

Which NEC Mathematics Course Should I Choose?

Choosing Between GCSEs and
Adult Numeracy Courses



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Which NEC Mathematics course should I choose?

Introduction

NEC offers six mathematics courses of level 1 and 2 standard (i.e. up to and including GCSE level). It is the aim of this skills check to help you decide which of the six courses is the one for you. When you are ready to enrol or you want to ask further questions, ring 0800 389 2839 or email our customer relations team on info@nec.ac.uk.

OBJECTIVES

When you have read and worked through the skills check, you should be able to:

- distinguish between the six level 1 and 2 maths courses offered by NEC
- choose the course that is most suitable for you.

The six level 1 and 2 maths courses offered by NEC

The six courses are:

- **Develop Your Maths Level 1.** This course provides a good grounding in numeracy and can lead to the Numeracy Level 1 national test.
- **Develop Your Maths Level 2.** This course builds on the work in Develop Your Maths Level 1 and can lead to the Numeracy Level 2 national test.
- **Foundation Level IGCSE**, which can lead to grades C to G.
- **Higher Level IGCSE**, which can lead to grades A* to D.
- **Foundation Level GCSE**, which can lead to grades C to G.
- **Higher Level GCSE**, which can lead to grades A* to D.

Do I take a Develop Your Maths course or a GCSE course?

The first decision that you have to make is whether or not you should be going for a GCSE or non-GCSE course. In order to help you with this decision, you should:

- Try the following questions 1 to 7, without a calculator.
- Then check your answers with the Answers section.

Choose the answer you think is correct. Take as much time as you need.

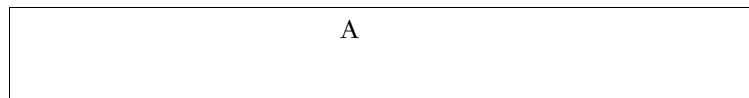
1 The prices in a café were:

Tea 30p, Coffee 35p, Ham sandwich 90p, Bun 25p

Mary's bill came to £1.75. What did she buy?

- a) a tea, a ham sandwich and a bun
- b) a tea, a coffee and a ham sandwich
- c) a tea, a coffee and two ham sandwiches
- d) two teas, a ham sandwich and a bun

2



A and B are two rectangles. A is 10 cm wide and 1 cm deep. B is 5 cm wide and 2 cm deep. The area of A is:

- a) twice as big as the area of B
- b) the same as the area of B
- c) half the area of B
- d) less than half the area of B

3 Here are eight sums:

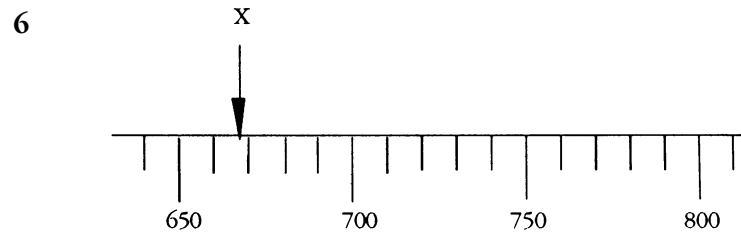
A 41×2 B $97 - 14$ C $40 + 41$ D 28×3

E $92 - 16$ F $39 + 46$ G $82 \div 2$ H 80×1

Work them out and put the answers in increasing order, from the smallest to the largest. Which order did you get?

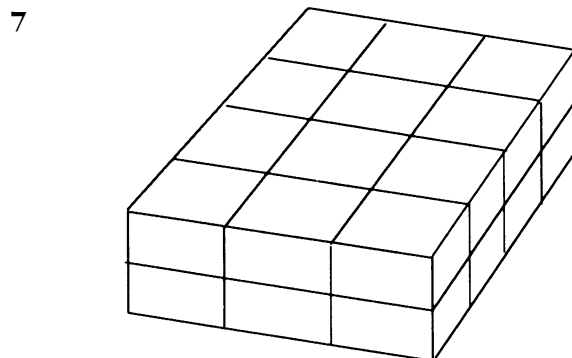
- a) G F H C A B D E
- b) G D E H C A B F
- c) G E H C A B D F
- d) None of these

- 4 A family had 28, 33, 26 and 35 bottles of milk in the four weeks of February. The number of bottles of milk they had in February was:
- a) 100
 - b) 102
 - c) 112
 - d) 122
- 5 A darts player had 93 left. Then he threw a treble eleven, a five and a double fifteen. The number he had left after this throw was:
- a) 68
 - b) 62
 - c) 25
 - d) 10



In the diagram, the arrow X is pointing nearest to:

- a) 652
- b) 659
- c) 660
- d) 670



In the diagram, the total number of blocks in the stack is:

- a) 18
- b) 20
- c) 24
- d) 26

Now go to page 8 to check your answers.

If you scored less than 5, then you probably need to brush up on your basic maths. Many NEC students start here and go on to greater things, so don't feel despondent!

I suggest that you start by purchasing Develop Your Maths Level 1, which gives a good grounding in maths. (After that, you should probably move on to Develop Your Maths, Level 2.)

If you scored five or more, then you should:

- Try the remaining questions 8 to 22 below, only using a calculator for questions 15 to 22 inclusive.
- Then check your answers with the Answers section.

- 8** A washing-up liquid is sold in two sizes of plastic bottle; one containing 250 ml (ml = millilitre) and the other 1 litre. There are 1000 ml in 1 litre.

The 250 ml bottles cost 27p each and the 1 litre bottles 99p each. How much cheaper is it to buy a 1 litre bottle than to buy the same amount in 250 ml bottles?

- a) 36p
- b) 19p
- c) 11p
- d) 9p

- 9** Look at the 3 pairs of measurements below.

- A 368 cm, 3.68 m
- B 15.3 cm, 1530 mm
- C 4.5 ml, 4500 litres

Which of these do you agree with?

- a) the measurements in each pair are equal to each other
- b) only the measurements in pair A and pair C are equal to each other
- c) only the measurements in pair B and pair C are equal to each other
- d) the measurements in only one of the pairs are equal to each other

- 10** A pill weighs 0.3 g. This is the same weight as:

- a) $\frac{3}{10}$ g
- b) $\frac{1}{3}$ g
- c) 3 g
- d) 30 g

- 11** There are 10 millimetres in a centimetre. A matchbox is 54 millimetres long. This is the same length as:
- a) 0.54 cm
 - b) 5.4 cm
 - c) 54 cm
 - d) 540 cm
- 12** 5% of £40 is:
- a) £2.00
 - b) £5.00
 - c) £8.00
 - d) £12.50
- 13** What is $\frac{5}{16}$ (five-sixteenths) converted to a decimal?
- a) 0.3125
 - b) 0.32
 - c) 3.2
 - d) 5.16
- 14** On a plan the distance between two points is 60 mm, while the matching full-size distance is 15 m. What is the scale of the plan?
- a) 1 to 4
 - b) 1 to 45
 - c) 1 to 250
 - d) 1 to 400

You may use a calculator for the remaining questions.

- 15** The cost of running a disco is £170. Two hundred and forty-nine people come, paying £1.25 each. What is the profit?
- a) £53.88
 - b) £57.72
 - c) £141.25
 - d) £160.35

16 A car driver reckons to average 42 mph on a journey of 145 miles. The best estimate of the time his journey will take is:

- a) 2.89 hr
- b) 3 hrs 7 min
- c) $3\frac{1}{2}$ hr
- d) 3 hrs 45 min

17 What is 0.35×0.48 ?

- a) 0.0158
- b) 0.168
- c) 1.68
- d) 1680

18 You have to add 3.61 to 4.58 and then multiply the result by 7. What is the answer?

- a) 59.22
- b) 57.33
- c) 35.67
- d) 25.5388

19 A brand of washing powder is sold in three sizes, S, M and L. The price and weight of each size is shown in the box.

S
600 g
61p

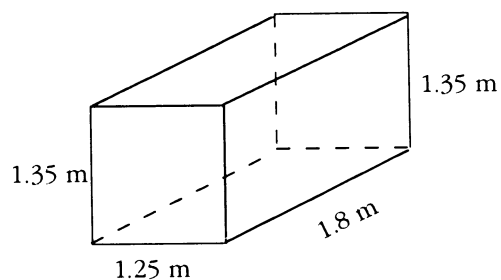
M
900 g
83p

L
3000 g
£2.89

The best value and worst value sizes are:

- a) L best, S worst
 - b) S best, M worst
 - c) M best, L worst
 - d) M best, S worst
- 20** In a survey, 648 people were asked about television viewing; 267 people said they watched more than 12 hours a week. The percentage of the total who watched 12 hours or less was about:
- a) 32%
 - b) 41%
 - c) 59%
 - d) 70%

21 The diagram shows an oil fuel tank in the shape of a cuboid.



Its volume is about:

- a) 5.73 m^3
- b) 4.4 m^3
- c) 3.6 m^3
- d) 3.0 m^3

22 Starting with £18.00, you buy the following items:

- 2 loaves at 72p each
- 3 packets of butter at 60p each
- 1 shoulder lamb £4.32
- 1 large bottle beer at £1.84
- 2 tins luncheon meat at 62p each
- 3 packets biscuits at 45p each

The cash still available to spend is:

- a) £3.25
- b) £4.98
- c) £6.01
- d) £13.46

Now go to page 8 to check your answers.

If you scored less than 7, then you probably need to purchase Develop Your Maths Level 2.

If you scored 7 or more, then you should be able to start one of the four GCSE courses offered by NEC.

Answers

The correct responses are:

- | | | | |
|----|----|----|----|
| 1 | d) | 12 | a) |
| 2 | b) | 13 | a) |
| 3 | c) | 14 | c) |
| 4 | d) | 15 | c) |
| 5 | c) | 16 | c) |
| 6 | d) | 17 | b) |
| 7 | c) | 18 | b) |
| 8 | d) | 19 | d) |
| 9 | d) | 20 | c) |
| 10 | a) | 21 | d) |
| 11 | b) | 22 | c) |

The NEC GCSE Courses

NEC offers four maths GCSE courses – two IGCSEs and two GCSEs. You now have to choose between IGCSE and GCSE.

WHAT IS IGCSE?

IGCSE stands for 'International General Certificate of Secondary Education'. This exam is set internationally and is particularly useful for students studying outside the UK. However, many individual students in the UK also take this exam as do, increasingly, a number of UK schools.

The crucial difference between IGCSE and GCSE is that:

- IGCSE has no coursework
- IGCSE has no non-calculator exam papers, just two calculator papers.

There are two tiers at IGCSE – Foundation Level and Higher Level.

Foundation Level IGCSE can lead to grades C to G. It contains very little algebra but there is some basic set theory.

Higher Level IGCSE can lead to grades A* to D. It contains the usual algebra that you would expect in any maths exam – quadratic equations, for example – as well as more set theory, some differential calculus and the theory of functions.

You will find sample questions for each of these exams at the end of this booklet.

In summary then:

IGCSE

- no coursework
- no non-calculator papers
- very little algebra in Foundation Level
- Higher Level also includes work on calculus and the theory of functions.

Grades	Foundation level	Higher level
A*		
A		
B		
C		
D		
E		
F		
G		
U		

WHAT IS GCSE?

GCSE stands for ‘General Certificate of Secondary Education’ and it is the exam taken by the majority of students in the UK.

The crucial difference between GCSE and IGCSE is that:

- GCSE has a coursework component, equal to 20% of the total marks
- GCSE has non-calculator as well as calculator work.

There are two tiers of GCSE:

- **Foundation Level GCSE**, which can lead to grades C to G. It contains very little algebra and there is no set theory.
- **Higher Level GCSE**, which can lead to grades A* to D. It contains the usual algebra that you would expect in any maths exam – quadratic equations, for example – but no work on sets, calculus or theory of functions.

You will find sample questions for each of these exams at the end of this booklet.

In summary then:

GCSE (for awards from Summer 2008 onwards)

- coursework counts for 20% of each exam
- GCSE has a non-calculator paper as well as a calculator paper
- Foundation Level contains very little algebra
- there are no questions on sets, calculus or functions.

Grades	Foundation level	Higher level
A*		↑
A		
B		↓
C	↑	
D		
E		↓
F		
G		↓
U	↓	

Grades C–G

Grades A*–D (allowed E)

WHAT IS COURSEWORK?

As we have seen, IGCSE has no coursework whereas GCSE does have a coursework component worth 20% of the exam. It is important then that, in order to choose the correct course for you, you know what is meant by coursework and the pros and cons of offering it.

When you learn maths in the usual way, you are taught a particular subject and then you are given questions for which there are answers. (Indeed, one of the pleasures of this sort of maths is getting a question right and then ticking it with a flourish!)

Coursework is different. You'll be given a task and there will be no 'right answer'. What you will be expected to do is to make an attempt at answering some aspect of the problem. For example, a recently set task by the exam board AQA was 'Read All About It' where you were asked to investigate whether or not tabloids used shorter words than broadsheets. Moreover, you were also asked to extend the problem. Without going into any detail, there are many approaches to a task such as this – for example, which tabloids? What broadsheets? What sections of the publications do we test? Which is the best average to use? Do we extend the task to include magazines? Or do we extend it to include things such as sentence length or vowel frequency? Clearly you cannot answer every aspect of this task and so it will be up to you to select some aspect of the problem.

WHICH EXAM IS RIGHT FOR ME? – FREQUENTLY ASKED QUESTIONS

- 1 *I need a C-Grade in order to enrol on a PGCE/paramedics/nursing course. Which course would you recommend?*

You need a C-Grade for your career move and the easiest way to achieve this is to take a Foundation course.

- 2 *If I enrol on a Higher course, but then find that I cannot cope, what then?*

In that case you would be best advised to purchase a Foundation course. However, that means more expense and so it is important that your first choice is the right one.

- 3 *I cannot decide between Foundation and Higher Level. What do you recommend?*

If a C-Grade is sufficient for your next career move, then go for Foundation Level. Otherwise go for Higher Level.

- 4 *I took 'O' level years ago and need to brush up on my maths. What do you recommend?*

Go for Higher Level.

- 5 *I would eventually like to take 'A' level maths. Which course for is best for that?*

Go for Higher IGCSE. As well as covering all the usual topics, this course also includes some calculus and function work – both of which are valuable at 'A' level.

- 6 *I only need a C-Grade, but would like to get a higher grade than that, so I am going to purchase a Higher course. Do you agree?*

The crucial point is that you need a C-Grade. If you go for Higher Level then there will be an opportunity for you to achieve a higher grade, but a lot more studying will be involved. Do you have the spare time to devote to this additional work? If you do, then it might be worth a try,

(but see questions 2 and 3). If you are unlikely to have much spare time, then go for Foundation Level.

- 7 *I'll be taking Foundation Level, but cannot decide between GCSE and IGCSE. Which do you recommend?*

If you like the idea of coursework and you need to practise non-calculator methods, then go for GCSE. If you don't like coursework or mental arithmetic, then go for IGCSE.

- 8 *I'll be taking Higher Level, but cannot decide between GCSE and IGCSE, what do you recommend?*

Higher GCSE has coursework and a non-calculator paper. Higher IGCSE has no coursework, calculators can be used in both IGCSE papers and there is also an introduction to calculus and functions. You need to make your choice in the light of these differences.

SAMPLE QUESTIONS FOR THE NEC GCSE COURSES

I have gathered together five representative questions for each of the NEC GCSE courses. They are intended to give you a flavour of each course. You are not expected to attempt these questions, although I have included the answers just in case you wish to do so.

Sample questions for IGCSE, Foundation Level

- Express 360 as a product of powers of prime factors.
- Find the interest earned after one year on \$4000 invested at 3% per annum.
- $A = \{ \text{3-sided shapes} \}$
 $B = \{ \text{shapes with two equal sides} \}$
What is the mathematical name for members of $A \cap B$?
- Solve the equation $6x - 5 = 2x + 31$
- A cuboid has volume 105 cm^3 , length 3 cm and width 5 cm. What is the height of the cuboid?

Sample questions for IGCSE, Higher Level

- A curve has equation $y = 2x^2 - 5x + 4$. Find the coordinates of the point on the curve where the gradient equals -9 .
- Functions $f(x)$ and $g(x)$ are defined by

$$f(x) = \frac{3}{2+x} \quad \text{and} \quad g(x) = x^2 + 2, \quad \text{where } x \geq 0.$$

Calculate $f^{-1}g(2)$.

3 $\mathcal{E} = \{ \text{Integers less than } 24 \}$

$A = \{ x : 3 < x < 9 \}$

$B = \{ \text{Multiples of } 4 \}$

Find the value of $n(A \cup B)$

4 Simplify fully $\frac{x^2 - 12x + 36}{x^2 - 36}$

5 The base radius of a cone is 3 cm and its height is 4 cm. Calculate:

(a) the slant height of the cone

(b) the total surface area of the cone, leaving your answer as a multiple of π .

Sample questions for GCSE, Foundation Level (for awards from 2008 onwards)

1 (Non-calculator paper) Work out 65% of 160.

2 (Non-calculator paper) Find the value of $3x - 4y$ when $x = 6$ and $y = -5$

3 (Non-calculator paper) A regular pentagon has each exterior angle as 30° . How many sides does the pentagon have?

4 (Calculator paper) Solve the inequality $4x - 2 < x + 13$.

5 (Calculator paper) If the exchange rate is $\text{£}1 = 1.655$ dollars, change 150 dollars to £ , giving your answer correct to the nearest pence.

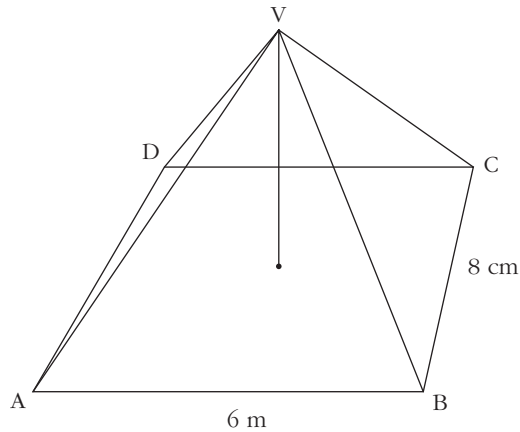
Sample questions for GCSE, Higher Level (for awards from 2008 onwards)

1 (Non-calculator paper) Show that $\frac{\sqrt{75} - \sqrt{48}}{\sqrt{75} + \sqrt{48}}$ simplifies to $\frac{1}{9}$.

2 (Non-calculator paper) Find the equation of the line which passes through the three points $(-3, 1)$, $(0, 2)$ and $(6, 4)$.

3 (Non-calculator paper) Make x the subject of the formula $y = \frac{5a + x}{1 - 2x}$

- 4 (Calculator paper) A pyramid $VABCD$ has a rectangular base $ABCD$. The vertex V is 12 cm vertically above the mid-point of the base. $AB = 6$ cm and $BC = 8$ cm



If the top 6 cm of the pyramid are removed, what is the volume of the remaining frustum?

- 5 Find the area of the triangle below.

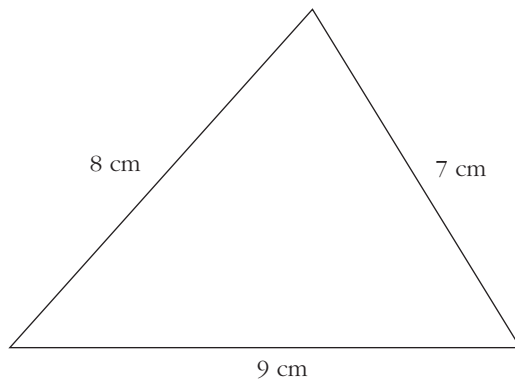


Diagram not drawn to scale

Give your answer correct to 2 decimal places.

Answers to sample questions

IGCSE, FOUNDATION LEVEL

- 1 $2^3 \times 3^2 \times 5$
- 2 \$120
- 3 Isosceles triangle
- 4 $x = 9$
- 5 7 cm

IGCSE, HIGHER LEVEL

- 1 $(-1, 11)$
- 2 $-1\frac{1}{2}$
- 3 8
- 4 $\frac{x-6}{x+6}$
- 5 (a) 5 cm (b) $24\pi \text{ cm}^2$

GCSE, FOUNDATION LEVEL (FOR AWARDS FROM 2008 ONWARDS)

- 1 104
- 2 38
- 3 12 sides
- 4 $x < 15$
- 5 £90.63

GCSE, HIGHER LEVEL (FOR AWARDS FROM 2008 ONWARDS)

- 1 $\frac{5\sqrt{3}-4\sqrt{3}}{5\sqrt{3}+4\sqrt{3}} = \frac{\sqrt{3}}{9\sqrt{3}} = \frac{1}{9}$
- 2 $y = \frac{1}{3}x + 2$
- 3 $x = \frac{y-5a}{2y+1}$
- 4 168 cm^3
- 5 26.83 cm^2

You should now be able to choose the maths course that is right for you.
To enrol, ring 0800 389 2839 or email info@nec.ac.uk. Good luck!