www.dynamicpapers.com

Cambridge IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

7334800620

MATHEMATICS **0580/23**

Paper 2 (Extended) **October/November 2019**

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Tracing paper (optional)
Geometrical instruments

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 70.

This document consists of **12** printed pages.

© UCLES 2019

Cambridge Assessment International Education

www.dynamicpapers.com

1 Write down the temperature that is 7 °C below −3 °C.

..... °C [1]

2 Calculate $\sqrt{256^{0.25} + 4 \times 8}$.

..... [1]

3 Here is a list of numbers.

87 77 57 47 27

From this list, write down

(a) a cube number,

..... [1]

(b) a prime number.

..... [1]

4 Find the highest common factor (HCF) of 84 and 105.

..... [2]

5 Write in standard form.

(a) 72000

..... [1]

(b) 0.0018

..... [1]

© UCLES 2019

www.dynamicpapers.com

6 Expand and simplify $(x+3)(x+5)$.

..... [2]

7 Find the gradient of the line that is perpendicular to the line $2y = 3 + 5x$.

..... [2]

8 When $\sin x° = 0.36$, find

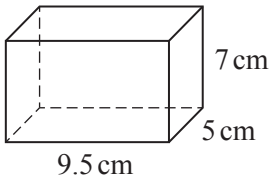
(a) the acute angle $x°$,

..... [1]

(b) the obtuse angle $x°$.

..... [1]

9 A cuboid measures 5 cm by 7 cm by 9.5 cm.



NOT TO SCALE

Work out the surface area of this cuboid.

..... cm^2 [3]

www.dynamicpapers.com

10 $5n$ is the mean of the three numbers 391, n and $n - 1$.

Find the value of n.

$n =$ ..... [3]

11 Factorise.

(a) $12x + 15$

..... [1]

(b) $xy - 2x + 3y - 6$

..... [2]

12 A is the point (2, 1) and B is the point (9, 4).

Find the length of AB.

..... [3]

www.dynamicpapers.com

13 A straight line joins the points $(3k, 6)$ and $(k, -5)$.
The line has a gradient of 2.

Find the value of k.

$k =$ ..... [3]

14 Find the nth term of each sequence.

(a) $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}, \frac{1}{10}, \ldots$

..... [1]

(b) 1, 5, 25, 125, 625, ...

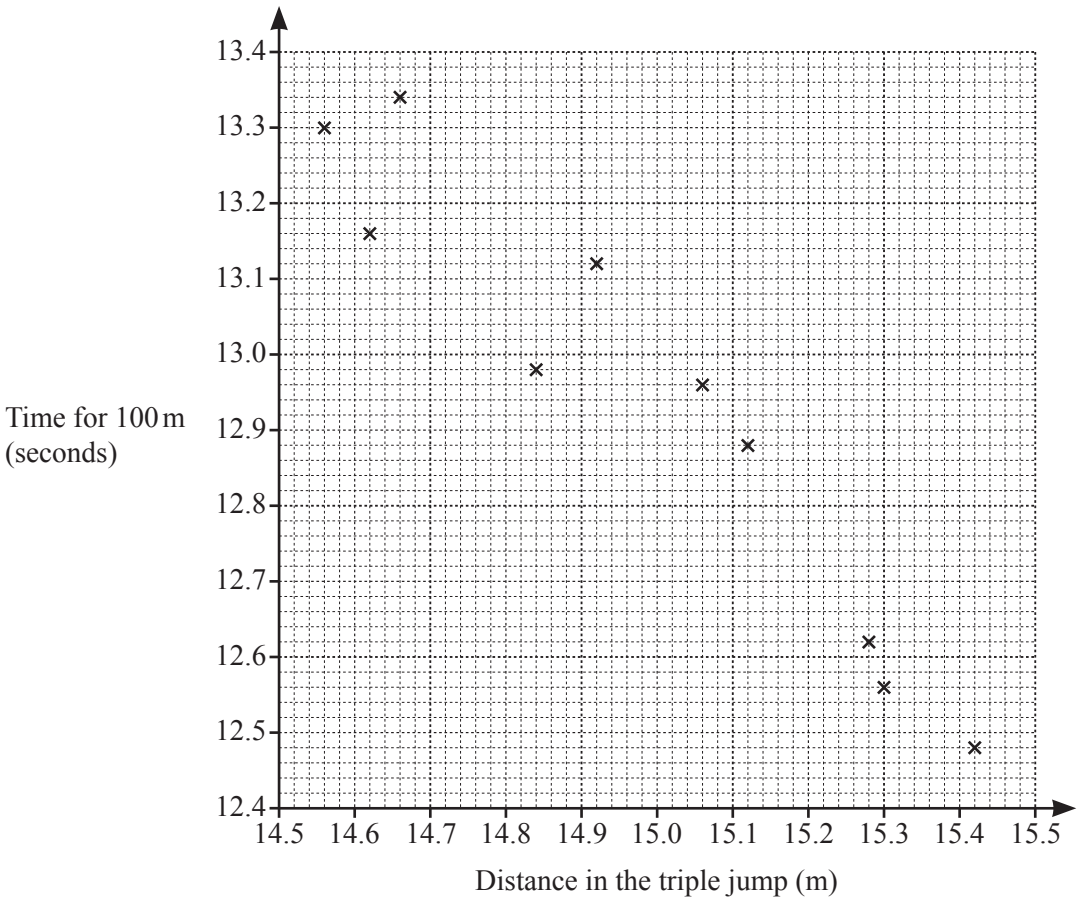
..... [2]

15 **Without using a calculator**, work out $\frac{2}{3} + \frac{1}{4} \times \frac{2}{3}$.
Write down all the steps of your working and give your answer as a fraction in its simplest form.

..... [4]

www.dynamicpapers.com

16 Ten athletes compete in both the 100 metre race and the triple jump.
Their results are shown in the scatter diagram.



(a) One of these athletes jumps 15.12 m in the triple jump.

Write down his time for the 100 metre race.

..... s [1]

(b) The values for two other athletes are shown in the table.

Distance in the triple jump (m)	14.74	15.2
Time for 100 m (seconds)	13.2	12.76

On the scatter diagram, plot these points. [1]

(c) On the scatter diagram, draw a line of best fit. [1]

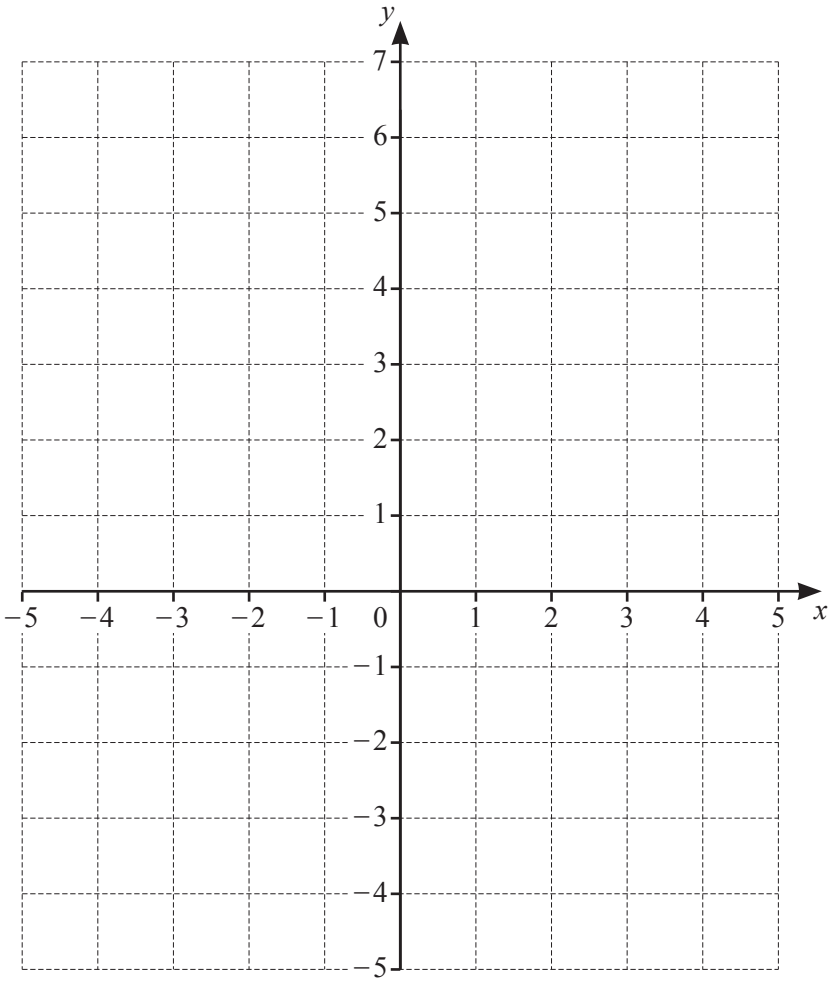
(d) What type of correlation is shown in the scatter diagram?

..... [1]

© UCLES 2019

www.dynamicpapers.com

17



By shading the **unwanted** regions on the grid, draw and label the region R that satisfies the following inequalities.

$$-2 < x \leqslant 3 \qquad\qquad y \leqslant x + 3$$

[4]

www.dynamicpapers.com

18 **(a)** $M = \{x : x \text{ is an integer and } 2 \leqslant x < 6\}$

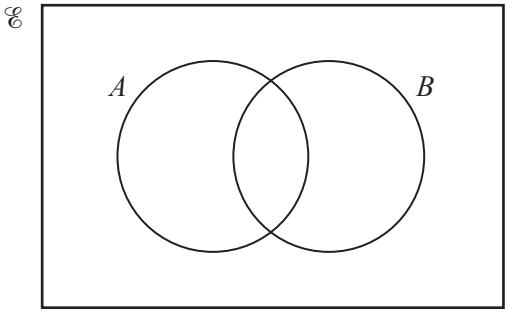
(i) Find n(M).

..... [1]

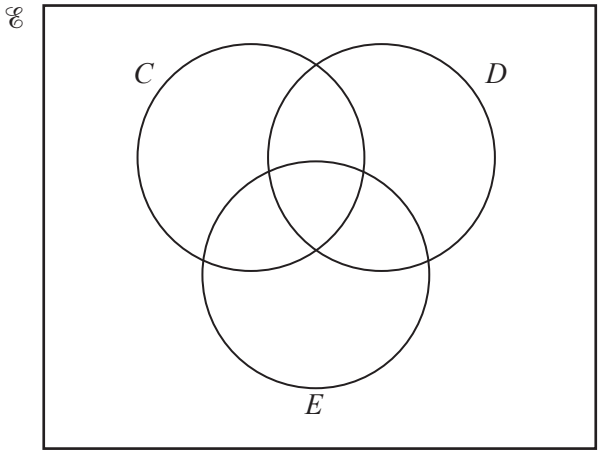
(ii) Write down a set N where $N \subset M$ and $N \neq \varnothing$.

{.....} [1]

(b) In each Venn diagram, shade the required region.



$(A \cup B)'$

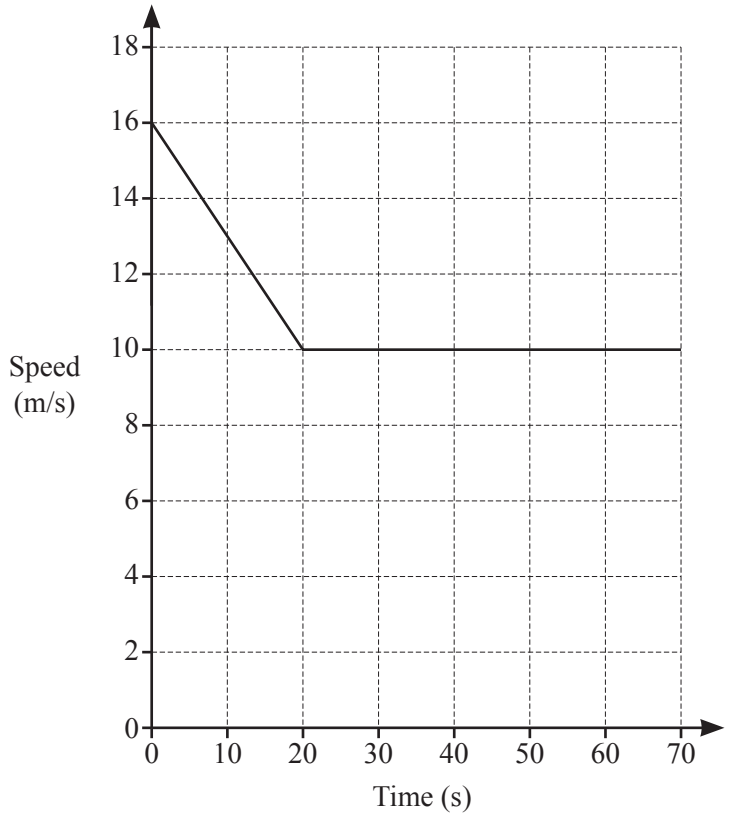


$(C \cap D') \cup E$

[2]

www.dynamicpapers.com

19



The diagram shows the speed–time graph for 70 seconds of a car journey.

(a) Calculate the deceleration of the car during the first 20 seconds.

..... m/s^2 [1]

(b) Calculate the total distance travelled by the car during the 70 seconds.

..... m [3]

www.dynamicpapers.com

20 t is inversely proportional to the square of $(x + 1)$.
When $x = 2$, $t = 5$.

(a) Write t in terms of x.

$t =$ ..... [2]

(b) When $t = 1.8$, find the positive value of x.

$x =$ ..... [2]

21 **(a)** Work out the inverse of the matrix $\begin{pmatrix} -3 & 10 \\ 1 & -5 \end{pmatrix}$.

$\begin{pmatrix} & \\ & \end{pmatrix}$ [2]

(b) Work out the value of x and the value of y in this matrix calculation.

$$\begin{pmatrix} 1 & 5 \\ 2 & y \end{pmatrix}\begin{pmatrix} -4 & 1 \\ 2 & 9 \end{pmatrix} = \begin{pmatrix} x & 46 \\ 6 & 65 \end{pmatrix}$$

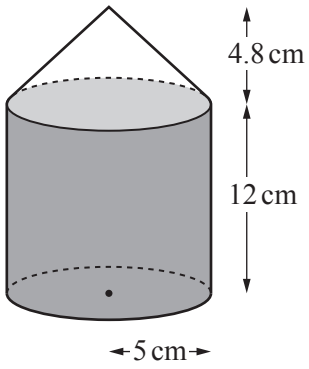
$x =$ .....

$y =$ ..... [3]

© UCLES 2019

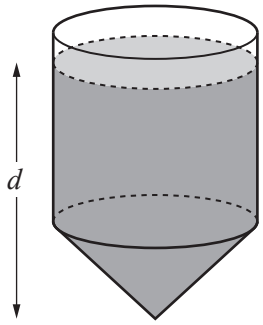
www.dynamicpapers.com

22 A container is made from a cylinder and a cone, each of radius 5 cm.
The height of the cylinder is 12 cm and the height of the cone is 4.8 cm.



NOT TO SCALE

The cylinder is filled completely with water.
The container is turned upside down as shown below.



NOT TO SCALE

Calculate the depth, d, of the water.
[The volume, V, of a cone with radius r and height h is $V = \frac{1}{3}\pi r^2 h$.]

d = ... cm [5]

Question 23 is printed on the next page.

www.dynamicpapers.com

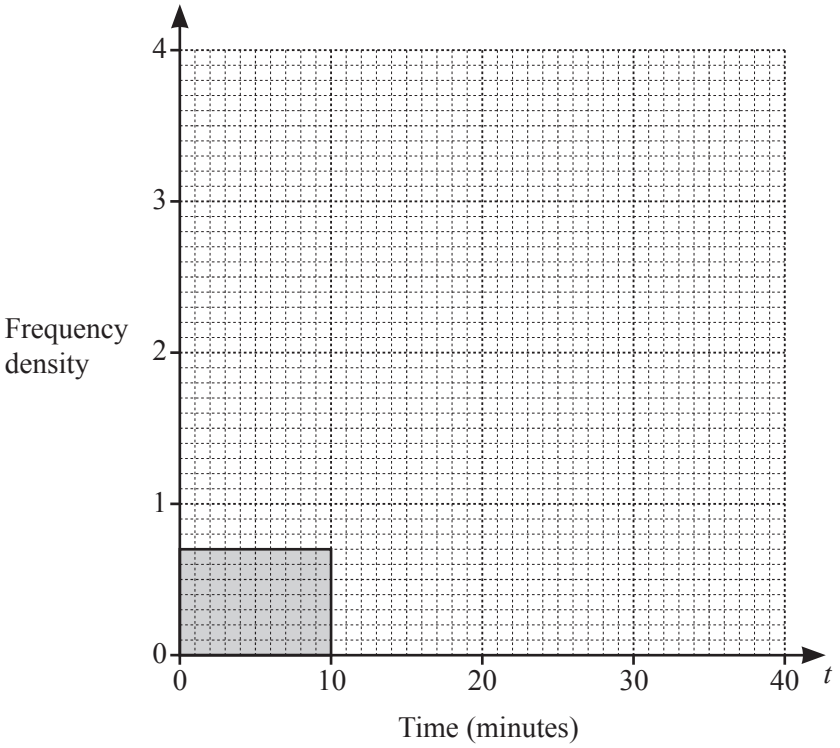
23 The time, t minutes, it takes each of 50 students to travel to school is recorded.
The table shows the results.

Time (t minutes)	$0 < t \leqslant 10$	$10 < t \leqslant 15$	$15 < t \leqslant 20$	$20 < t \leqslant 40$
Frequency	7	19	16	8

(a) Write down the modal class.

..... $< t \leqslant$ ..... min [1]

(b) On the grid, complete the histogram to show the information in the table.



[3]

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge Assessment International Education Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cambridgeinternational.org after the live examination series.

Cambridge Assessment International Education is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which itself is a department of the University of Cambridge.

© UCLES 2019