Name: _____

GCSE (1 – 9)

Trig and Exponential Graphs

Instructions

• Use **black** ink or ball-point pen.
• Answer all questions.
• Answer the questions in the spaces provided
– *there may be more space than you need.*
• Diagrams are **NOT** accurately drawn, unless otherwise indicated.
• You must **show all your working out.**

Information

• The marks for each question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

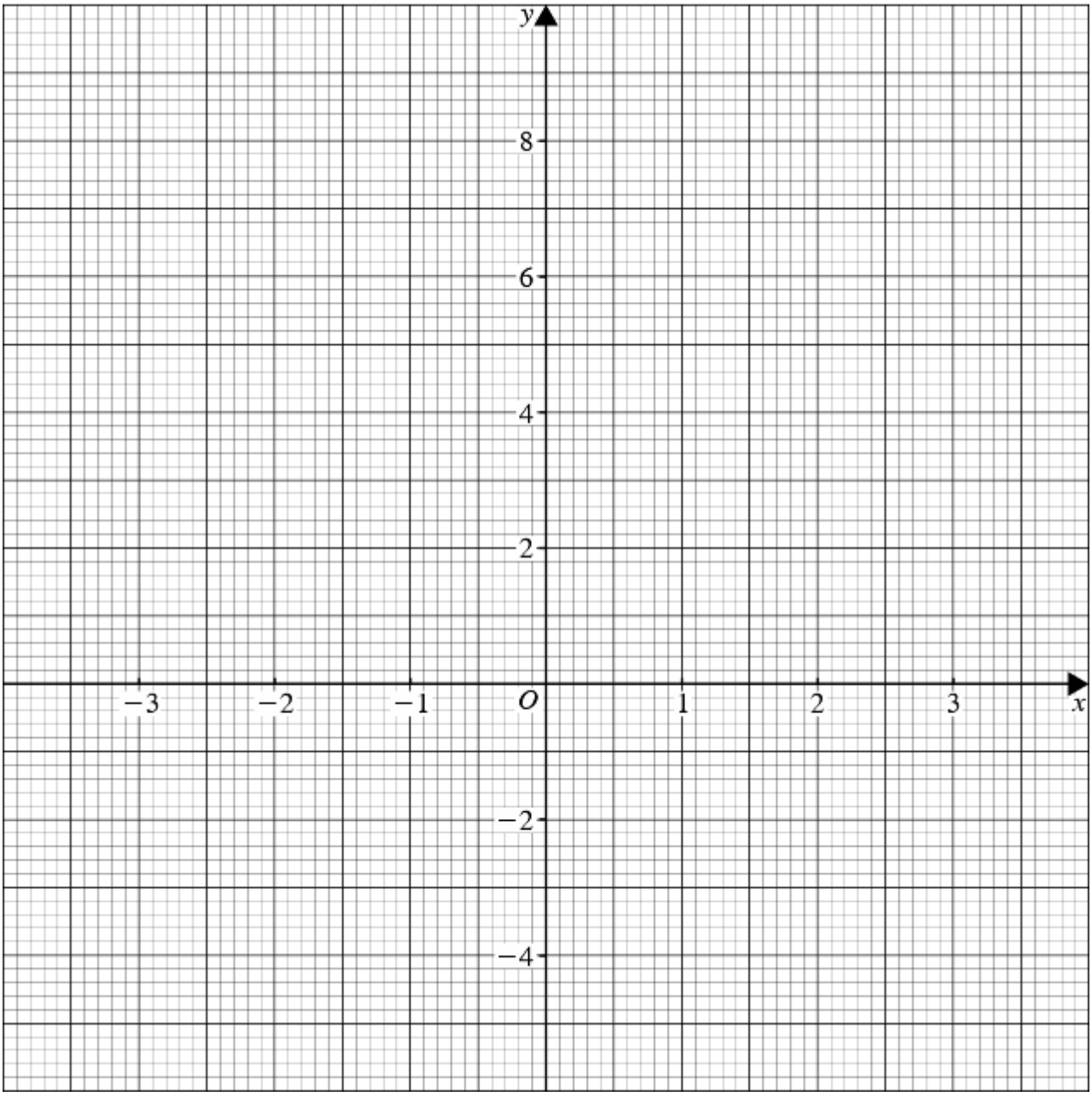
Advice

• Read each question carefully before you start to answer it.
• Keep an eye on the time.
• Try to answer every question.
• Check your answers if you have time at the end

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

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

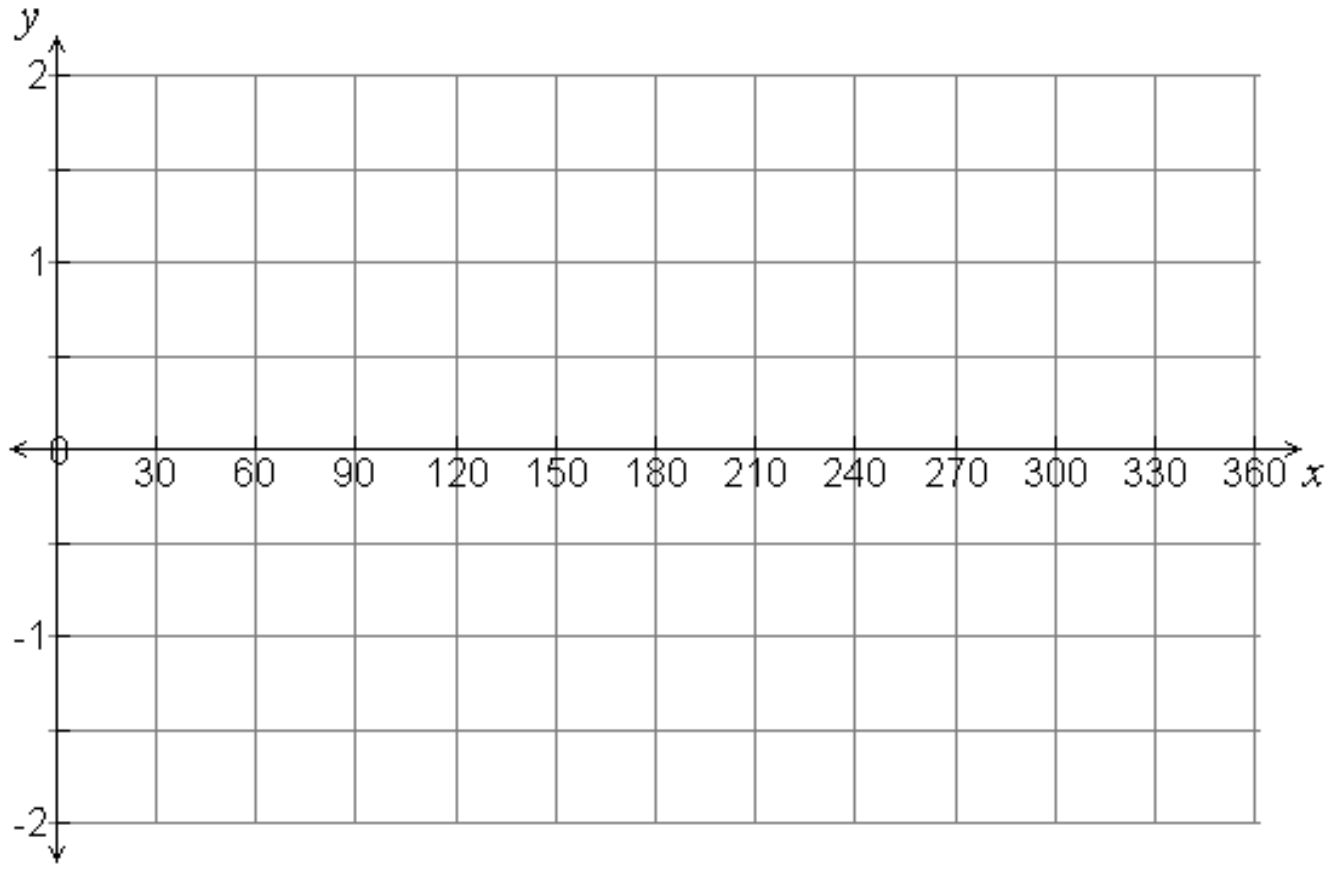
b) On the grid, draw the graph of $y = 2^x$ (2)



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													

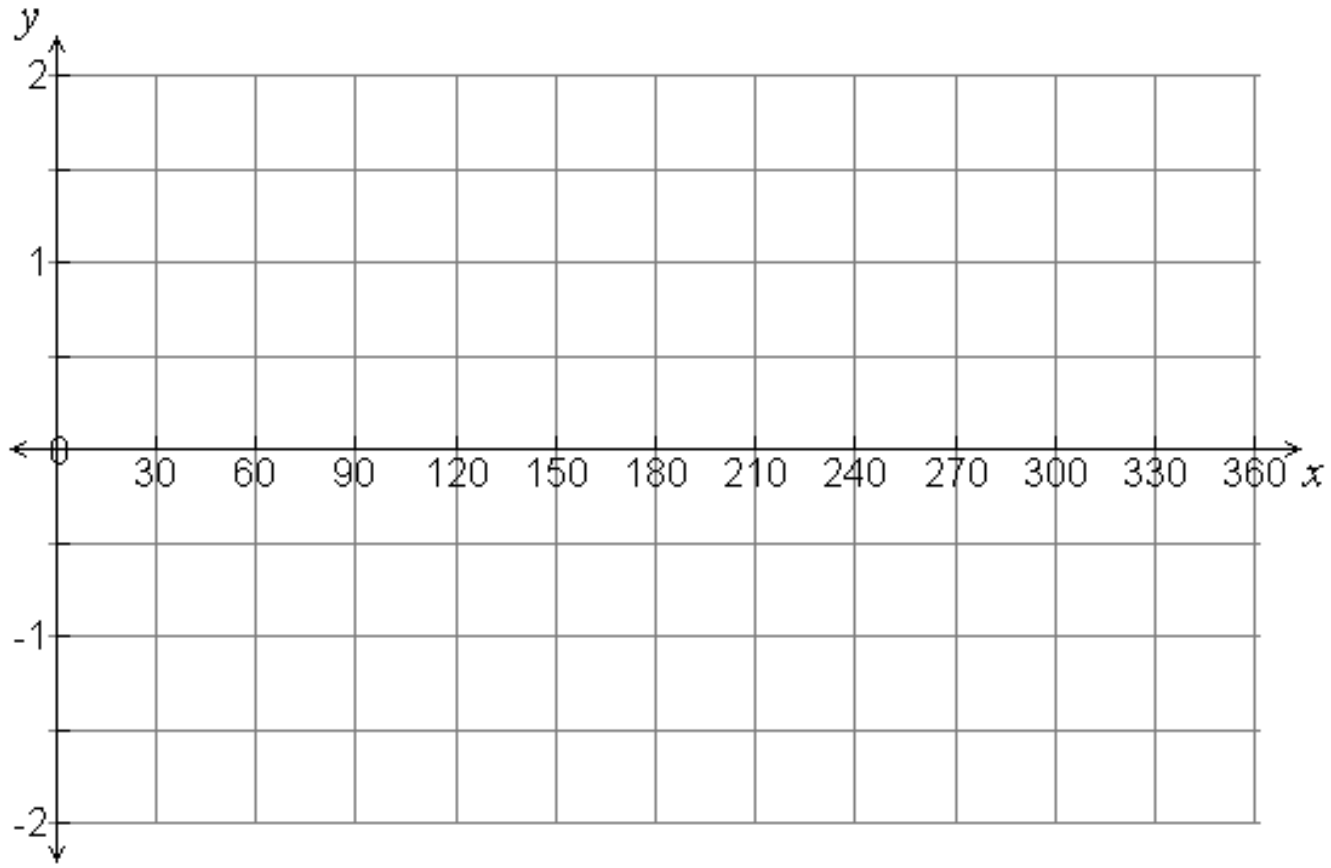
b) On the grid, draw the graph of $y = \sin(x)$ (2)



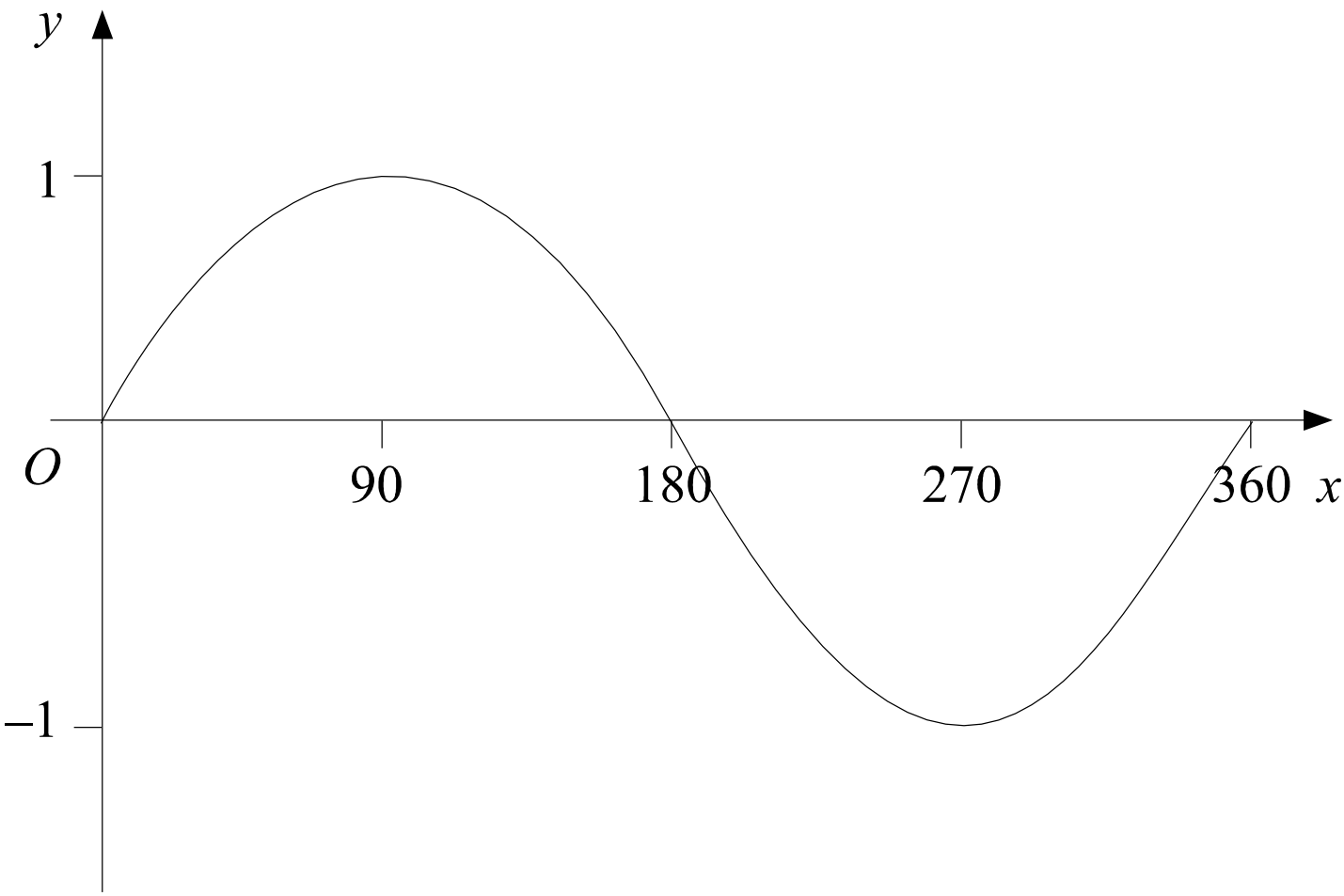
3.(a) Complete the table of values for $y = \cos(x)$ (2)

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 $y = \sin x^o$ for $0 \leqslant x \leqslant 360$



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

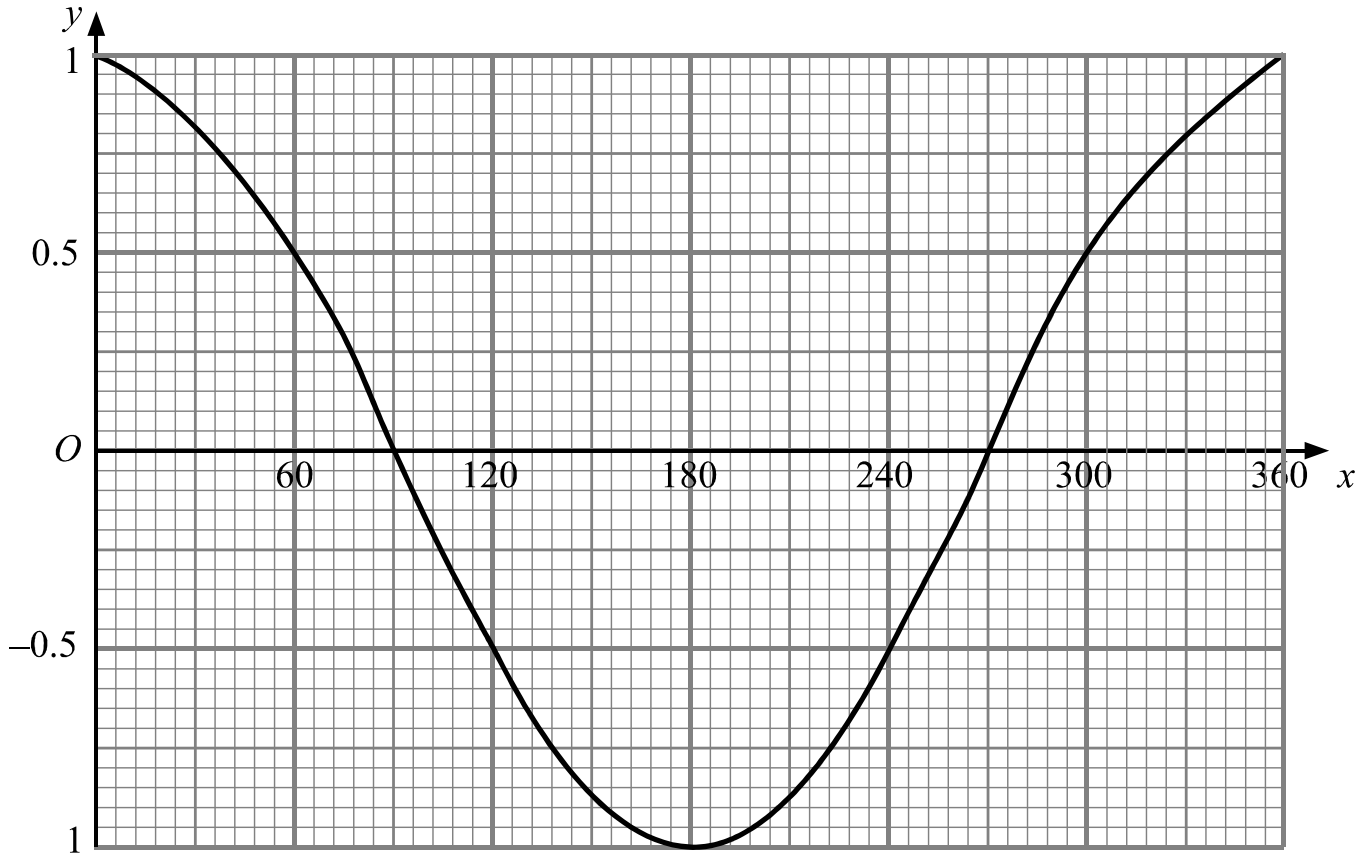
i) $\sin 150^o$

..... (1)

ii) $\sin 330^o$

..... (1)

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



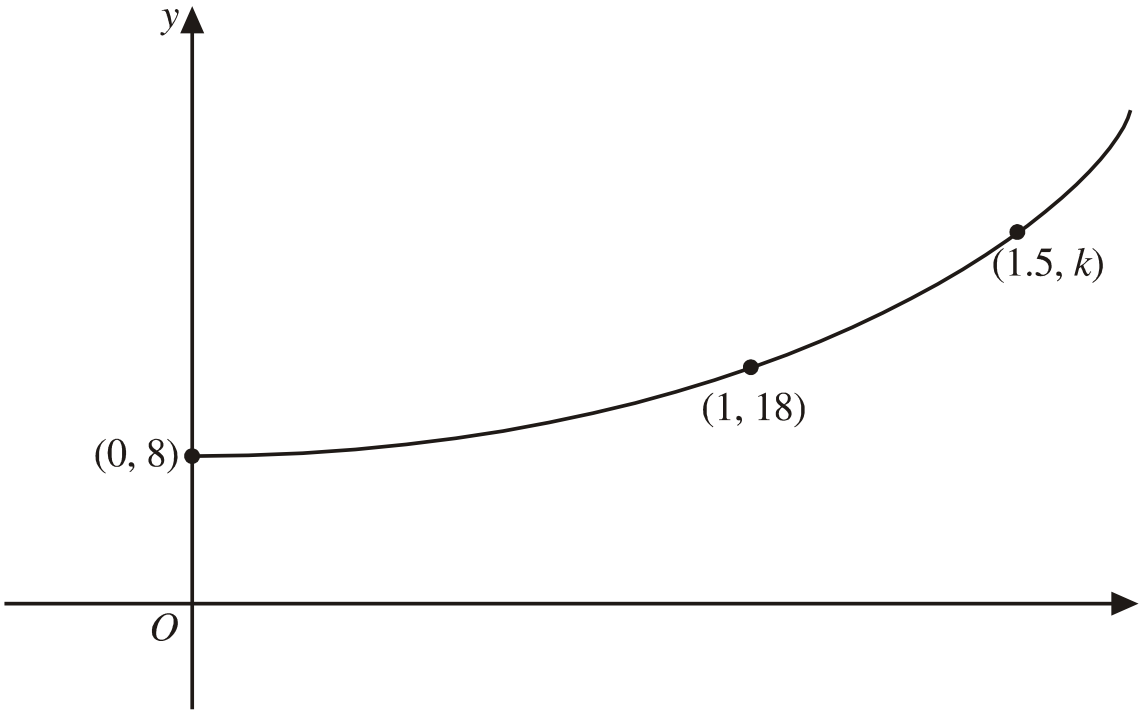
a) Use the graph to find estimates of the solutions, in the interval $0 \leqslant x \leqslant 360$, of the equation:

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.



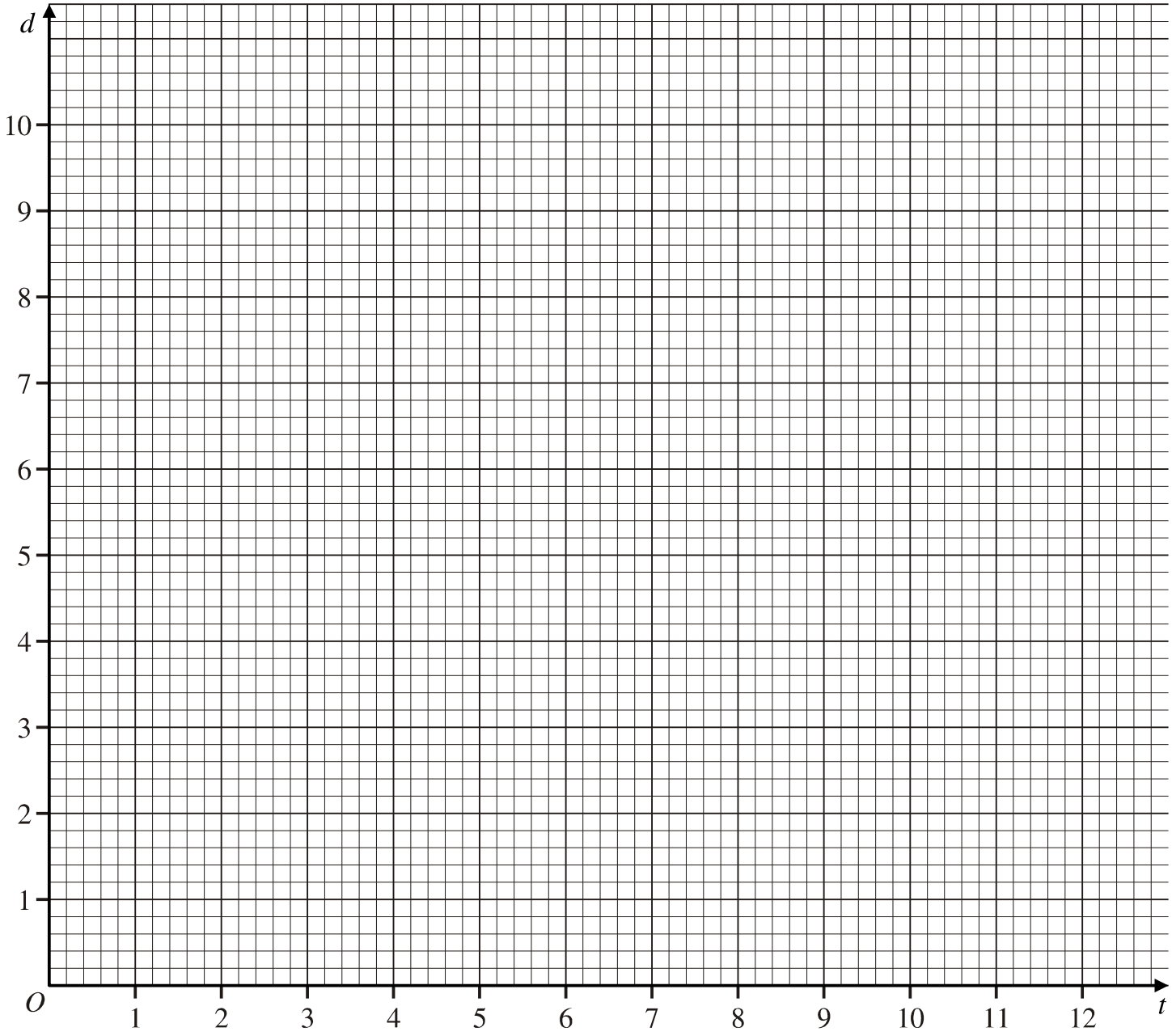
The points with coordinates (0, 8), (1, 18) and (1.5, k) lie on the graph.
Calculate the values of p, q and k.

(6)

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 $0 \leqslant t \leqslant 12$. (4)



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

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