Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education (9–1)

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

0123456789

MATHEMATICS **0626/02**

Paper 2 (Extended) **For Examination from 2017**

SPECIMEN PAPER

1 hour

Candidates answer on the Question Paper.

Additional Materials: Geometrical instruments
Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces at the top of this page.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams and graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
Electronic calculators should be used.
If working is required for any question it must be shown below that question.
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 60.

This syllabus is regulated in England as a Cambridge International Level 1/Level 2 (9–1) Certificate.

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

1 **(a)** Find the lowest common multiple (LCM) of 30 and 36.

..... [2]

(b) Write 252 as a product of prime factors.

..... [2]

2 A doctor measures the height and weight of each person in a group.
This information is plotted on a scatter graph.

Write down the type of correlation you would expect for this information.

..... [1]

3 Write down the equation of the line, parallel to $y = 3x + 5$, which passes through the point $(0, -2)$.

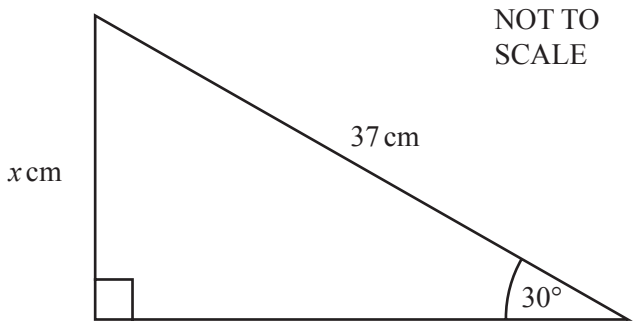
$y =$ ..... [3]

4 Parul completes a 10 km run in 55 minutes 30 seconds.

Calculate Parul's average speed in km/h.

..... km/h [3]

5



Find the value of x.

x = ... [2]

6 Factorise completely

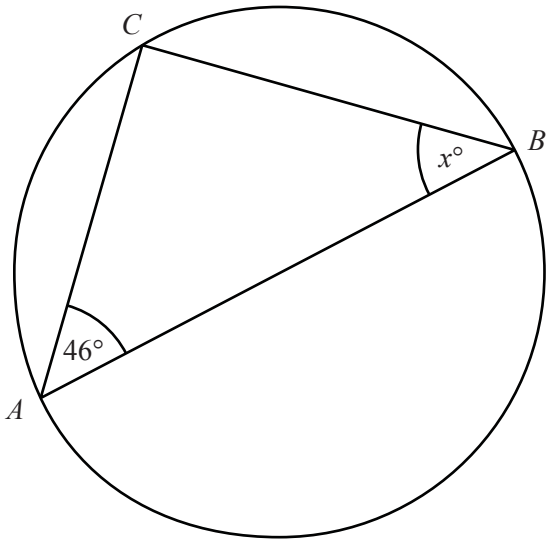
(a) $x^2 - 64$,

..... [1]

(b) $x^2 + 11x + 30$.

..... [2]

7



NOT TO SCALE

A, *B* and *C* are points on the circumference of a circle with diameter *AB*.

Find the value of *x*, giving a reason for your answer.

x = ... because .....

..... [2]

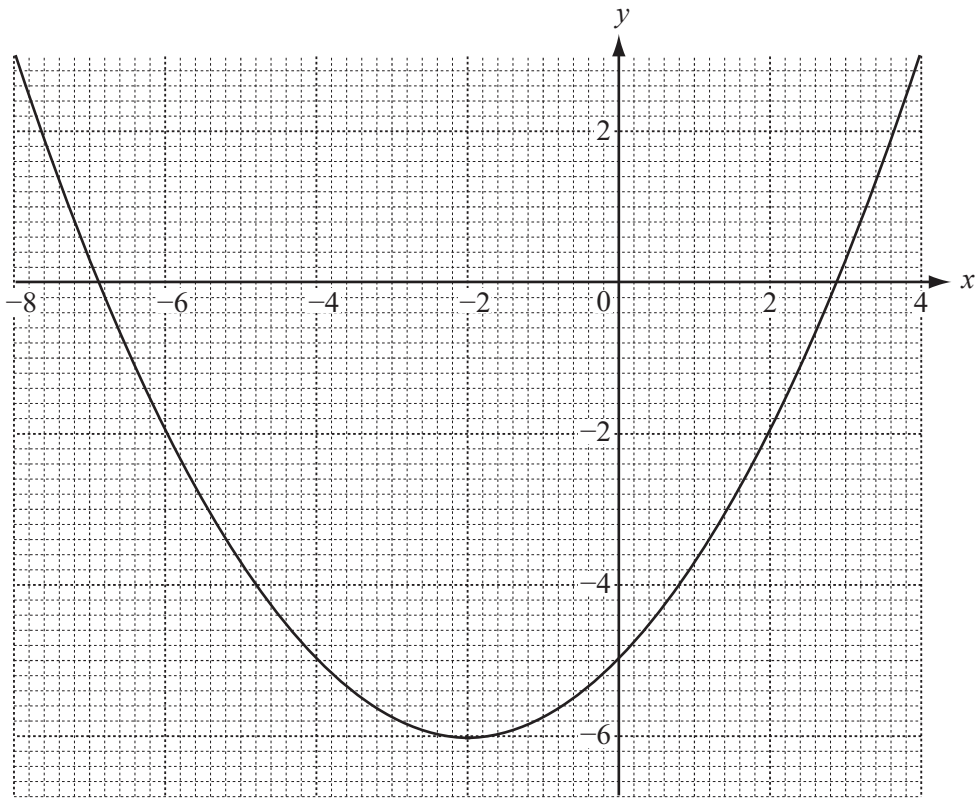
8 Solve the simultaneous equations.
You must show your working.

$$2x - y = 9$$
$$7x + 2y = 26$$

x = ...

y = ... [3]

9 The graph of $y = 0.25x^2 + x - 5$ for $-8 \leqslant x \leqslant 4$ is shown below.



Use the graph to find the roots of $0.25x^2 + x - 5 = 0$, correct to 1 decimal place.

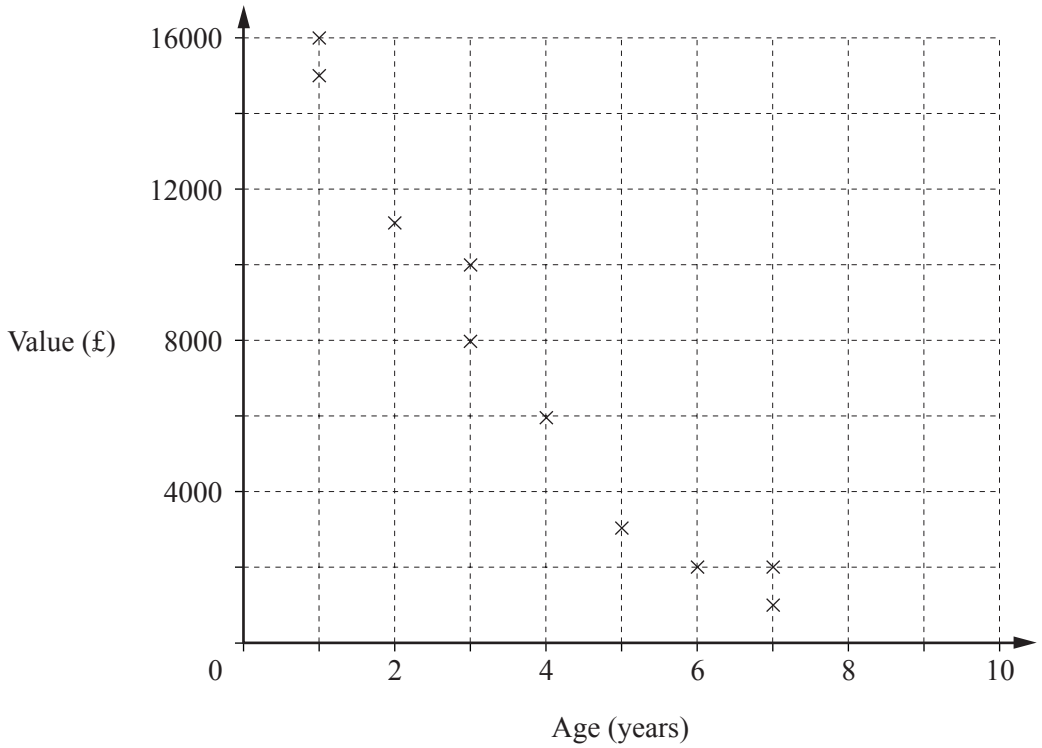
..... [2]

10 Show that $3^{-2} + 2^{-2} = \frac{13}{36}$.

Write down all the steps of your working.

[2]

11 The scatter diagram shows information about the age and value of a sample of ten cars.



Give two reasons why a line of best fit should **not** be used to estimate the value of a car which is 15 years old.

Reason 1 .....

.....

Reason 2 .....

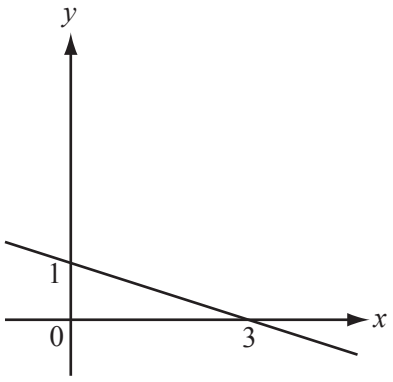
..... [2]

12 Last year Mark earned £18 900.
This year Mark earns £19 750.50.

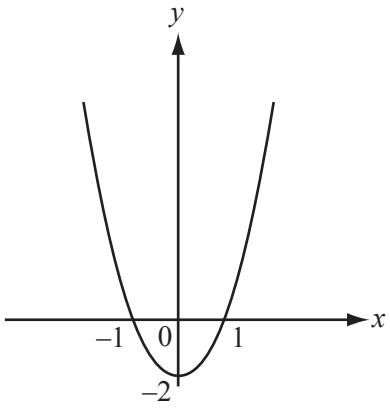
Calculate the percentage increase from £18 900.

..... % [2]

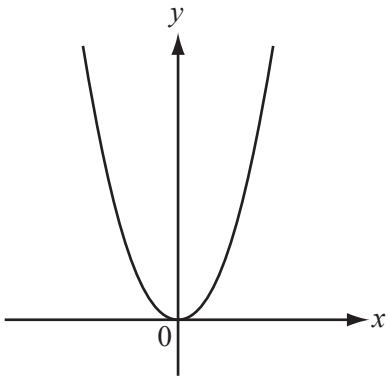
13 The diagrams A, B, C, D, E and F are the graphs of six functions.



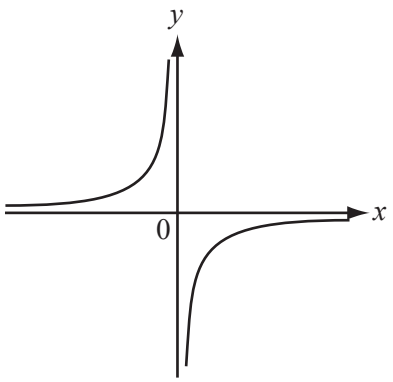
A



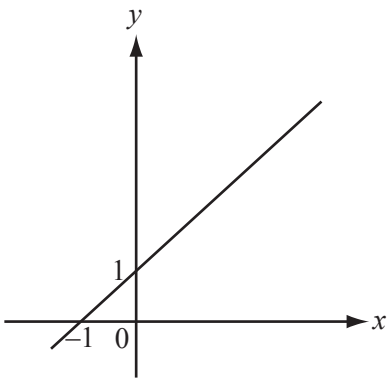
B



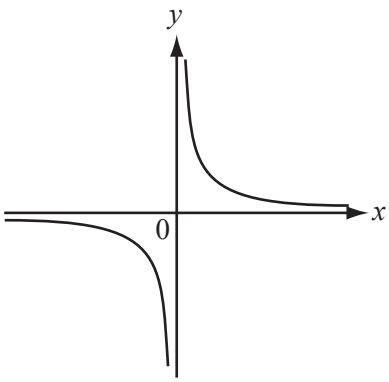
C



D



E



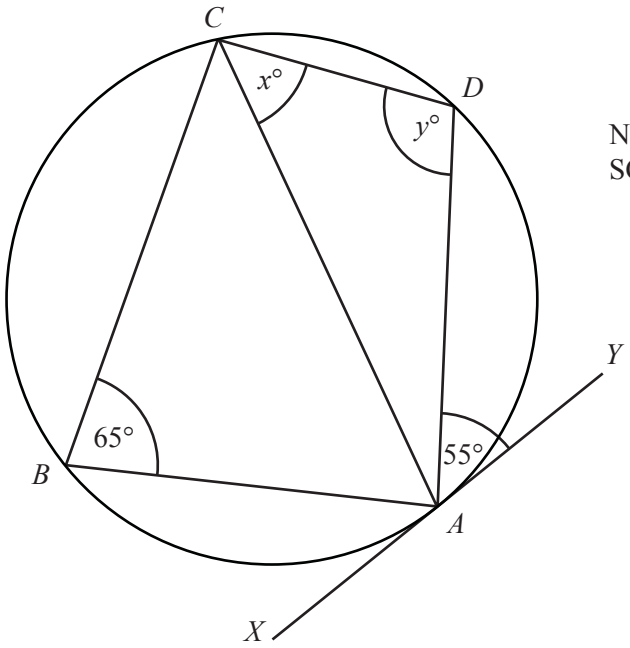
F

Complete the table to show which diagrams represent the given functions.
The first function has been done for you.

Function	$y = 1 - \frac{x}{3}$	$y = 2x^2$	$y = -\frac{4}{x}$
Diagram	A		

[2]

14



A, B, C and D are points on the circumference of the circle.
The line XY is a tangent to the circle at A.

(a) Find the value of x, giving a reason for your answer.

x = ... because .....

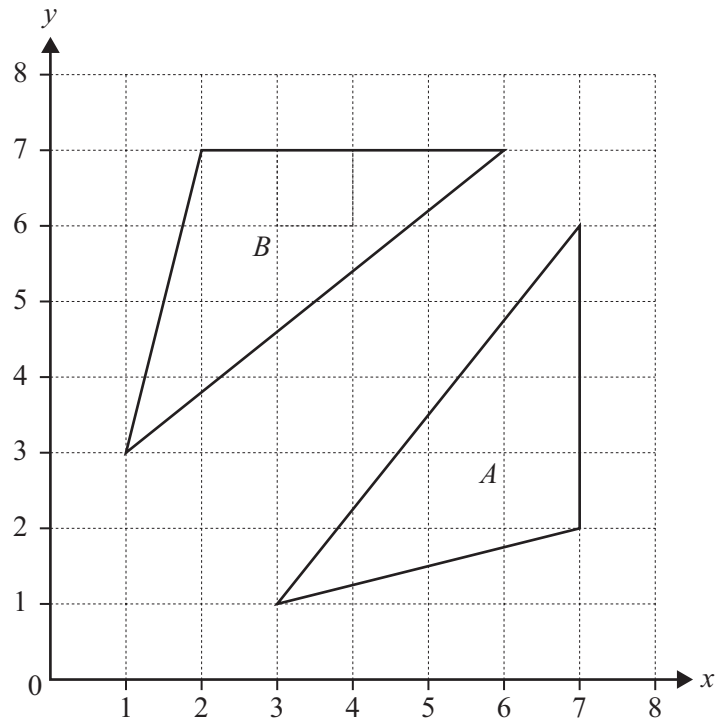
..... [2]

(b) Find the value of y, giving a reason for your answer.

y = ... because .....

..... [2]

15



Find the matrix that represents the transformation that maps triangle A onto triangle B.

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

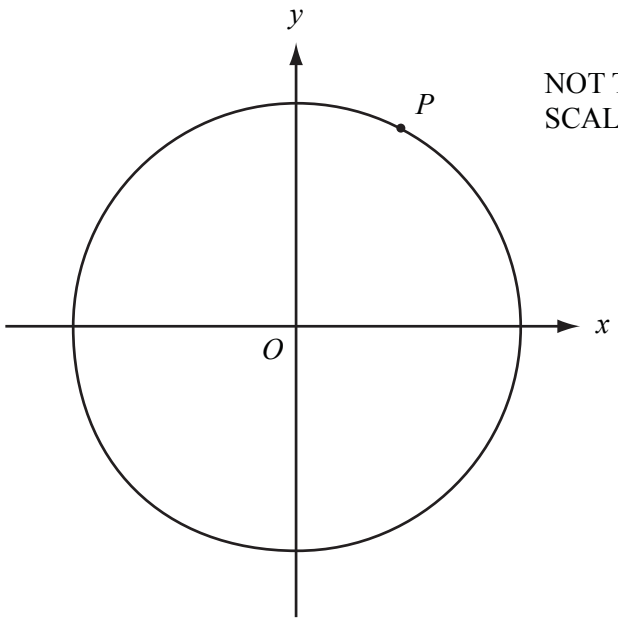
16 Show an appropriate method to find the co-ordinates of the turning point of the curve $y = x^2 + 4x - 3$.

(..... , ...) [4]

17 Solve the equation $\frac{11}{x} - 8x = 11$.
Show all your working and give your answers correct to 2 decimal places.

x = ... or x = ... [6]

18



The diagram shows a circle with its centre at the origin.
The point $P(3, 4)$ lies on the circle.

(a) Find the equation of the circle.

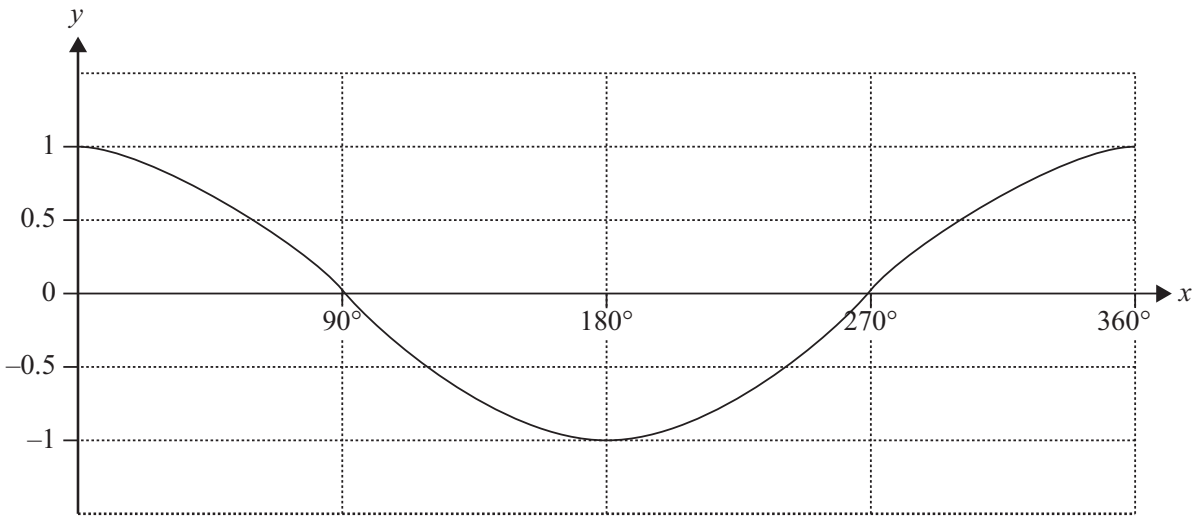
..... [3]

(b) Find the equation of the tangent to the circle at the point P.

..... [4]

Question 19 is printed on the next page.

19 The graph of $y = \cos x$ is shown on the grid for $0° \leqslant x \leqslant 360°$.



(a) Solve the equation $3\cos x = 1$ for $0° \leqslant x \leqslant 360°$.
Give your answers correct to 1 decimal place.

..... [4]

(b) On the same grid, sketch the graph of $y = \sin x$. [2]