2$ for

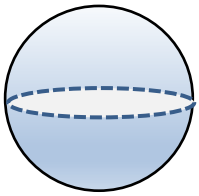
Not to scale

height



$V = \frac{4\pi r^2}{3}$ or $V = \frac{4}{3}\pi r^2$ for volume of sphere

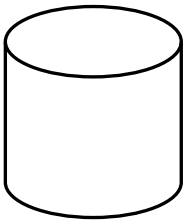
$A = 4\pi r^2$ for surface area of sphere

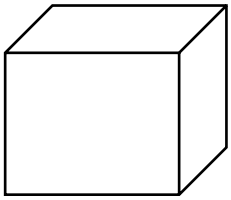


- value for pi (π) often given in question and should be used. If value not given, candidates may use any from $\pi = \frac{22}{7}$ $\pi = 3.14$ $\pi = 3.142$ or π value from calculator
- must know formulae for cylinder

$V = \pi r^2 h$ $V = LBH$

$A = 2\pi r^2 + 2\pi rh$





18. Calculate actual dimensions from scale drawings and create a scale diagram given actual measurements

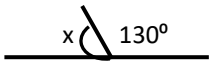
19. Use coordinates in 2-D, positive and negative, to specify the positions of points

20. Understand and use common 2-D representations of 3-D objects

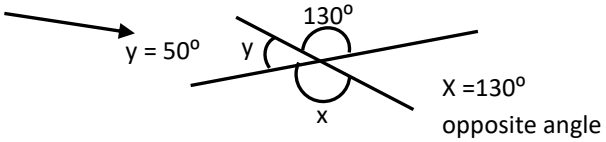
21. Draw 3-D shapes to include plans and elevations

22. Calculate values of angles and/or coordinates with 2-D and 3-D shapes

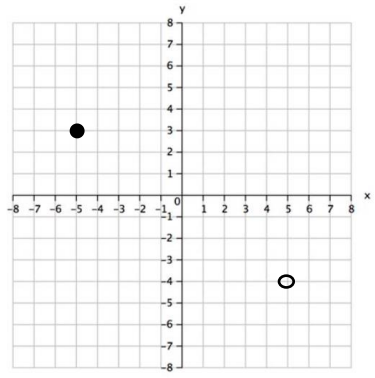
- calculate with reference to standard angles: right angle 90º; straight line 180º; point 360º
- calculate with reference to **interior** angles of standard 2-D shapes: triangle 180º; quadrilateral (4sides – 2) x 180 = 360º; pentagon (5sides – 2) x 180 = 540º; hexagon (6sides – 2) x 180 = 720º
- calculate with reference to parallel lines



X = 180 – 130 = 50º

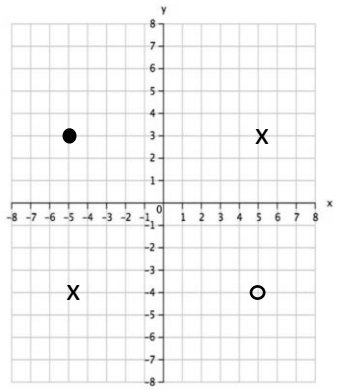


- identify coordinates
  read horizontal axis (x) before vertical axis (y)

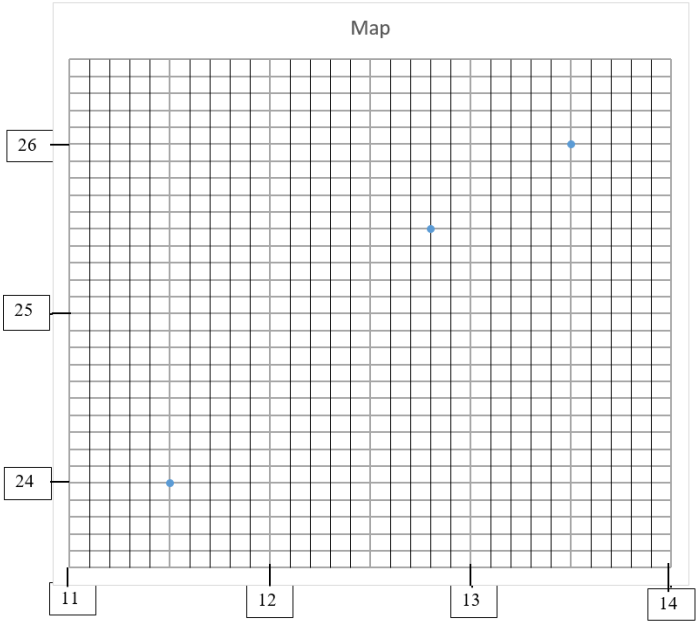


● -5,3
○ 5, -4

find coordinate that makes right angle triangle



x 5,3
or -5, -4



23. Calculate the median and mode of a set of quantities

Median- the middle value of a range of values, e.g. the median of 1, 5, 7, 8, 10.

Answer 7 would be the median.

Mode- the number that appears most often from a range of values., e.g. the mode of 1, 6, 6, 7, 7, 7, 8, 10.

Answer 7 would be the mode.

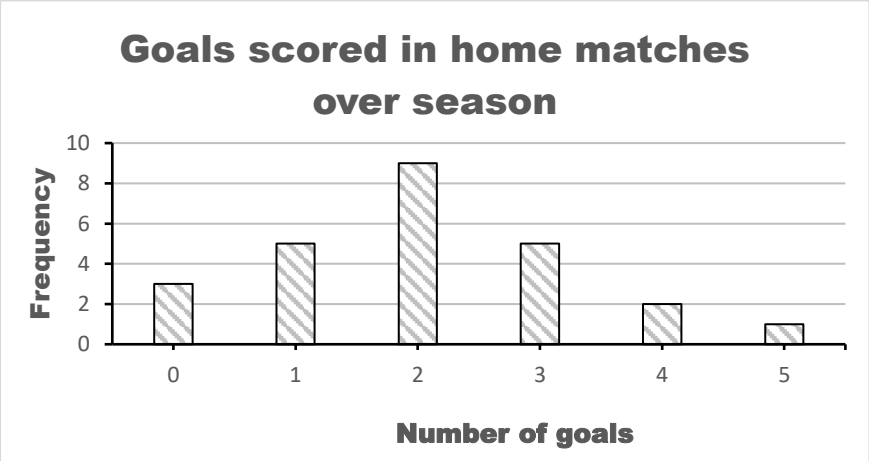
Mean- the mean is the average number from a range of values, e.g. 1, 5, 9, 13, 27.

Answer Mean would be 1+5+9+13+27 = 55. 55/ 5 = 11.

24. Estimate the mean of a grouped frequency distribution from discrete data

- find mean from grouped data in table or chart

  eg find the mean number of goals scored in each match



Goals scored (x)		Frequency (f) (ie number of times)	Calculate fx	
0	x	3	= 0	mean = 51÷ 25 = 2.04
1	x	5	= 4	
2	x	9	=18	

3	x	5	=15	(goals per match)
4	x	2	=8	
5	x	1	=5	
6 or more	x	0	=0	
		25	51	

25. Use mean, median, mode and range to compare 2 sets of data.

Median- the middle value of a range of values, e.g. the median of 1, 5, 7, 8, 10. 7 would be the median.

Mode- the number that appears most often from a range of values., e.g. the mode of 1, 6, 6, 7, 7, 7, 8, 10. 7 would be the mode.

Mean- the mean is the average number from a range of values, e.g. 1, 5, 9, 13, 27. Mean would be 1+5+9+13+27 = 55. 55/ 5 = 11.

Range- the difference between the highest and lowest values. E.g, 2, 5, 8, 19, 33. Range is 33-2 = 31.

Should be able to calculate any of these 4 from two tables and compare them to find which data is better, more suitable, gives higher/ lower values, etc.

26. Work out the probability of combined events including the use of diagrams and tables including two-way tables

Work out the probability of the events as fractions and multiply them together to find the combined probability. This can be shown in a table with two columns showing the individual probabilities.

Example the probability a person will be late on Sunday is 1/8. The probability they will be late on Monday is 6/15. What is the probability the person will be late on both days?

Answer 1/8 x 6/15 = 6/120 = 1/20.

27. Express probabilities as fractions, decimals and percentages

Example 10 people play tennis. 40 people play sport. What percentage, decimal and fraction of the people who play sport play tennis?

Answer

Fraction- 10/40 = ¼

Percentage- 25%

Decimal- 0.25

28. Draw and interpret scatter diagrams and recognise positive and negative correlation

Should be able to draw and label a scatter diagram and analyse one, e.g. read off values, find percentages, etc.

Recognise positive correlation- e.g. as the x axis increases the y axis increases.

Recognise negative correlation- e.g. as the x axis increases, the y axis decreases.

Appendix 2
Test specification 4748-120 and 4748-220

Total 60 marks **Time 1 hour 45 minutes (Section 1 - 25 minutes, Section 2 - 1 hour 20 minutes)**					
	Total marks	**Calculator (75%)**	**Non-calculator (25%)**	**Underpinning skills (25%)**	**Problem solving (75%)**
Section 1 Non-calculator	**15**	*0*	*15*	*10*	*5*
Section 2 Calculator	**45**	*45*	*0*	*5*	*40*
Totals	**60**	*45*	*15*	*15*	*45*

Level 2 Subject Content Coverage
23-25 of the 28 numbered content statements must be covered in each assessment version (ie 82-89%)
(need at least 75% of numbered SCS from each content area)
100% of numbered statements must be covered over every three assessment versions

Must meet 100% of the problem-solving bullet points across the test
All problem solving questions should contain attriutes A and C.

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