

Bullers Wood Maths Summer Work

Due in on your third maths lesson in September.

Name: _____

School for Year 11: _____

Maths GCSE grade achieved/assigned: _____

Have you appealed your given grade? Yes/No

Have you/are you due to take an exam to amend your grade? Yes/No

Any other maths qualifications achieved, including grade assigned:

Total marks available: 85

Total marks achieved: _____

This pack contains GCSE questions from the Edexcel Exam board. These are all essential components of the A Level course. The first section (Q1-10) you can complete with a calculator, the second section (Q11-23) you need to complete **without** a calculator. It is useful to develop your non-calculator skills to become a more competent mathematician. If you find topics challenging you need to make a list and ask your teacher for help as soon as possible in September. You can also use online resources to support your understanding.

Make a list of any topic areas you need help with here:

CALCULATOR QUESTIONS

Questions

Q1.

(a) Factorise fully $6ab + 10ac$

.....
(2)

(b) Expand and simplify $(x - 5)(x + 7)$

.....
(2)

(c) Simplify $\frac{2m^2t^6}{m^4t^2}$

Give your answer in its simplest form.

.....
(2)

(d) Factorise $y^2 - 16$

.....
(1)

(e) Simplify $(h^2)^{-3}$

.....
(1)

(Total for Question is 8 marks)

Q2.

(a) Expand and simplify $(p + 9)(p - 4)$

.....

(2)

(b) Solve $\frac{5w-8}{3} = 4w + 2$

$w =$

(3)

(c) Factorise $x^2 - 49$

.....

(1)

(d) Simplify $(9x^8y^3)^{\frac{1}{2}}$

.....

(2)

(Total for Question is 8 marks)

Q3.

Simplify fully $\frac{x^2 - 2x - 15}{x^2 - 4x - 21}$

.....
(Total for Question is 3 marks)

Q4.

Solve the simultaneous equations

$$5x + 2y = 11$$

$$4x - 3y = 18$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question is 4 marks)

Q5.

Solve the simultaneous equations

$$x^2 + y^2 = 25$$

$$y = 2x + 5$$

$$x = \dots\dots\dots \text{ and } y = \dots\dots\dots$$

or

$$x = \dots\dots\dots \text{ and } y = \dots\dots\dots$$

(Total for Question is 6 marks)

Q6.

Solve the simultaneous equations

$$3x - 2y = 7$$

$$7x + 2y = 13$$

.....
(Total for Question is 3 marks)

Q7.

By using the quadratic formula (which you'll need to look up) Solve $5x^2 + 6x - 2 = 0$
Give your solutions correct to 2 decimal places.

.....
(Total for Question is 3 marks)

Q8.

(a) Factorise $e^2 - 100$

.....
(1)

(b) Factorise $2x^2 - 7x - 15$

.....
(2)

(c) Simplify $\frac{(g-7)^9}{(g-7)^3}$

.....
(1)

(Total for Question is 4 marks)

Q9.

(a) Expand and simplify $(x + 5)(x - 8)$

.....
(2)

(b) Factorise $x^2 - 16$

.....
(1)

(Total for Question is 3 marks)

Q10.

(a) Simplify $(3x^2y^4)^3$

.....
(2)

(b) Simplify $\frac{x^2-9}{x^2+5x-3}$

.....
(3)

(Total for Question is 5 marks)

NON-CALCULATOR QUESTIONS

Q11.

(a) Simplify $a^4 \times a^5$

.....

(1)

(b) Simplify $\frac{45e^6f^8}{5ef^2}$

.....

(2)

(c) Write down the value of $9^{\frac{1}{2}}$

.....

(1)

(Total for Question is 4 marks)

Q12.

Work out $\frac{2}{5} + \frac{3}{8}$

Give your answer in its simplest form.

.....

(Total for Question is 2 marks)

Q13.

Write down the value of

(i) 7^0

.....

(ii) 5^{-1}

.....

(iii) $9^{-\frac{1}{2}}$

.....

(Total for Question is 3 marks)

Q14.

Rationalise the denominator $\frac{3}{\sqrt{7}}$

.....
(Total for Question is 2 marks)

Q15.

Write $(5 - \sqrt{5})^2$ in the form $a + b\sqrt{5}$, where a and b are integers.

.....
(Total for Question is 2 marks)

Q16.

(a) Write down the value of 10^0

.....
(1)

(b) Write down the value of 10^{-2}

.....
(1)

(Total for Question is 2 marks)

Q17.

(a) Write down the reciprocal of 5

.....
(1)

(b) Evaluate 3^{-2}

.....
(1)
(Total for Question is 2 marks)

Q18.

(a) Simplify $5^4 \times 5^6$

.....
(1)

(b) Simplify $7^5 \div 7^2$

.....
(1)
(Total for Question is 2 marks)

Q19.

(a) Work out $\frac{1}{7} \times \frac{2}{3}$

.....
(1)

(b) Work out $\frac{3}{5} - \frac{1}{3}$

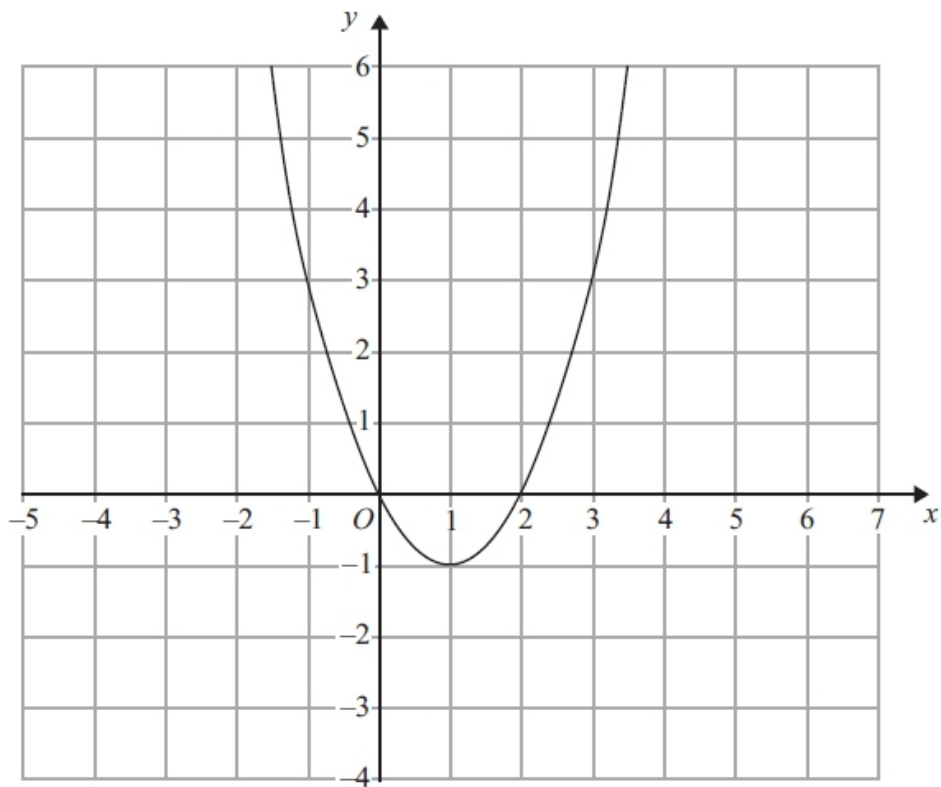
.....
(2)

(Total for Question is 3 marks)

Q20.

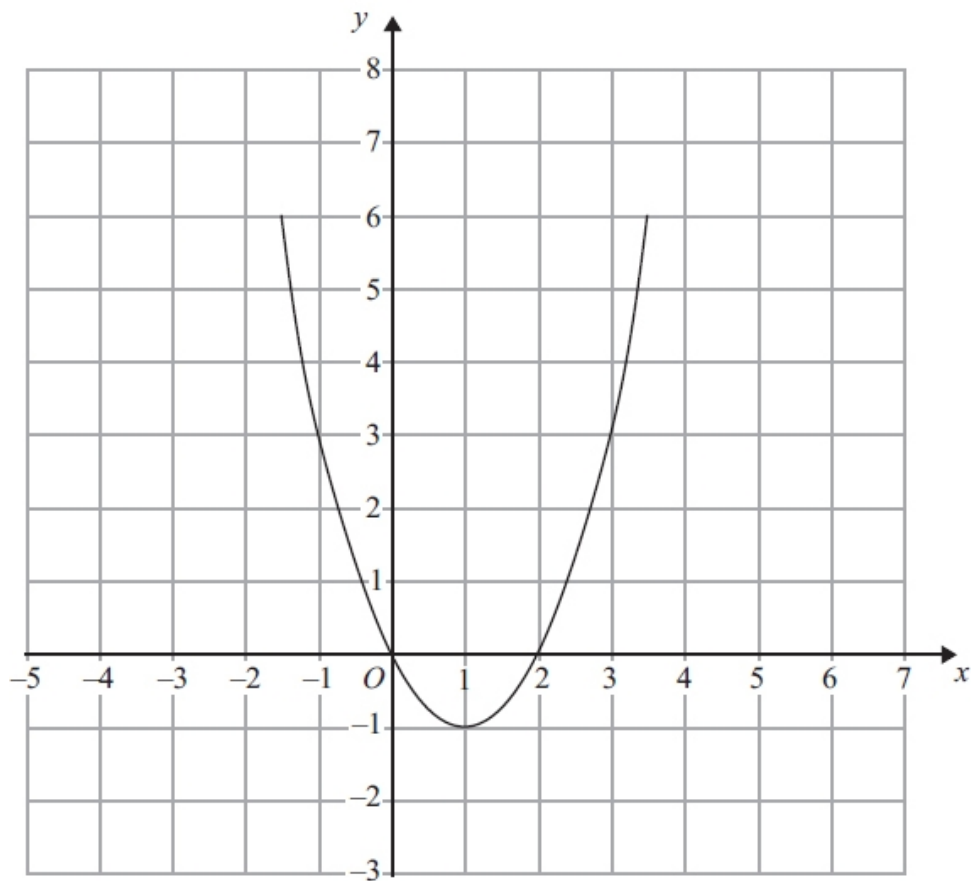
The graph of $y = f(x)$ is shown on each of the grids.

(a) On this grid, sketch the graph of $y = f(x - 3)$



(2)

(b) On this grid, sketch the graph of $y = 2f(x)$

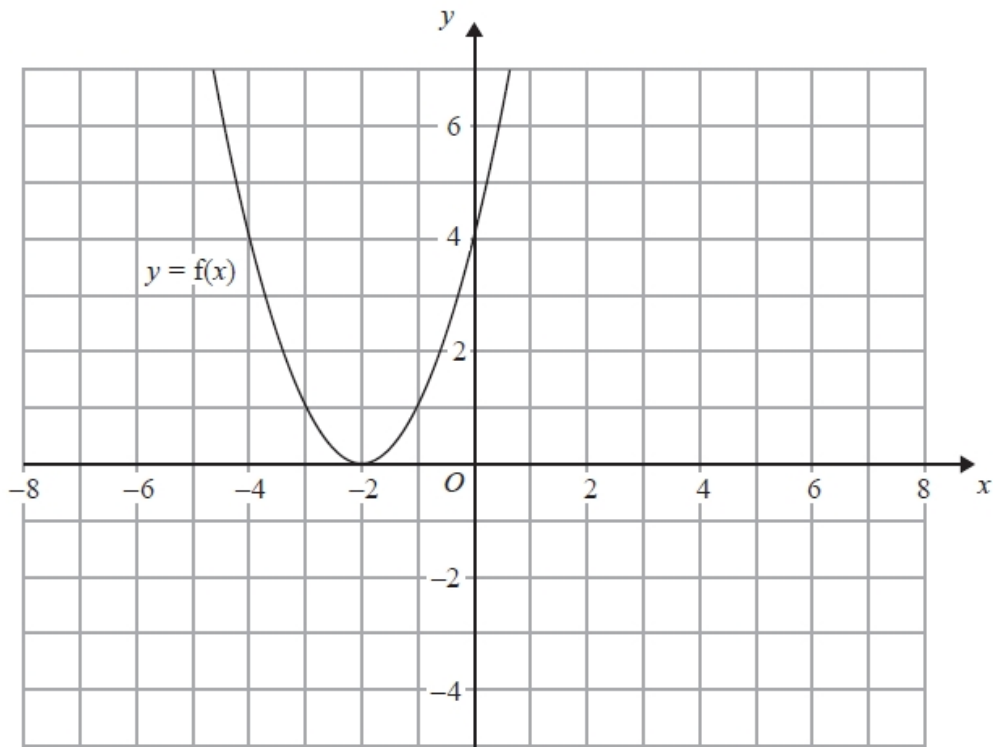


(2)

(Total for Question is 4 marks)

Q21.

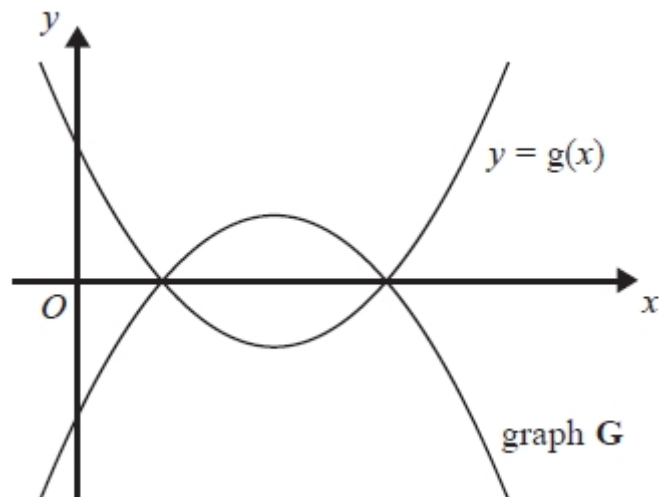
The graph of $y = f(x)$ is shown on the grid.



(a) On the grid above, sketch the graph of $y = f(x + 3)$

(2)

The graph of $y = g(x)$ is shown below.



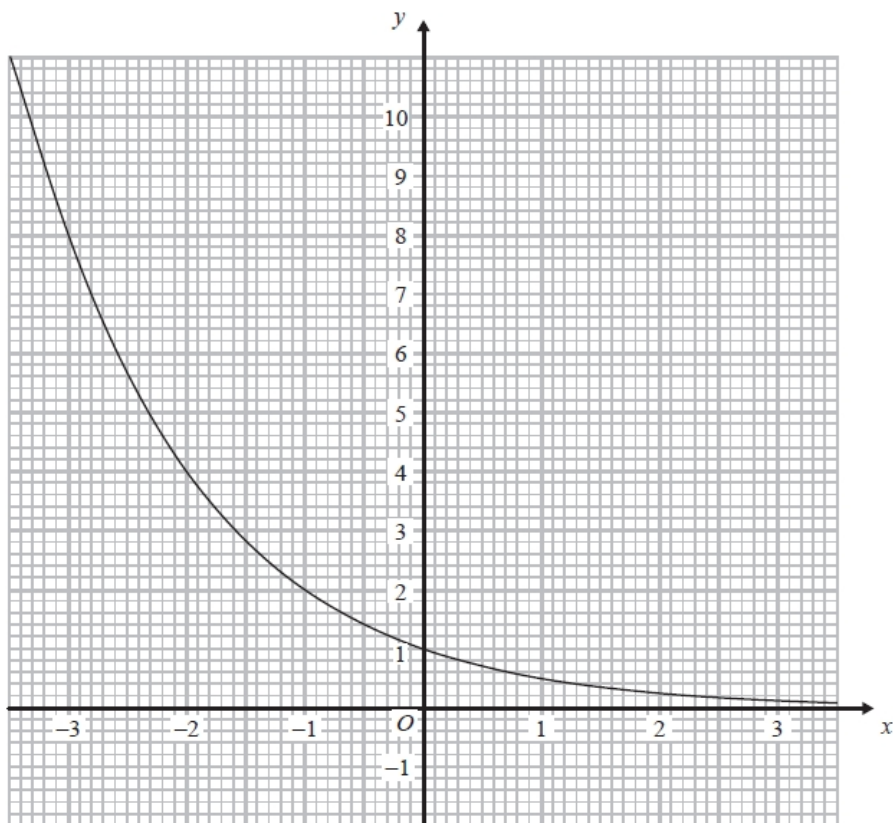
The graph **G** is the reflection of $y = g(x)$ in the x -axis.

(b) Write down an equation of graph **G**.

.....
(1)

(Total for question is 3 marks)

Q22.

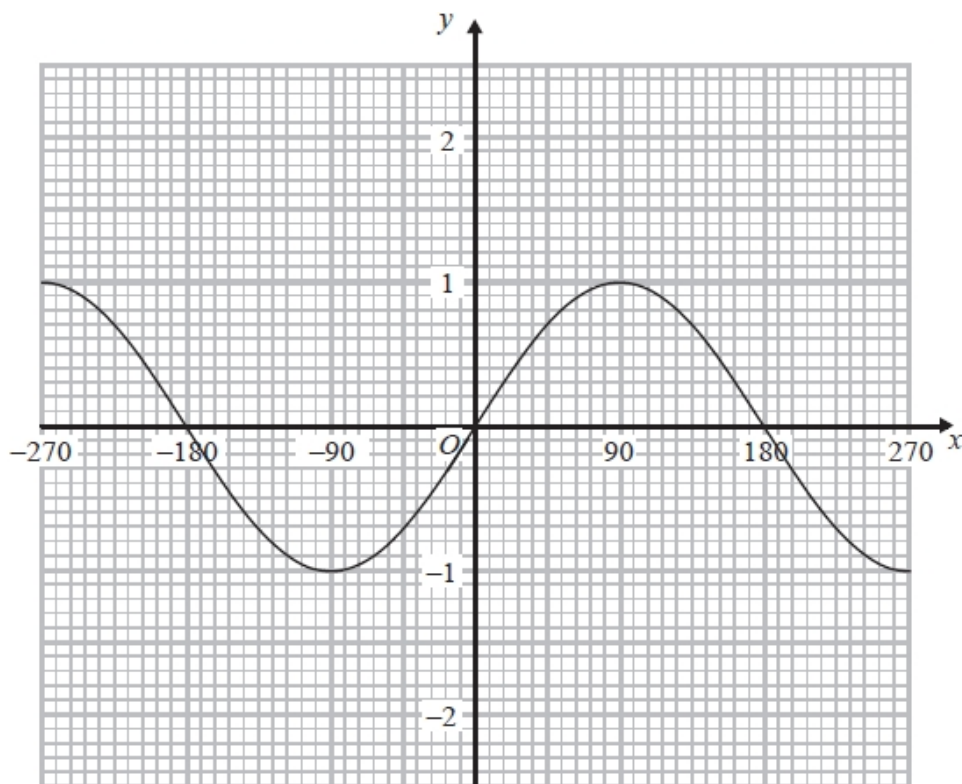


The graph of $y = k^x$, where k is a positive constant, is shown above.

(a) Find the value of k .

$k = \dots\dots\dots$

(2)



The graph of $y = \sin x^\circ$ for values of x from -270 to $+270$ is shown above.

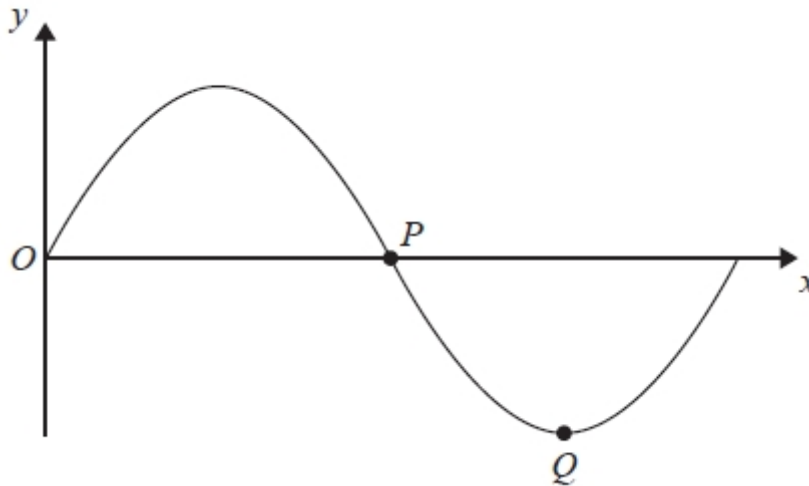
(b) On the same axes, draw the graph of $y = 1 - \sin x^\circ$ for values of x from -270 to $+270$

(2)

(Total for question is 4 marks)

Q23.

The diagram shows part of a sketch of the curve $y = \sin x^\circ$.



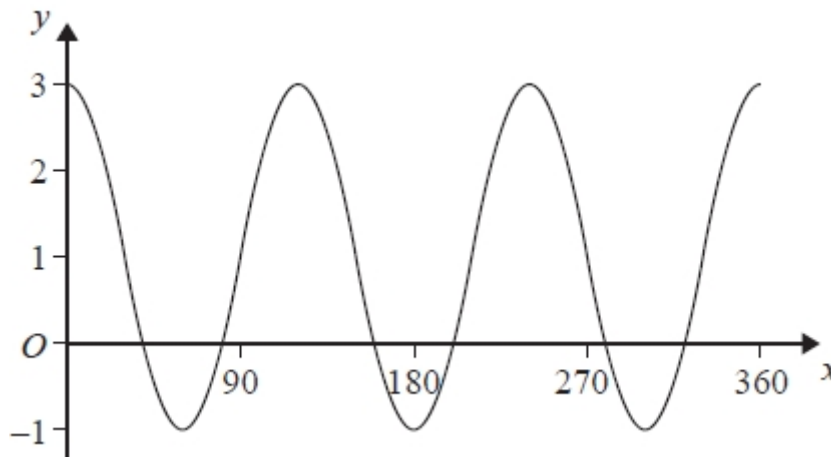
(a) Write down the coordinates of the point P .

(.....,)
(1)

(b) Write down the coordinates of the point Q .

(.....,)
(1)

Here is a sketch of the curve $y = a \cos bx^\circ + c$, $0 \leq x \leq 360$



(c) Find the values of a , b and c .

$a =$
 $b =$
 $c =$
(3)

(Total for Question is 5 marks)

TOTAL MARKS FOR PAPER IS 85 MARKS