

# Harder Graphs: Trig/Exponential

## Question Paper

Level	GCSE
Subject	Maths
Exam Board	Edexcel GCSE
Topic	Harder Graphs: Trig/Exponential
Grade Level	Grade 7
Booklet	Question Paper

**Time Allowed:** 35 minutes

**Score:** /29

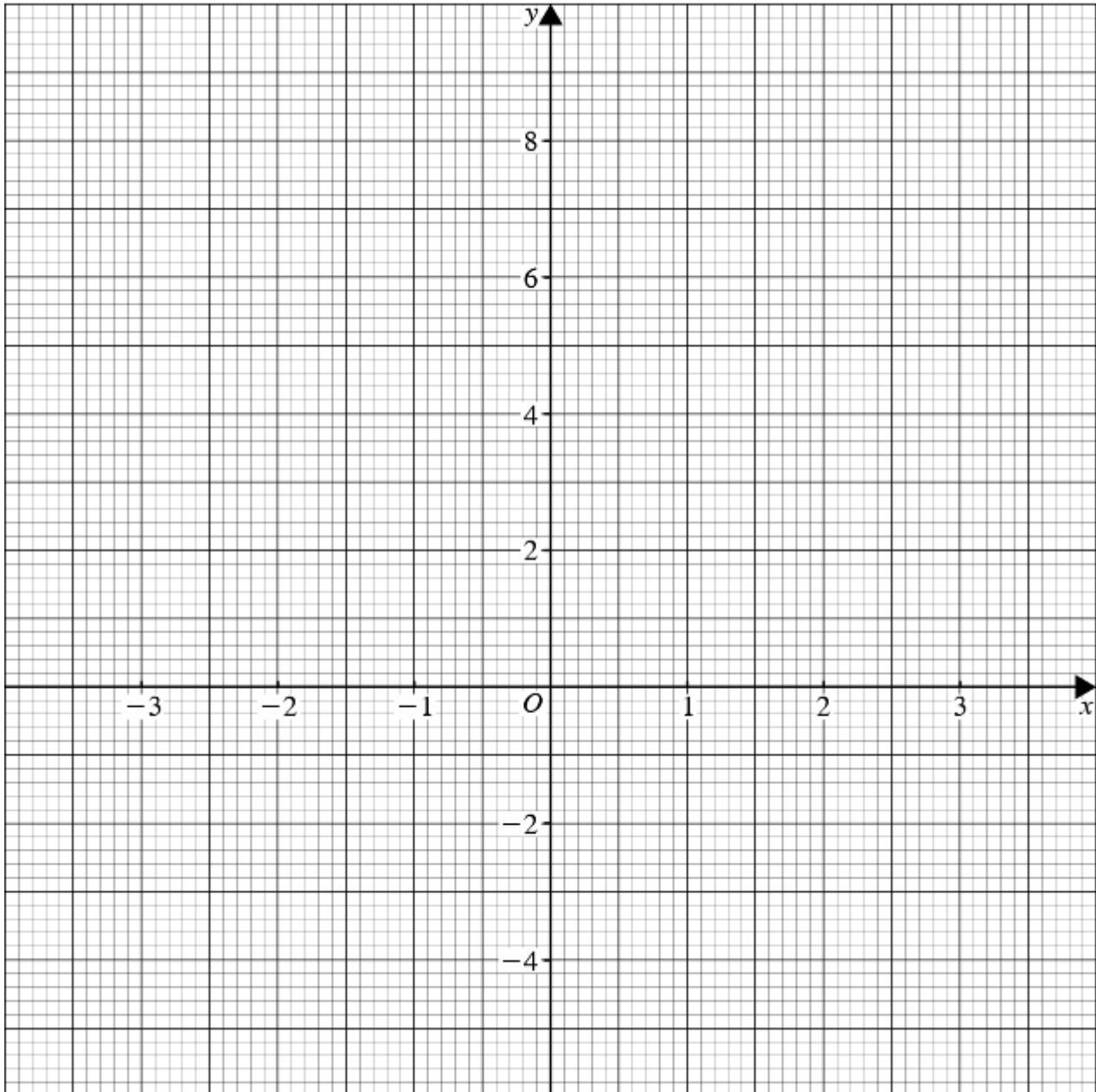
**Percentage:** /100

**Grade Boundaries:**

1.(a) Complete the table of values for  $y=2^x$  (2)

$x$	-3	-2	-1	0	1	2	3
$y$							

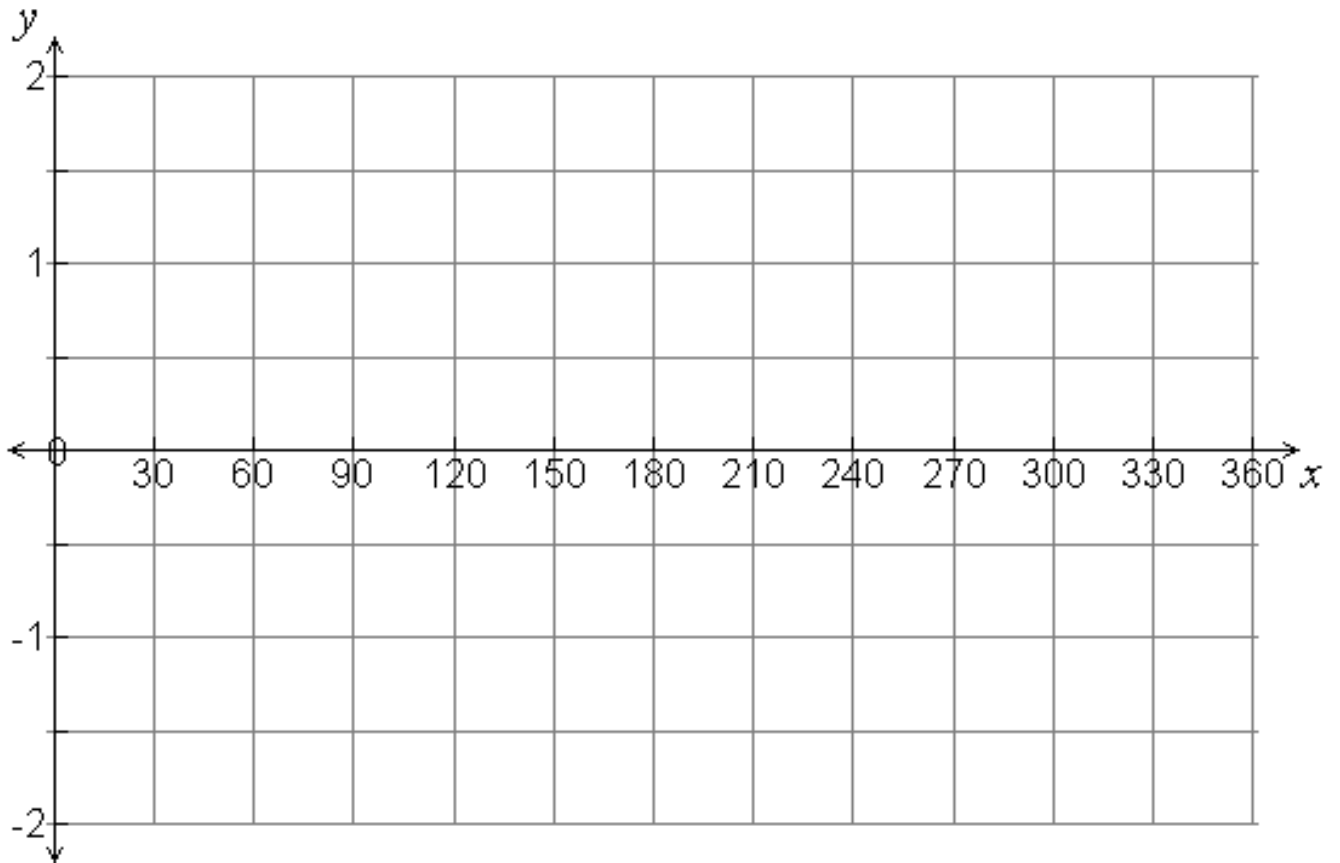
b) On the grid, draw the graph of  $y=2^x$  (2)



2.(a) Complete the table of values for  $y = \sin(x)$  (2)

$x$	0	30	60	90	120	150	180	210	240	270	300	330	360
$y$													

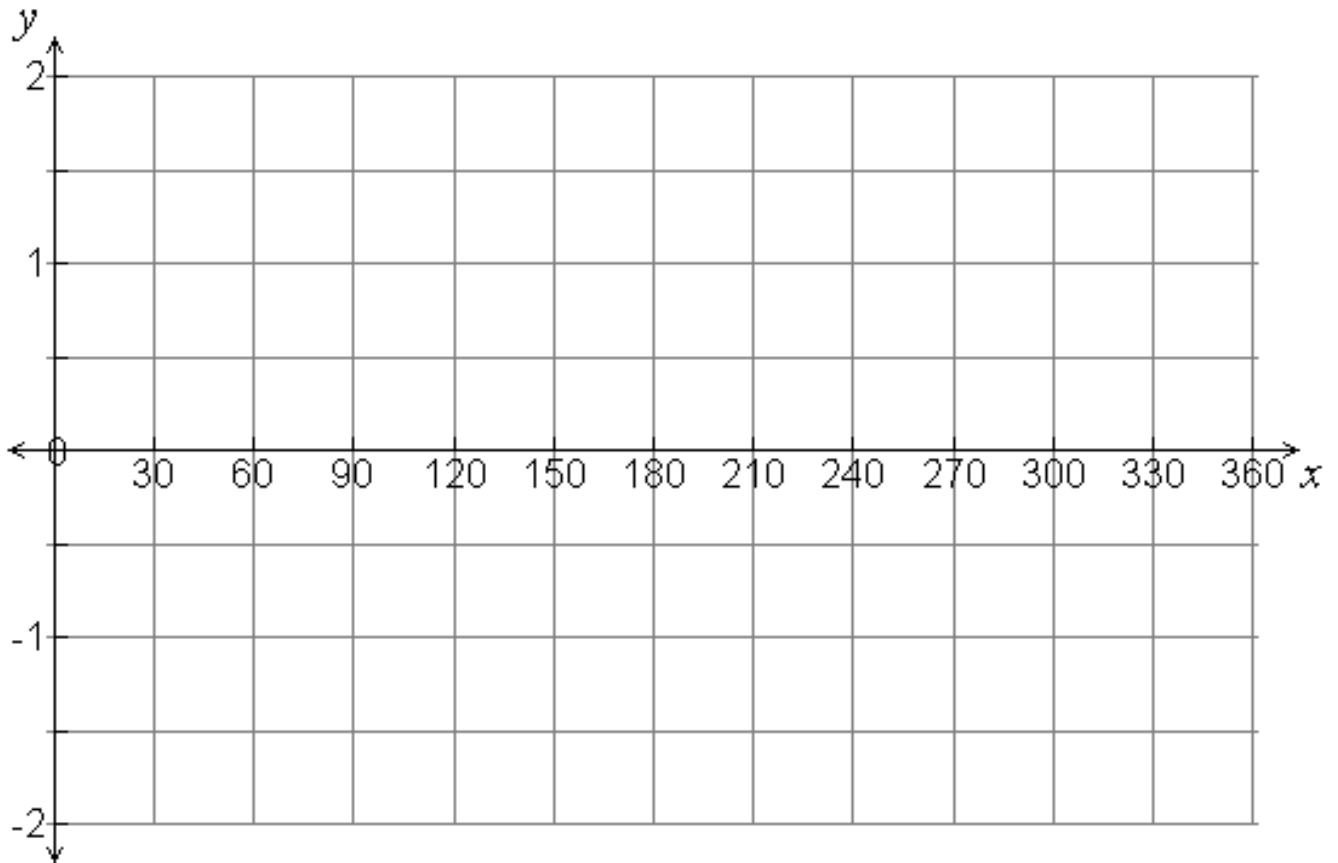
b) On the grid, draw the graph of  $y = \sin(x)$  (2)



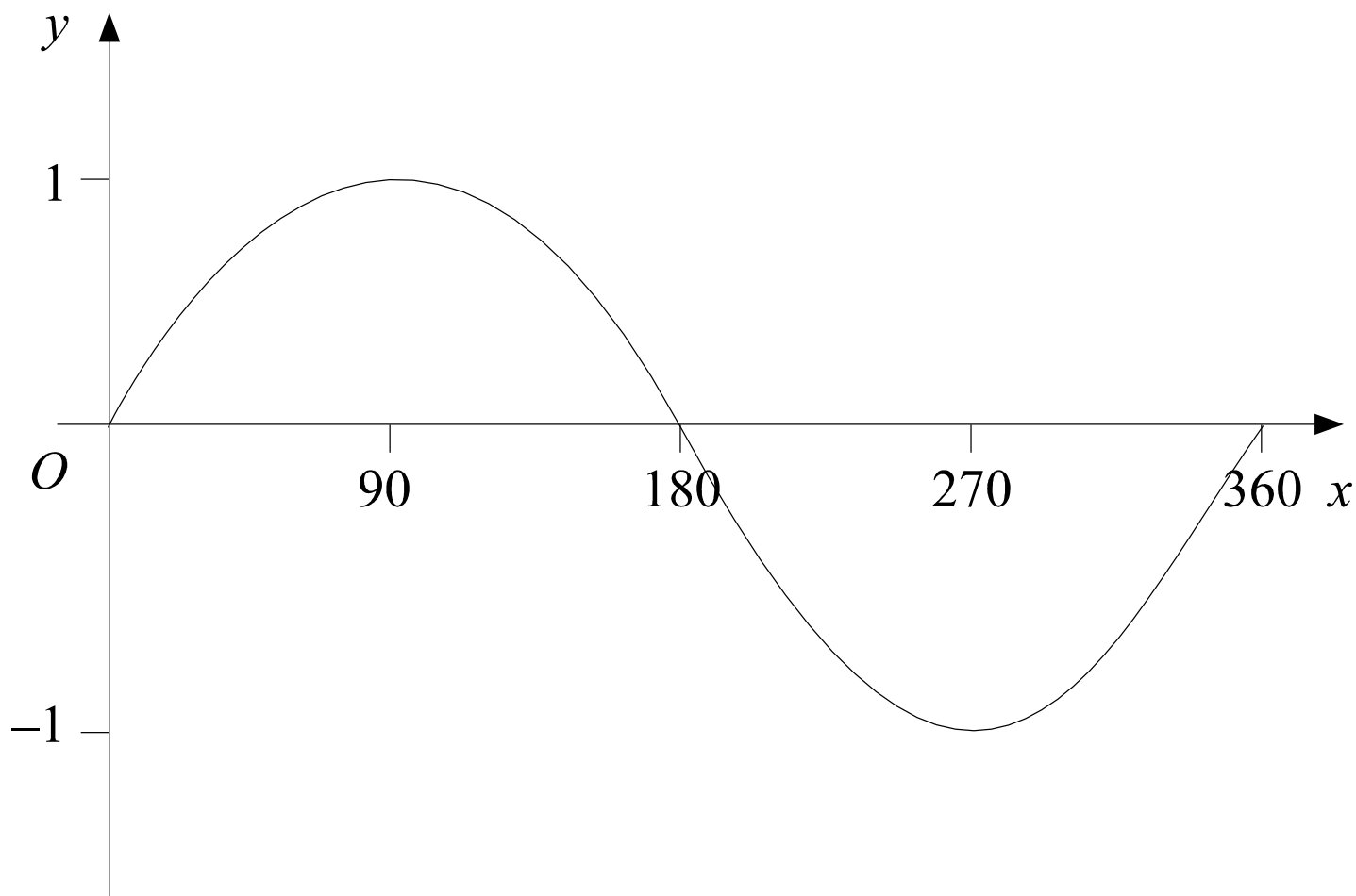
3.(a) Complete the table of values for  $y = \cos(x)$  (2)

$x$	0	30	60	90	120	150	180	210	240	270	300	330	360
$y$													

b) On the grid, draw the graph of  $y = \cos(x)$  (2)



4. Here is a sketch of the curve  $y = \sin x^\circ$  for  $0 \leq x \leq 360$

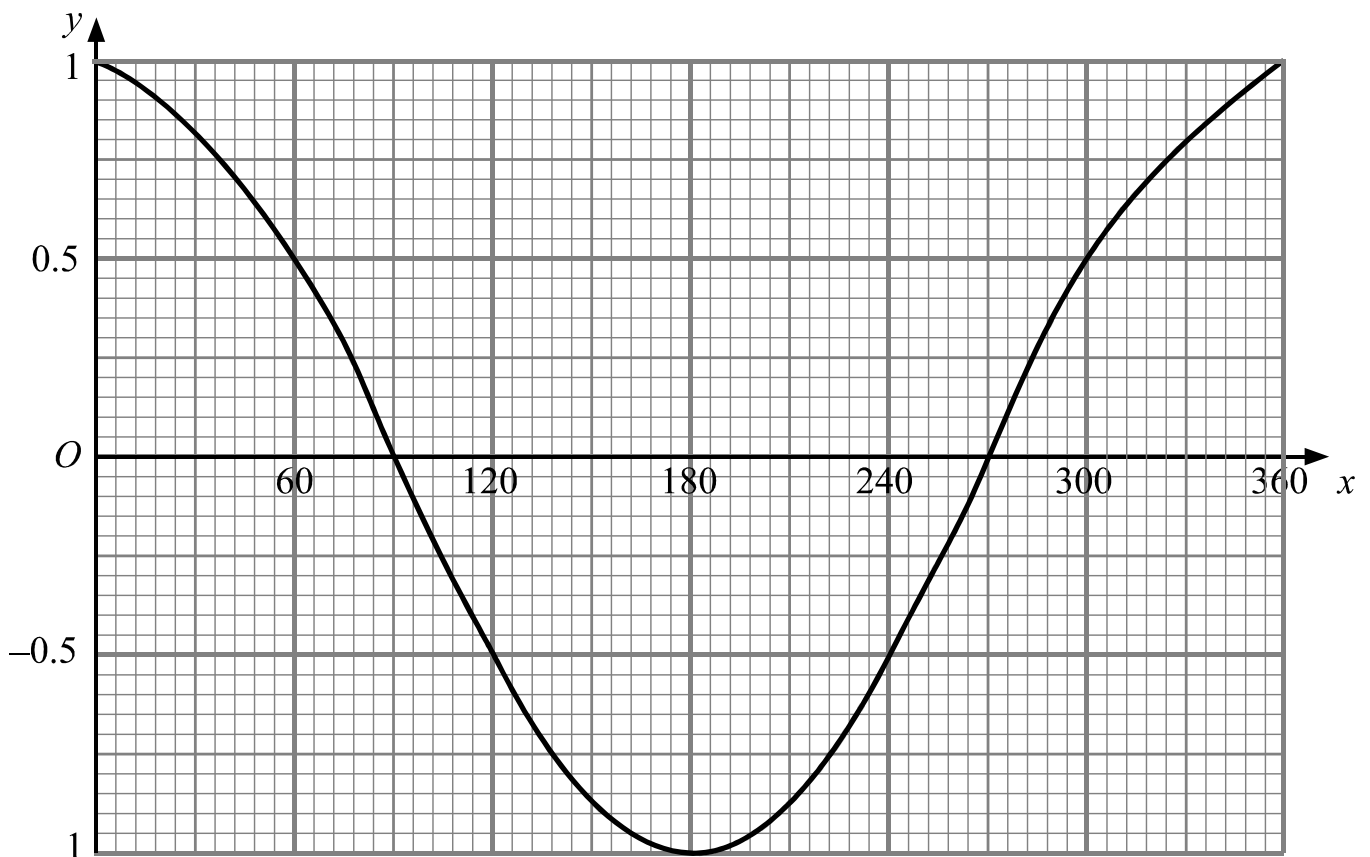


a) Given that  $\sin 30^\circ = \frac{1}{2}$ , write down the value of:

i)  $\sin 150^\circ$  ..... (1)

ii)  $\sin 330^\circ$  ..... (1)

5. Here is a sketch of the curve  $y = \cos x^\circ$  for  $0 \leq x \leq 360$

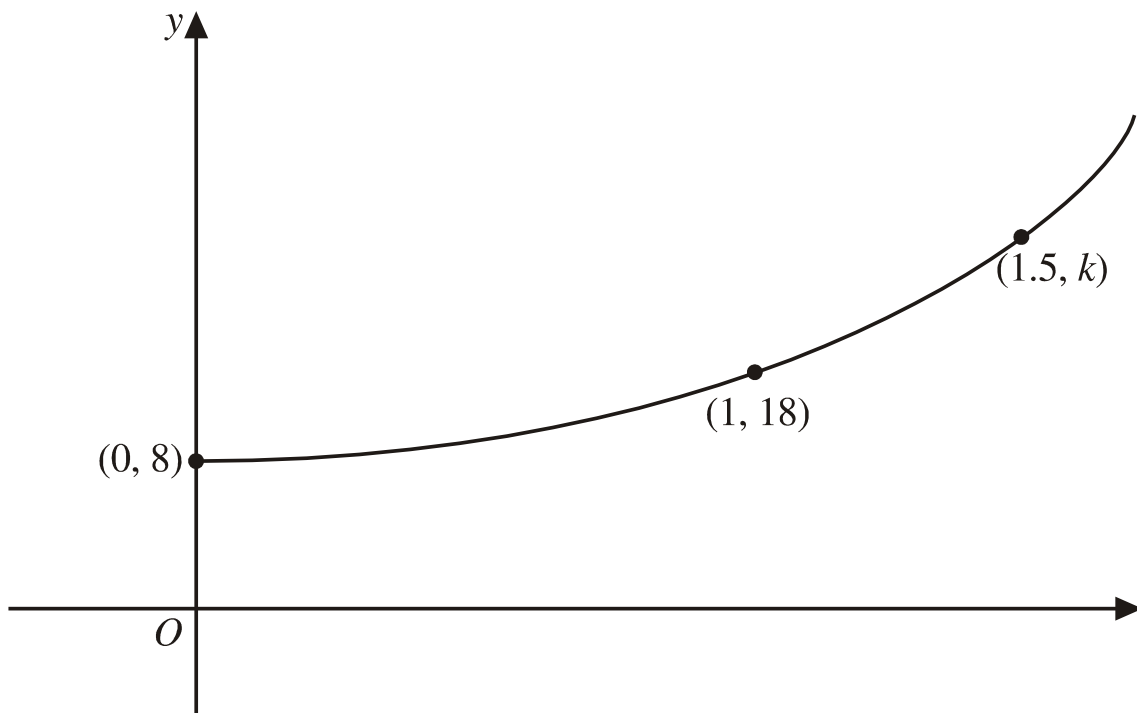


a) Use the graph to find estimates of the solutions, in the interval  $0 \leq x \leq 360$ , of the equation:

i)  $\cos(x) = -0.4$  ..... (2)

ii)  $4 \cos(x) = 3$  ..... (2)

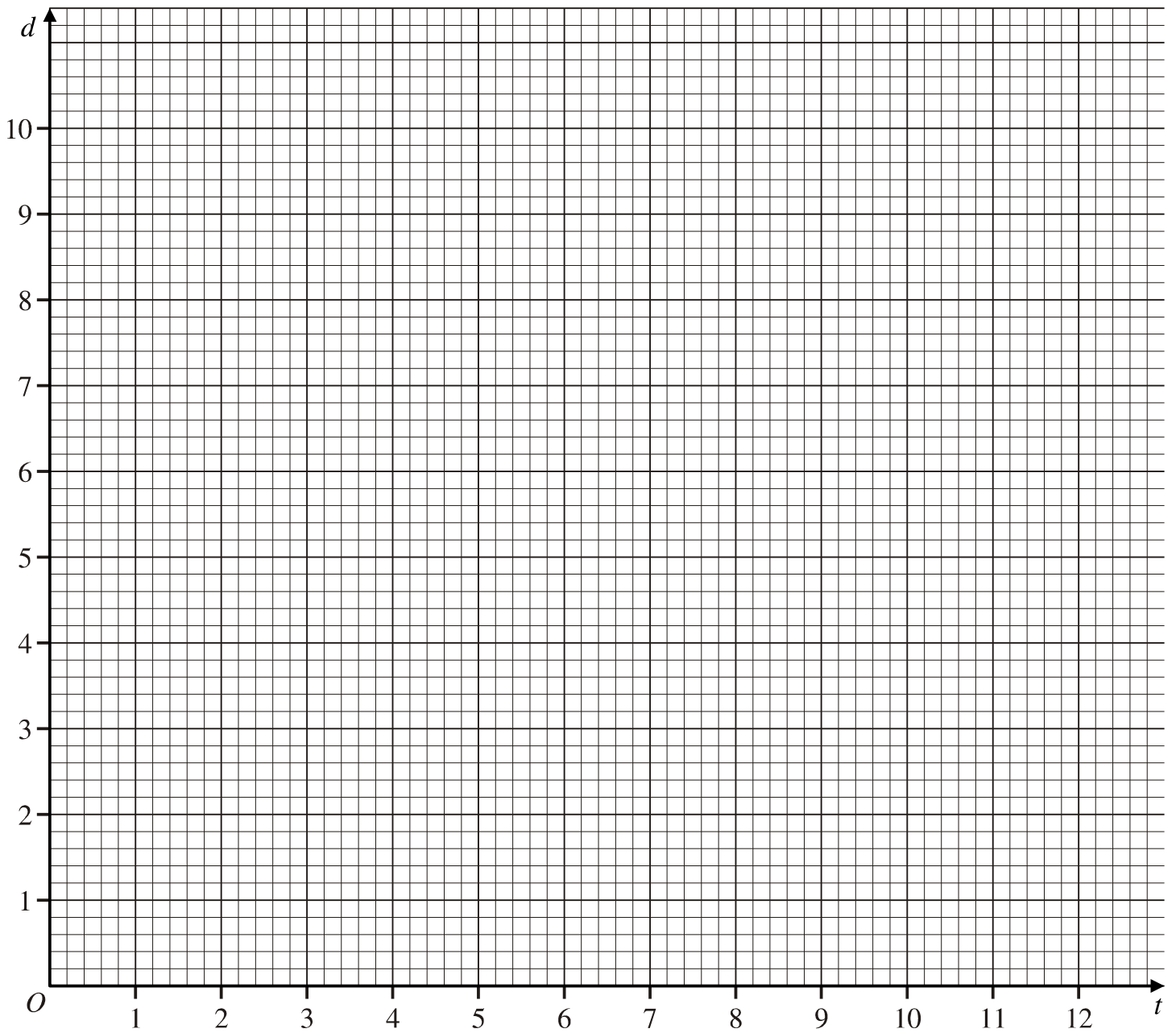
6. This sketch shows part of the graph with equation  $y = pq^x$ , where  $p$  and  $q$  are constants.



The points with coordinates  $(0, 8)$ ,  $(1, 18)$  and  $(1.5, k)$  lie on the graph. Calculate the values of  $p$ ,  $q$  and  $k$ .

7. The depth of water,  $d$  metres, at the entrance to a harbour is given by the formula:  $d = 5 - 4 \sin(30t)$  where  $t$  is the time in hours after midnight on one day.

a) On the axes below, draw the graph of  $d$  against  $t$  for  $0 \leq t \leq 12$ . (4)



b) Find the two values of  $t$ , where  $0 \leq t \leq 24$ , when the depth is least.

..... and ..... (1)