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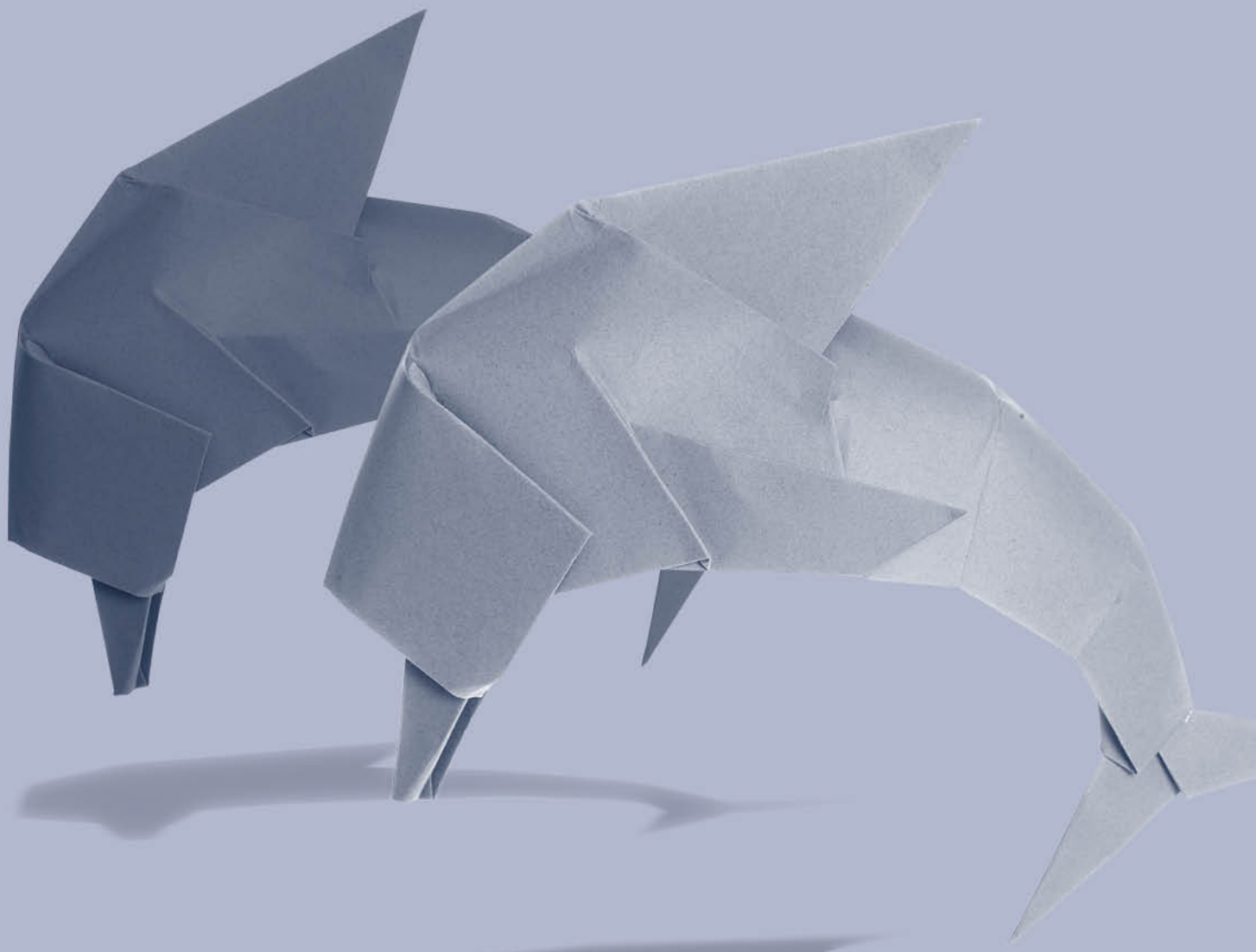
GCSE (9–1) Mathematics



New topics – sample questions

Pearson Edexcel Level 1/Level 2 GCSE (9–1) in Mathematics (1MA1)
First teaching from September 2015
First certification from June 2017 Issue 1

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Contents

About this booklet

This new topics sample questions booklet has been produced to support mathematics teachers delivering the new GCSE (9–1) in Mathematics (1MA1) specification (first assessment summer 2017).

How to use this booklet

This booklet provides a list of questions assessing new topics from the New Sample Assessment Materials and two sets of specimen papers (plus one question from the Original Sample Assessment Materials). Also included are a few sample questions for new assessment objectives. The questions are ordered by specification point.

Free support

Our free support for the GCSE (9–1) Mathematics specification (1MA1) can be found on the Edexcel mathematics website (http://qualifications.pearson.com/en/home.html) and on the Emporium (www.edexcel.com).

1. Number

Structure and calculation

N5	apply systematic listing strategies, including use of the product rule for counting **(i.e. if there are *m* ways of doing one task and for each of these, there are *n* ways of doing another task, then the total number of ways the two tasks can be done is *m* × *n* ways)**

New to GCSE (9–1) Maths

Use of the product rule for counting.

Sample questions

There are 14 boys and 12 girls in a class.
Work out the total number of ways that 1 boy and 1 girl can be chosen from the class.

(Total 2 marks)
Specimen Papers Set 1, Paper 3H qu.13 (N5 – AO1)

Marie has 25 cards.
Each card has a different symbol on it.

Marie gives one card to Shelley and one card to Pauline.

(*a*) In how many different ways can Marie do this?

(2)

There are 12 boys and 10 girls in David's class.
David is going to pick three different students from his class and write their names in a list in order.

The order will be

boy girl boy	**or**	girl boy girl

(*b*) How many different lists can David write?

(3)

(Total 5 marks)
Specimen Papers Set 2, Paper 2H qu.12 (N5 – AO1/AO3)

There are 17 men and 26 women in a choir.
The choir is going to sing at a concert.
One of the men and one of the women are going to be chosen to make a pair to sing the first song.

(*a*) Work out the number of different pairs that can be chosen.

(2)

Two of the men are going to be chosen to make a pair to sing the second song.
Ben thinks the number of different pairs that can be chosen is 136
Mark thinks the number of different pairs that can be chosen is 272

(*b*) Who is correct, Ben or Mark?
Give a reason for your answer.

(1)

(Total 3 marks)
New SAMs Paper 3H qu.15 (N5 – AO1/AO2)

Measures and accuracy

N15	round numbers and measures to an appropriate degree of accuracy (e.g. to a specified number of decimal places or significant figures); use inequality notation to specify simple error intervals due to truncation or rounding

New to GCSE (9–1) Maths

Using inequality notation to specify simple error intervals due to truncation or rounding.

Sample questions

The length, L cm, of a line is measured as 13 cm correct to the nearest centimetre.

Complete the following statement to show the range of possible values of L.

..... ≤ L < .....

(Total 2 marks)

Specimen Papers Set 1, Paper 3F qu.22 / 3H qu.2 (N15 – AO1)

Jim rounds a number, x, to one decimal place.
The result is 7.2.

Write down the error interval for x.

(Total 2 marks)

Specimen Papers Set 2, Paper 3F qu.25 / 3H qu.4 (N15 – AO1)

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2. Algebra

Notation, vocabulary and manipulation

A4 simplify and manipulate algebraic expressions (including those involving surds **and algebraic fractions**) by:
- collecting like terms
- multiplying a single term over a bracket
- taking out common factors
- expanding products of two **or more** binomials
- factorising quadratic expressions of the form $x^2 + bx + c$, including the difference of two squares; **factorising quadratic expressions of the form $ax^2 + bx + c$**
- simplifying expressions involving sums, products and powers, including the laws of indices

New to GCSE (9–1) Maths

Expanding the products of more than two binomials.

Sample questions

Show that

$$(3x - 1)(x + 5)(4x - 3) = 12x^3 + 47x^2 - 62x + 15$$

for all values of x.

(Total 3 marks)

Specimen Papers Set 1, Paper 2H qu.13 (A4, A6 – AO2)

A7	where appropriate, interpret simple expressions as functions with inputs and outputs; **interpret the reverse process as the 'inverse function'**; **interpret the succession of two functions as a 'composite function' (the use of formal function notation is expected)**

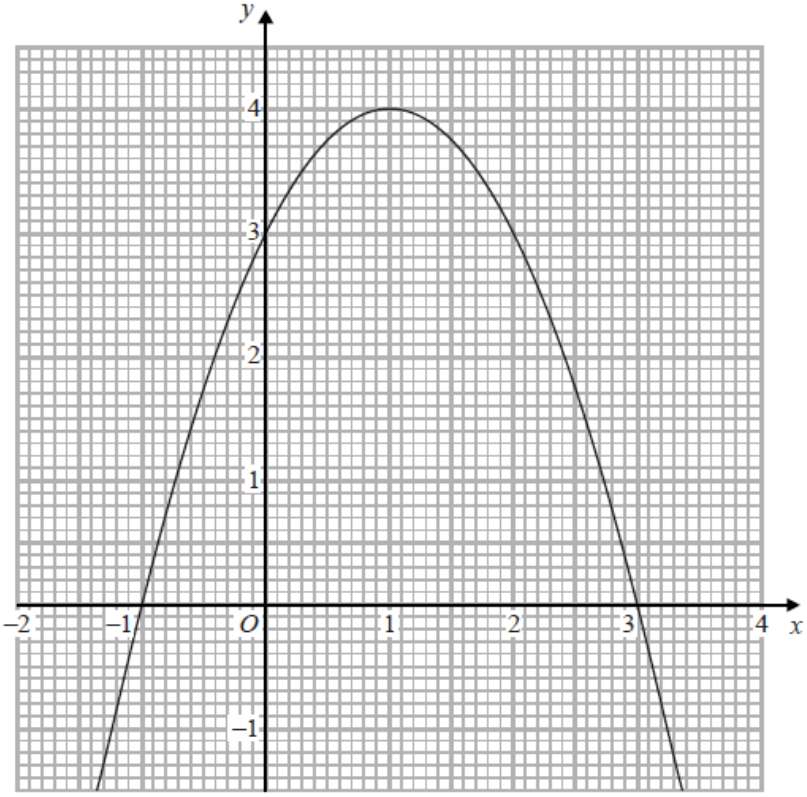
New to GCSE (9–1) Maths

Interpreting the reverse process as the 'inverse function'.

Interpreting the succession of two functions as a 'composite function'.

Sample questions

The graph of $y = f(x)$ is drawn on the grid.



(*a*) Write down the coordinates of the turning point of the graph.

(1)

(*b*) Write down the roots of $f(x) = 2$

(1)

(*c*) Write down the value of f(0.5)

(1)

(Total 3 marks)

New SAMs Paper 2H qu.7 (A7, A11 – AO2)

2. Algebra

The functions f and g are such that

$$f(x) = 3(x - 4) \quad \text{and} \quad g(x) = \frac{x}{5} + 1$$

(*a*) Find the value of f(10)

(1)

(*b*) Find $g^{-1}(x)$

(2)

(*c*) Show that $ff(x) = 9x - 48$

(2)

(Total 5 marks)

Specimen Papers Set 2, Paper 2H qu.9 (A7 – AO1/AO2)

The function f is such that

$$f(x) = 4x - 1$$

(*a*) Find $f^{-1}(x)$

(2)

The function g is such that

$$g(x) = kx^2 \text{ where } k \text{ is a constant.}$$

Given that fg(2) = 12

(*b*) work out the value of *k*

(2)

(Total 4 marks)

New SAMs Paper 3H qu.10 (A7 – AO1/AO3)

$f(x) = 3x^2 - 2x - 8$

Express $f(x + 2)$ in the form $ax^2 + bx$

(Total 3 marks)

Specimen Papers Set 1, Paper 2H qu.18 (A7 – AO1/AO2)

Graphs

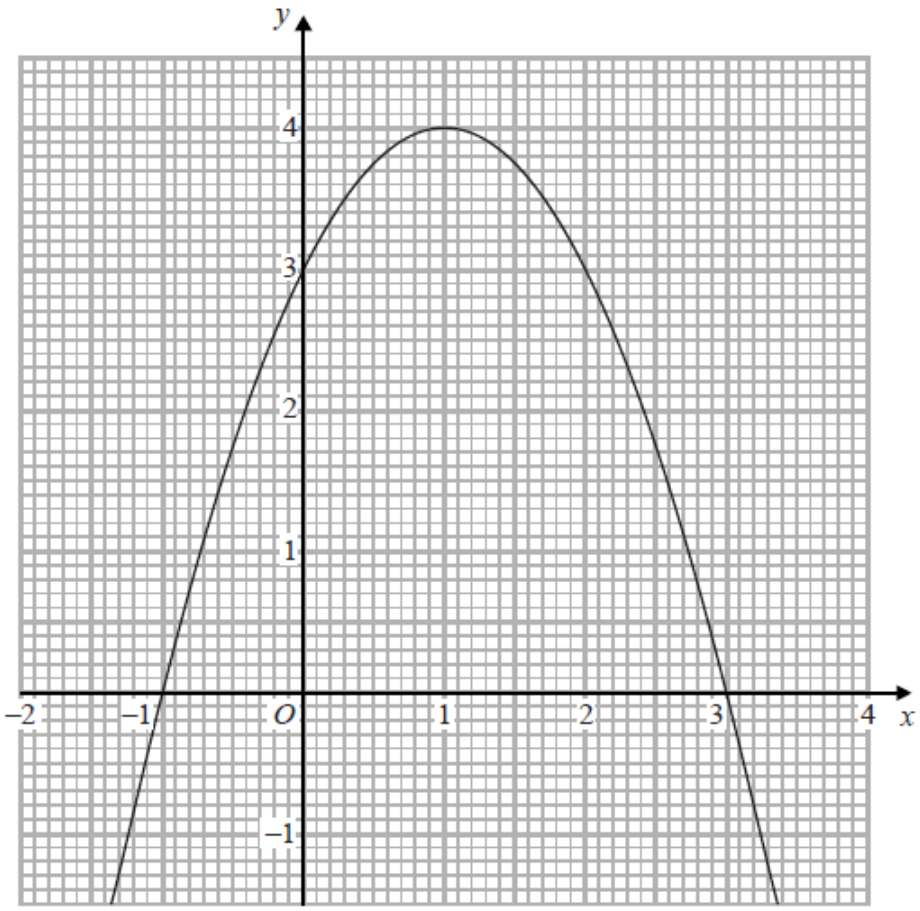
A11	identify and interpret roots, intercepts, turning points of quadratic functions graphically; deduce roots algebraically **and turning points by completing the square**

New to GCSE (9–1) Maths

The content in A11 is new to GCSE (9–1) Maths.

Sample questions

The graph of $y = f(x)$ is drawn on the grid.



(*a*) Write down the coordinates of the turning point of the graph.

(1)

(*b*) Write down the roots of $f(x) = 2$

(1)

(*c*) Write down the value of $f(0.5)$

(1)

(Total 3 marks)

New SAMs Paper 2H qu.7 (A11, A7 – AO2)

(*a*) Write $2x^2 + 16x + 35$ in the form $a(x + b)^2 + c$ where a, b, and c are integers.

(3)

(*b*) Hence, or otherwise, write down the coordinates of the turning point of the graph of $y = 2x^2 + 16x + 35$

(1)

(Total 4 marks)

Specimen Papers Set 2, Paper 3H qu.23 (A11 – AO1)

A12	recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function $y = \frac{1}{x}$ with $x \neq 0$, **exponential functions $y = k^x$ for positive values of k, and the trigonometric functions (with arguments in degrees) $y = \sin x$, $y = \cos x$ and $y = \tan x$ for angles of any size**

New to GCSE (9–1) Maths

The content in A12 is not new to GCSE (9–1) Maths, but below are two A12 questions assessing new Assessment Objectives.

Sample questions

In triangle RPQ,

$RP = 8.7$ cm
$PQ = 5.2$ cm
Angle $PRQ = 32^\circ$

(a) Assuming that angle PQR is an acute angle, calculate the area of triangle RPQ.
Give your answer correct to 3 significant figures.

(4)

(b) If you did not know that angle PQR is an acute angle, what effect would this have on your calculation of the area of triangle RPQ?

(1)

(Total 5 marks)
New SAMs Paper 2H qu.21 (A12, G23 – AO1/AO3)

Louis and Robert are investigating the growth in the population of a type of bacteria.
They have two flasks A and B.

At the start of day 1, there are 1000 bacteria in flask A.
The population of bacteria grows exponentially at the rate of 50% per day.

(a) Show that the population of bacteria in flask A at the start of each day forms a geometric progression.

(2)

The population of bacteria in flask A at the start of the 10th day is k times the population of bacteria in flask A at the start of the 6th day.

(b) Find the value of k.

(2)

At the start of day 1 there are 1000 bacteria in flask B.
The population of bacteria in flask B grows exponentially at the rate of 30% per day.

(c) Sketch a graph to compare the size of the population of bacteria in flask A and in flask B.

(1)

(Total 5 marks)
New SAMs Paper 3H qu.17 (A12, R16 – AO1/AO2/AO3)

A15	**calculate or estimate gradients of graphs and areas under graphs (including quadratic and other non-linear graphs), and interpret results in cases such as distance–time graphs, velocity–time graphs and graphs in financial contexts (this does not include calculus)**

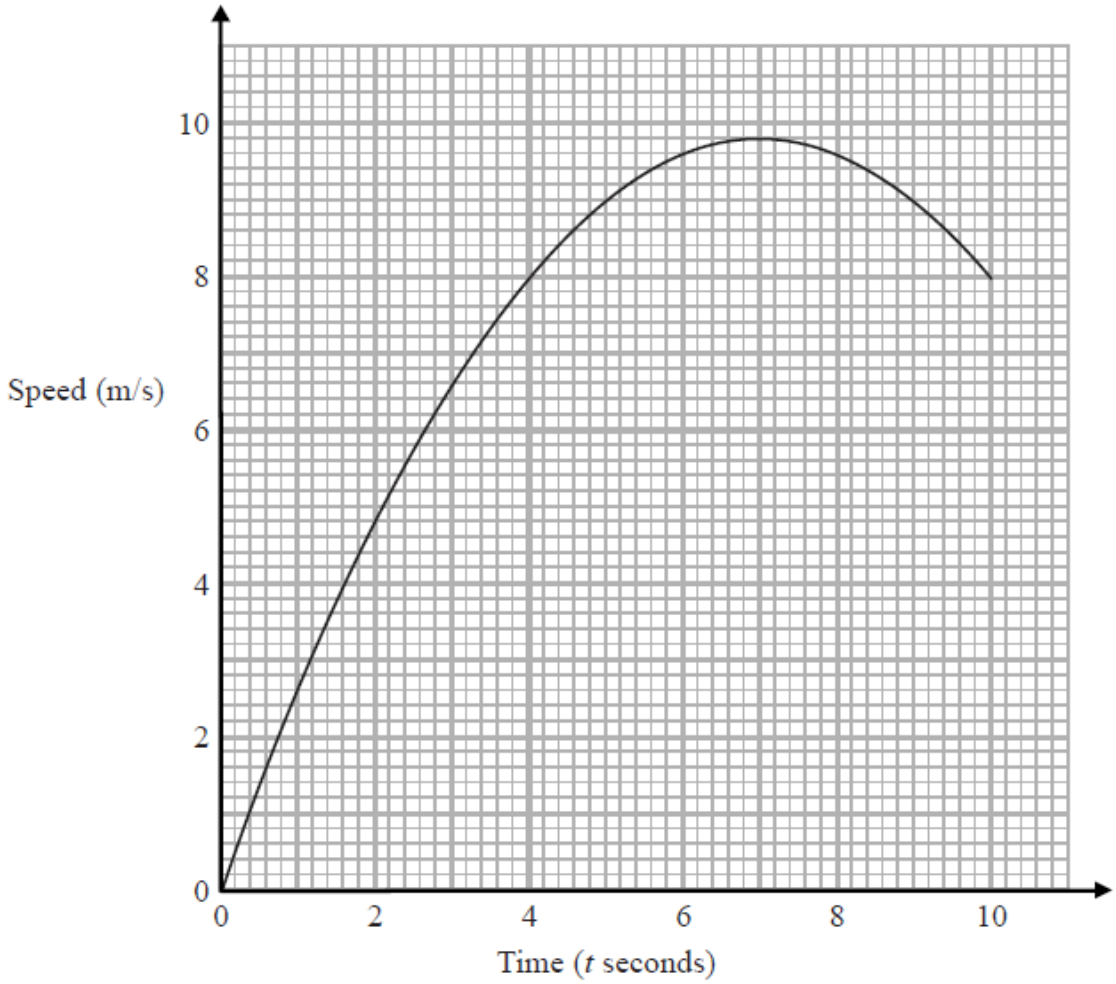
New to GCSE (9–1) Maths

The content in A15 is new to GCSE (9–1) Maths.

Sample questions

Karol runs in a race.

The graph shows her speed, in metres per second, t seconds after the start of the race.



(a) Calculate an estimate for the gradient of the graph when $t = 4$
You must show how you get your answer.

(3)

(b) Describe fully what your answer to part (a) represents.

(2)

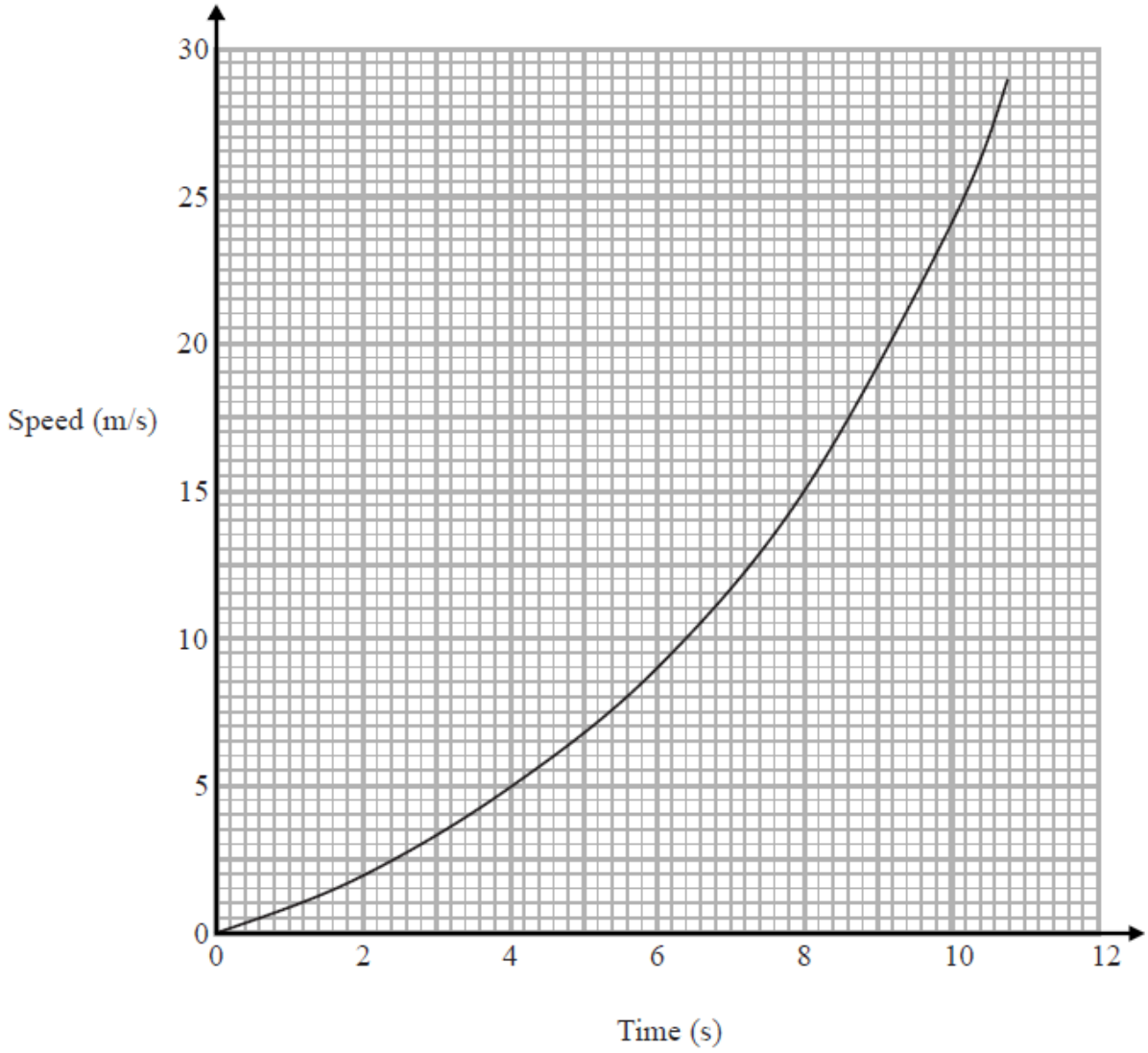
(c) Explain why your answer to part (a) is only an estimate.

(1)

(Total 6 marks)

Specimen Papers Set 2, Paper 2H qu.15 (A15 –AO1/AO2/AO3)

Here is a speed-time graph for a car.



(*a*) Work out an estimate for the distance the car travelled in the first 10 seconds.
Use 5 strips of equal width.

(3)

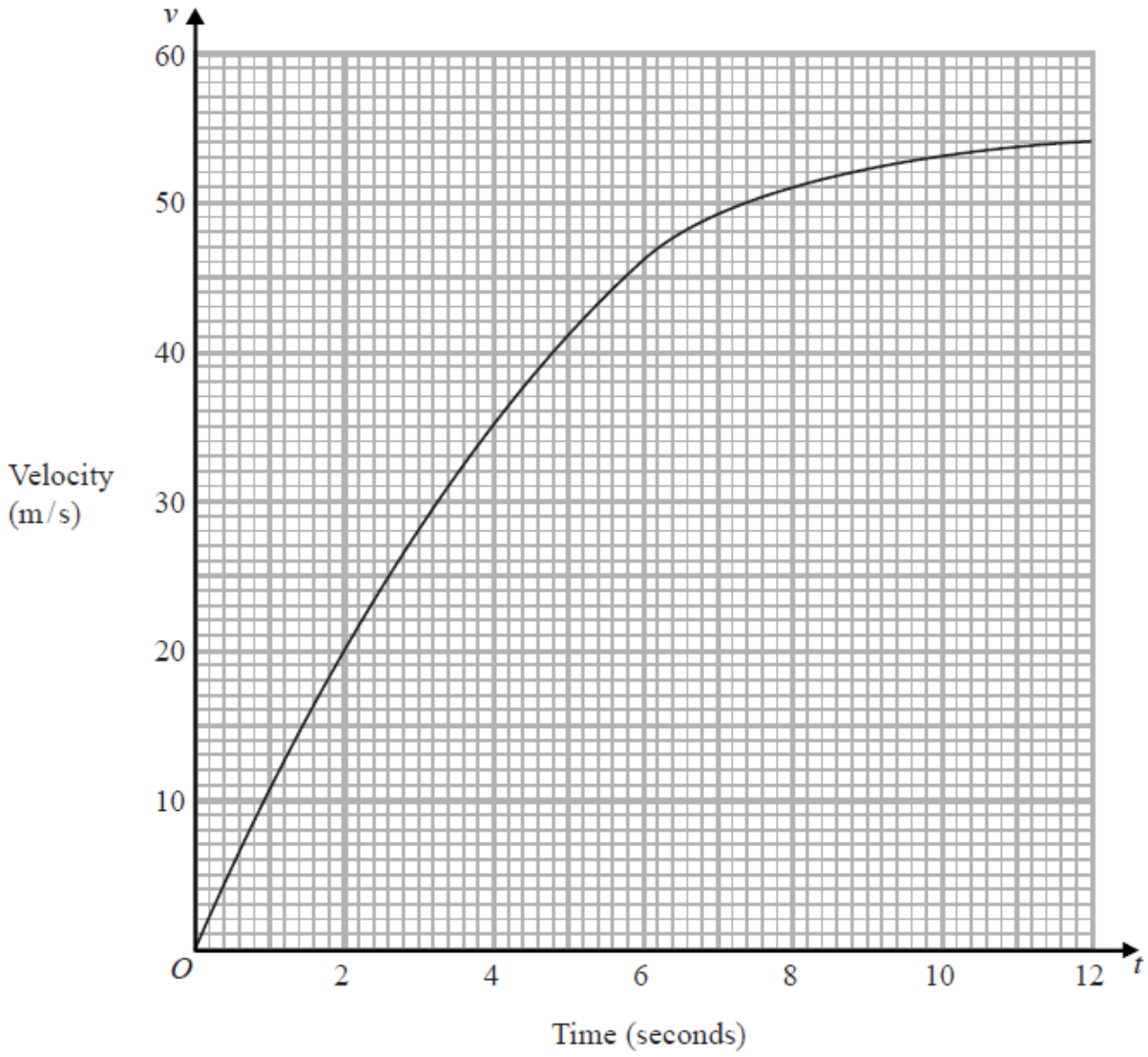
(*b*) Is your answer to (*a*) an underestimate or an overestimate of the actual distance?
Give a reason for your answer.

(1)

(Total 4 marks)

Specimen Papers Set 2, Paper 3H qu.18 (A15 –AO1/AO3)

The graph shows information about the velocity, v m/s, of a parachutist t seconds after leaving a plane.



(*a*) Work out an estimate for the acceleration of the parachutist at $t = 6$

(2)

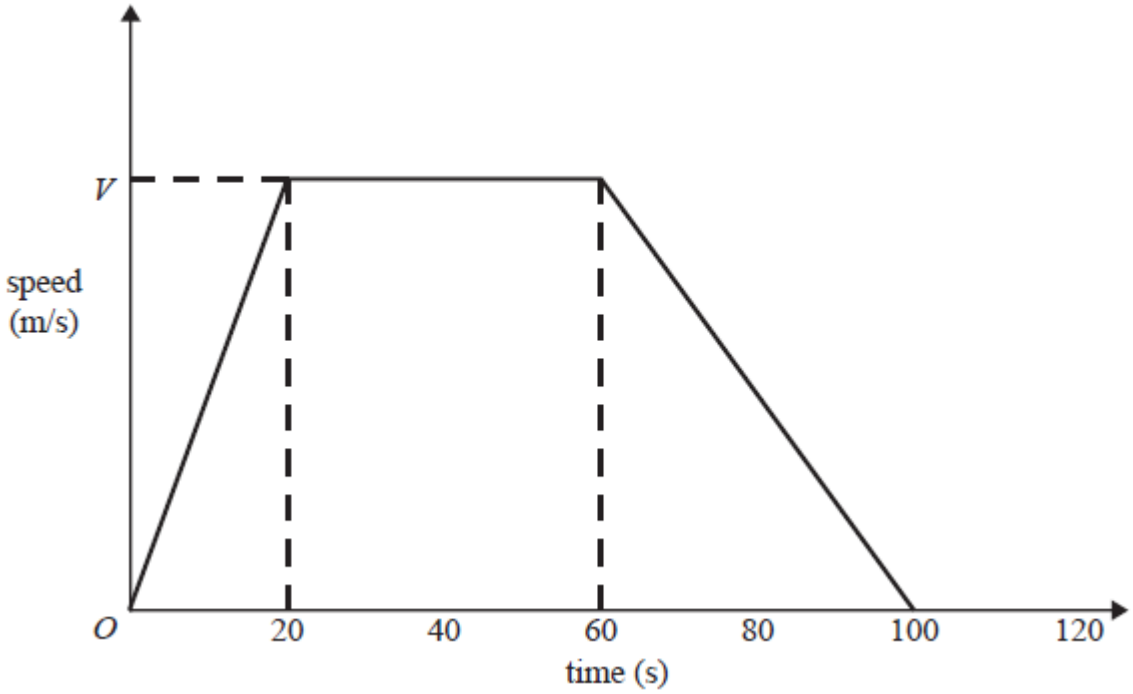
(*b*) Work out an estimate for the distance fallen by the parachutist in the first 12 seconds after leaving the plane.
Use 3 strips of equal width.

(3)

(Total 5 marks)

Specimen Papers Set 1, Paper 2H qu.20 (A15 –AO1/AO2)

Here is a speed-time graph for a car journey.
The journey took 100 seconds.



The car travelled 1.75 km in the 100 seconds.

(*a*) Work out the value of V.

(3)

(*b*) Describe the acceleration of the car for each part of this journey.

(2)

(Total 5 marks)

New SAMs Paper 1H qu.21 (A15 – AO1/AO2/AO3)

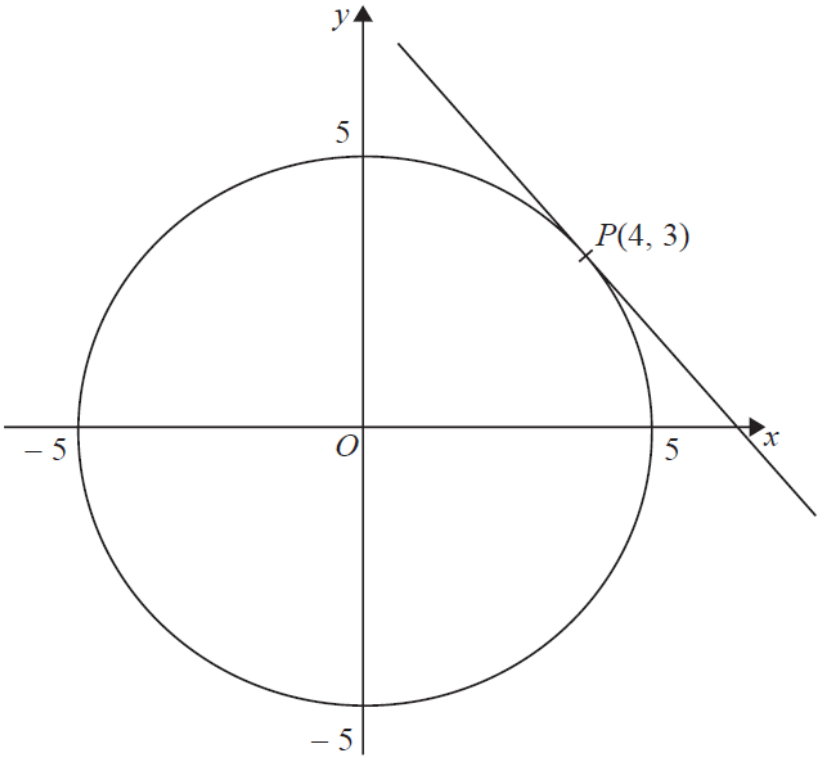
A16 recognise and use the equation of a circle with centre at the origin; find the equation of a tangent to a circle at a given point

New to GCSE (9–1) Maths

Finding the equation of a tangent to a circle at a given point.

Sample questions

Here is a circle, centre O, and the tangent to the circle at the point $P(4, 3)$ on the circle.



Find an equation of the tangent at the point P.

(Total 3 marks)

Specimen Papers Set 1, Paper 2H qu.23 (A16 –AO1)

The line l is a tangent to the circle $x^2 + y^2 = 40$ at the point A.
A is the point (2, 6).

The line l crosses the x-axis at the point P.

Work out the area of triangle OAP.

(Total 5 marks)

Specimen Papers Set 2, Paper 1H qu.22 (A16, A9, G16 –AO1/AO3)

Solving equations and inequalities

A20 find approximate solutions to equations numerically using iteration

New to GCSE (9–1) Maths

The content in A20 is new to GCSE (9–1) Maths.

Sample questions

(*a*) Show that the equation $x^3 + 4x = 1$ has a solution between $x = 0$ and $x = 1$

(2)

(*b*) Show that the equation $x^3 + 4x = 1$ can be arranged to give $x = \frac{1}{4} - \frac{x^3}{4}$

(1)

(*c*) Starting with $x_0 = 0$, use the iteration formula $x_{n+1} = \frac{1}{4} - \frac{x_n^3}{4}$ twice, to find an estimate for the solution of $x^3 + 4x = 1$

(3)

(Total 6 marks)

New SAMs Paper 3H qu.14 (A20, A4 – AO1/AO2)

(*a*) Show that the equation $3x^2 - x^3 + 3 = 0$ can be rearranged to give

$$x = 3 + \frac{3}{x^2}$$

(2)

(*b*) Using

$$x_{n+1} = 3 + \frac{3}{x_n^2} \quad \text{with } x_0 = 3.2,$$

find the values of x_1, x_2 and x_3

(3)

(*c*) Explain what the values of x_1, x_2 and x_3 represent.

(1)

(Total 6 marks)

Specimen Papers Set 1, Paper 3H qu.21 (A20, A5 –AO1/AO2/AO3)

A22	solve linear inequalities in one **or two** variable**(s), and quadratic inequalities in one variable**; represent the solution set on a number line**, using set notation and on a graph**

New to GCSE (9–1) Maths

Solving quadratic inequalities in one variable and representing the solution set using set notation.

Sample questions

Solve $x^2 > 3x + 4$

(Total 3 marks)

New SAMs Paper 1H qu.19 (A22 – AO1)

Solve the inequality $x^2 > 3(x + 6)$

(Total 4 marks)

Specimen Papers Set 2, Paper 1H qu.21 (A22 –AO1)

Sequences

A24	recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions, Fibonacci-type sequences, quadratic sequences, and simple geometric progressions (r^n where n is an integer, and r is a rational number > 0 **or a surd) and other sequences**

New to GCSE (9–1) Maths

Recognising and using Fibonacci-type sequences, quadratic sequences and simple geometric progressions (including surds) and other sequences.

Sample questions

Here are the first six terms of a Fibonacci sequence.

1 1 2 3 5 8

The rule to continue a Fibonacci sequence is,

the next term in the sequence is the sum of the two previous terms.

(*a*) Find the 9th term of this sequence.

(1)

The first three terms of a different Fibonacci sequence are

a b $a + b$

(*b*) Show that the 6th term of this sequence is $3a + 5b$

(2)

Given that the 3rd term is 7 and the 6th term is 29,

(*c*) find the value of a and the value of b.

(3)

(Total 6 marks)

New SAMs Paper 3F qu.20 / 3H qu.3 (A19, A21, A24 – AO1/AO2/AO3)

A25 deduce expressions to calculate the *n*th term of linear **and quadratic** sequences

New to GCSE (9–1) Maths

Deducing expressions to calculate the *n*th term of quadratic sequences.

Sample questions

Here are the first 5 terms of a quadratic sequence.

1 3 7 13 21

Find an expression, in terms of *n*, for the *n*th term of this quadratic sequence.

(Total 3 marks)

Specimen Papers Set 1, Paper 2H qu.17 (A25 –AO1/AO2)

3. Ratio, proportion and rates of change

R1	change freely between related standard units (e.g. time, length, area, volume/capacity, mass) and compound units (e.g. speed, rates of pay, prices, density, pressure) in numerical and algebraic contexts

New to GCSE (9–1) Maths

Changing between related standard units and compound units in algebraic contexts.

Sample questions

A box exerts a force of 140 newtons on a table.
The pressure on the table is 35 newtons/m^2.

Calculate the area of the box that is in contact with the table.

$$P = \frac{F}{A}$$

p = pressure

F = force

A = area

(Total 3 marks)

Specimen Papers Set 1, Paper 1F qu.21 / 1H qu.2 (R1, R11, A2 – AO1)

R6	express a multiplicative relationship between two quantities as a ratio or a fraction

New to GCSE (9–1) Maths

The content in R6 is new to GCSE (9–1) Maths.

Sample questions

In a box of pens, there are

three times as many red pens as green pens
and two times as many green pens as blue pens.

For the pens in the box, write down
the ratio of the number of red pens to the number of green pens to the number of blue pens.

(Total 2 marks)
New SAMs Paper 2H qu.8 (R6 – AO2)

R8	relate ratios to fractions and to linear functions

New to GCSE (9–1) Maths

Relating ratios to linear functions.

Sample questions

No questions on relating ratios to linear functions have appeared in the specimen papers, but below is an indicative example from the FAQs document:

Purple paint is made from using red paint and blue paint in the ratio 1 : 2.

Write an equation for y in terms of x to show the relationship between the amount of red paint (y) and the amount of blue paint (x).

R13 understand that X is inversely proportional to Y is equivalent to X is proportional to $\frac{1}{Y}$; **construct and** interpret equations that describe direct and inverse proportion

New to GCSE (9–1) Maths

The content in R13 is not new to GCSE (9–1) Maths, but below is an R13 question assessing new Assessment Objectives.

Sample questions

At a depth of x metres, the temperature of the water in an ocean is T °C.
At depths below 900 metres, T is inversely proportional to x.

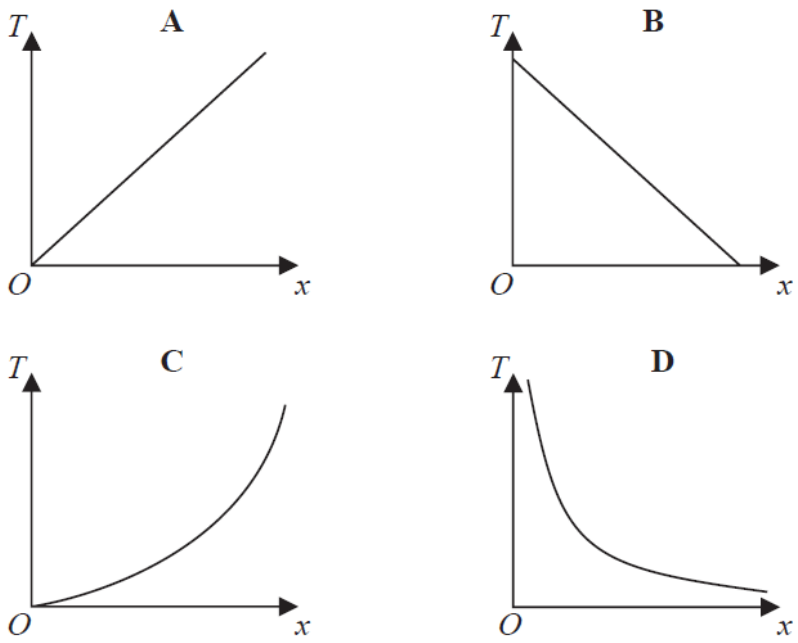
T is given by

$$T = \frac{4500}{x}$$

(*a*) Work out the difference in the temperature of the water at a depth of 1200 metres and the temperature of the water at a depth of 2500 metres.

(3)

Here are four graphs.



One of the graphs could show that T is inversely proportional to x.

(*b*) Write down the letter of this graph.

(1)

(Total 4 marks)

Specimen Papers Set 2, Paper 3F qu.27 / 3H qu.6 (R13, R10 – AO1/AO2)

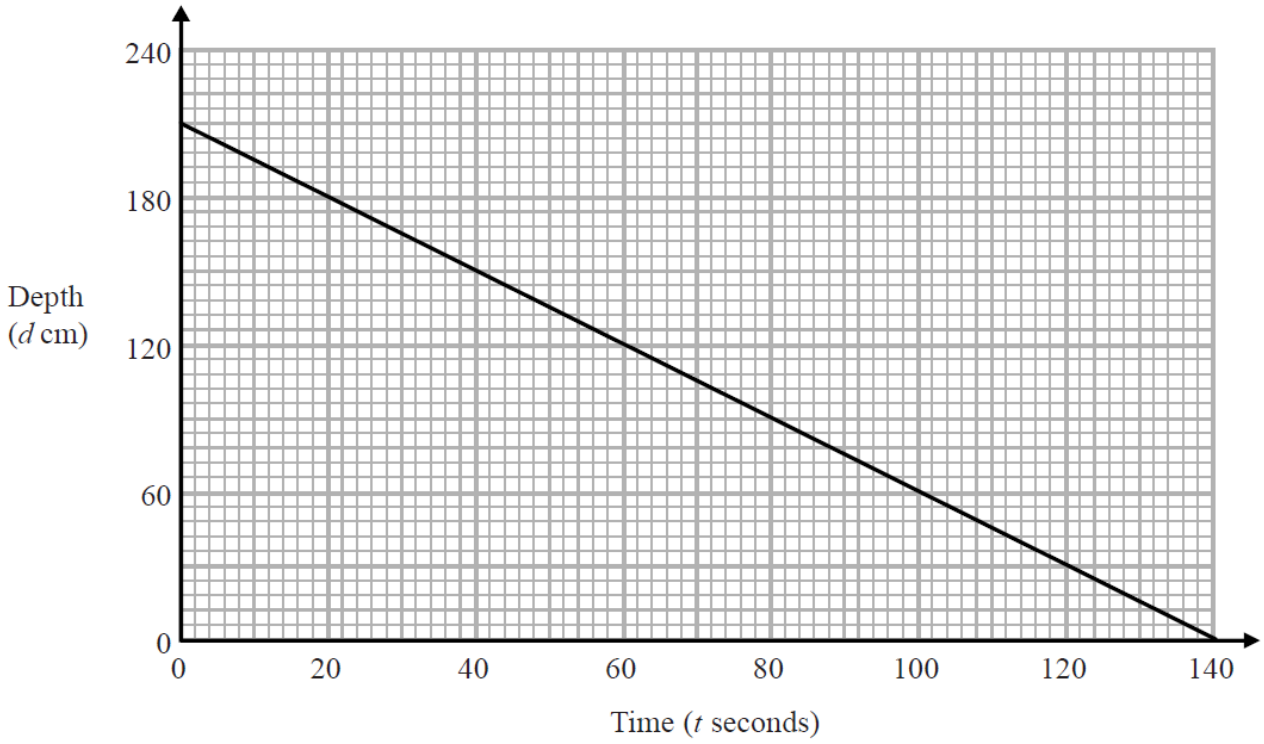
R14	interpret the gradient of a straight-line graph as a rate of change; recognise and interpret graphs that illustrate direct and inverse proportion

New to GCSE (9–1) Maths

Interpreting the gradient of a straight line graph as a rate of change.

Sample questions

The graph shows the depth, d cm, of water in a tank after t seconds.



(a) Find the gradient of this graph.

(2)

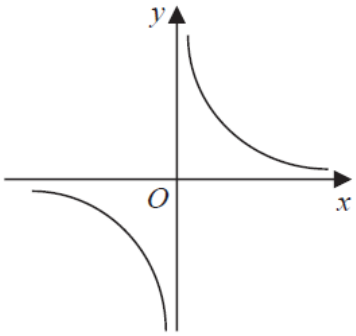
(b) Explain what this gradient represents.

(1)

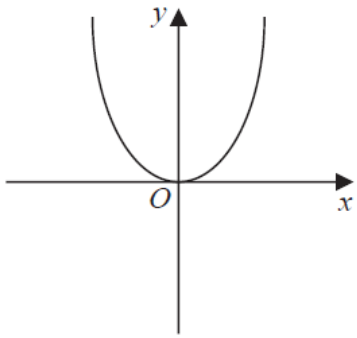
(Total 3 marks)

Specimen Papers Set 1, Paper 2H qu.10 (R14 – AO1/AO2)

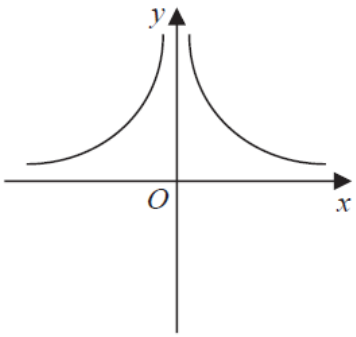
These graphs show four different proportionality relationships between y and x.



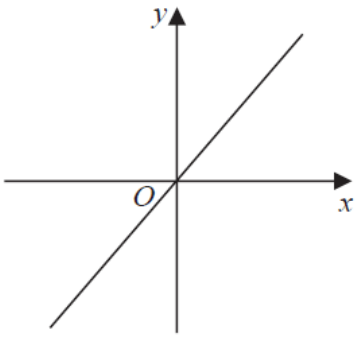
Graph A



Graph B



Graph C



Graph D

Match each graph with a statement in the table below.

Proportionality relationship	**Graph letter**
y is directly proportional to x	
y is inversely proportional to x	
y is proportional to the square of x	
y is inversely proportional to the square of x	

(Total 2 marks)

Specimen Papers Set 1, Paper 1H qu.16 (R14 – AO2)

R15	**interpret the gradient at a point on a curve as the instantaneous rate of change; apply the concepts of average and instantaneous rate of change (gradients of chords and tangents) in numerical, algebraic and graphical contexts (this does not include calculus)**

New to GCSE (9–1) Maths

The content in R15 is new to GCSE (9–1) Maths.

Sample questions

The quantity of heat, H calories, delivered by an electric current, I amps, acting for t seconds to heat an amount of water is given by the formula

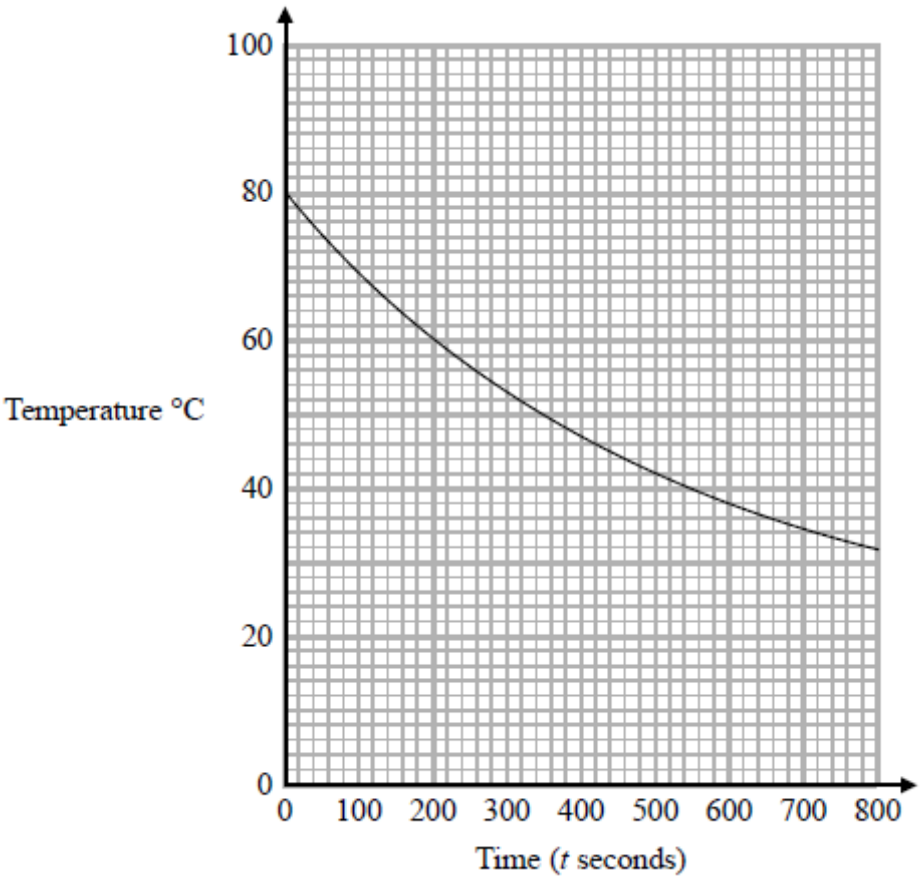
$$H = atI^2 - b$$

where a and b are constants.

(a) Rearrange the formula to make I the subject.

(2)

The graph gives information about the variation in the temperature, in °C, of an amount of water that is allowed to cool from 80 °C.



(*b*) (i) Work out the average rate of decrease of the temperature of the water between $t = 0$ and $t = 800$.

The instantaneous rate of decrease of the temperature of the water at time T seconds is equal to the average rate of decrease of the temperature of the water between $t = 0$ and $t = 800$.

(ii) Find an estimate for the value of T.
You must show how you got your answer.

(4)

(Total 6 marks)

Original SAMs Paper 3H qu.14 (R15, R14, A5 – AO1/AO2/AO3)

R16 set up, solve and interpret the answers in growth and decay problems, including compound interest **and work with general iterative processes**

New to GCSE (9–1) Maths

Working with general iterative processes.

Sample questions

The number of slugs in a garden t days from now is p_t where

$p_0 = 100$

$p_{t+1} = 1.06p_t$

Work out the number of slugs in the garden 3 days from now.

(Total 3 marks)

Specimen Papers Set 2, Paper 2H qu.13 (R16 – AO1/AO3)

Louis and Robert are investigating the growth in the population of a type of bacteria.
They have two flasks A and B.

At the start of day 1, there are 1000 bacteria in flask A.
The population of bacteria grows exponentially at the rate of 50% per day.

(*a*) Show that the population of bacteria in flask A at the start of each day forms a geometric progression.

(2)

The population of bacteria in flask A at the start of the 10th day is k times the population of bacteria in flask A at the start of the 6th day.

(*b*) Find the value of k.

(2)

At the start of day 1 there are 1000 bacteria in flask B.
The population of bacteria in flask B grows exponentially at the rate of 30% per day.

(*c*) Sketch a graph to compare the size of the population of bacteria in flask A and in flask B.

(1)

(Total 5 marks)

New SAMs Paper 3H qu.17 (R16, A12 – AO1/AO2/AO3)

The number of bees in a beehive at the start of year n is P_n.
The number of bees in the beehive at the start of the following year is given by

$$P_{n+1} = 1.05(P_n - 250)$$

At the start of 2015 there were 9500 bees in the beehive.

How many bees will there be in the beehive at the start of 2018?

(Total 3 marks)

Specimen Papers Set 1, Paper 2H qu.21 (R16 – AO3)

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4. Geometry and measures

Mensuration and calculation

G21	know the exact values of sin θ and cos θ for $\theta = 0°, 30°, 45°, 60°$ and $90°$; know the exact value of tan θ for $\theta = 0°, 30°, 45°$ and $60°$

New to GCSE (9–1) Maths

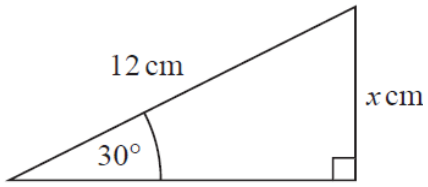
The content in G21 is new to GCSE (9–1) Maths.

Sample questions

(*a*) Write down the exact value of cos30°

(1)

(*b*)



Given that sin30° = 0.5,
work out the value of x.

(2)

(Total 3 marks)

Specimen Papers Set 1, Paper 1F qu.26 / 1H qu.7 (G21, G20 – AO1)

G23 **know and apply area = $\frac{1}{2}$ *ab* sin *C* to calculate the area, sides or angles of any triangle**

New to GCSE (9–1) Maths

The content in G23 is not new to GCSE (9–1) Maths, but below is a G23 question assessing new Assessment Objectives.

Sample questions

In triangle *RPQ*,

RP = 8.7 cm
PQ = 5.2 cm
Angle *PRQ* = 32°

(*a*) Assuming that angle *PQR* is an acute angle,
calculate the area of triangle *RPQ*.
Give your answer correct to 3 significant figures.

(4)

(*b*) If you did not know that angle *PQR* is an acute angle, what effect would this have on your calculation of the area of triangle *RPQ*?

(1)

(Total 5 marks)

New SAMs Paper 2H qu.21 (G23, A12 – AO1/AO3)

5. Probability

P1	record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees

New to GCSE (9–1) Maths

Use frequency trees to record, describe and analyse the frequency of outcomes of probability experiments.

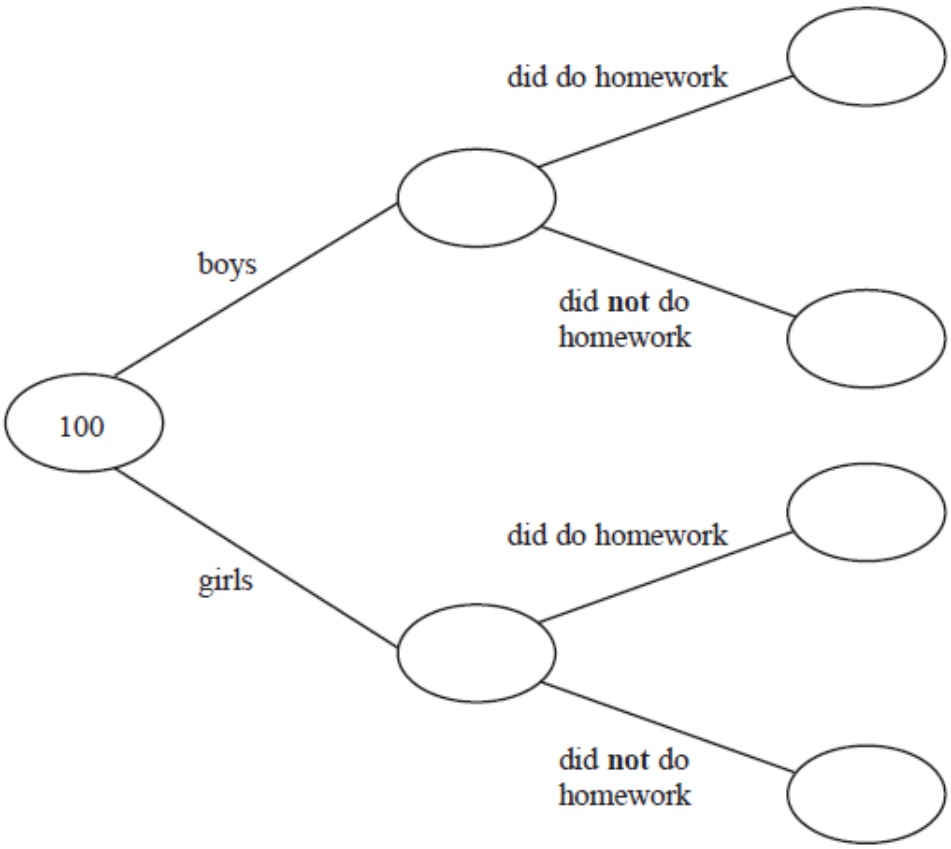
Sample questions

100 students had some homework.

42 of these students are boys.
8 of the 100 students did **not** do their homework.
53 of the girls did do their homework.

(*a*) Use this information to complete the frequency tree.

(3)



One of the girls is chosen at random.

(*b*) Work out the probability that this girl did **not** do her homework.

(2)

(Total 5 marks)

New SAMs Paper 1F qu.17 (P1, P3 – AO1/AO2)

P6	enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams and tree diagrams

New to GCSE (9–1) Maths

Use Venn diagrams to enumerate sets and combinations of sets systematically.

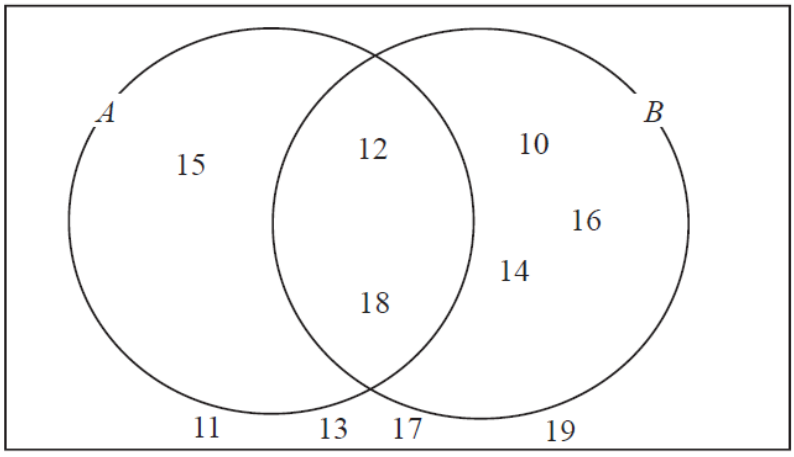
Sample questions

$\mathbf{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
$A = \{\text{multiples of } 2\}$
$A \cap B = \{2, 6\}$
$A \quad B = \{1, 2, 3, 4, 6, 8, 9, 10\}$

Draw a Venn diagram for this information.

(Total 4 marks)
Specimen Papers Set 1, Paper 3F qu.20 (P6, N4 – AO2)

Here is a Venn diagram.



(*a*) Write down the numbers that are in set

(i) $A \quad B$

(ii) $A \cap B$

(2)

One of the numbers in the diagram is chosen at random.

(*b*) Find the probability that the number is in set A'

(2)

(Total 4 marks)
Specimen Papers Set 2, Paper 2F qu.26 / 2H qu.5 (P6, P4 – AO1/AO2)

P9 calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams

New to GCSE (9–1) Maths

Use Venn diagrams to calculate and interpret conditional probabilities.

Sample questions

John has an empty box.
He puts some red counters and some blue counters into the box.

The ratio of the number of red counters to the number of blue counters is 1 : 4

Linda takes at random 2 counters from the box.

The probability that she takes 2 red counters is $\frac{6}{155}$

How many red counters did John put into the box?

(Total 4 marks)
New SAMs Paper 1H qu.24 (P9, A21, R8 – AO1/AO3)

Sami asked 50 people which drinks they liked from tea, coffee and milk.

All 50 people like at least one of the drinks.
19 people like all three drinks.
16 people like tea and coffee but do **not** like milk.
21 people like coffee and milk.
24 people like tea and milk.
40 people like coffee.
1 person likes only milk.
Sami selects at random one of the 50 people.

(*a*) Work out the probability that this person likes tea.

(4)

(*b*) Given that the person selected at random from the 50 people likes tea, find the probability that this person also likes exactly one other drink.

(2)

(Total 6 marks)
New SAMs Paper 3H qu.12 (P9, P8 – AO1/AO2/AO3)

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6. Statistics

No new topics in Statistics.