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

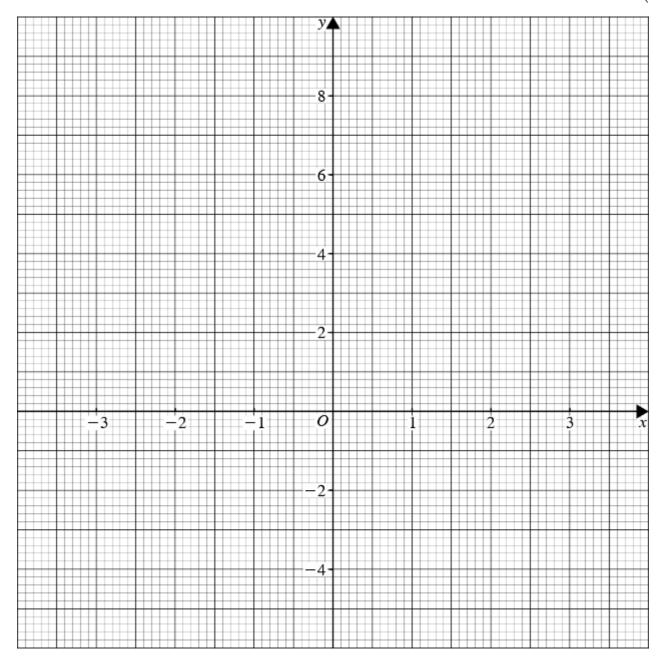
- · Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- · Check your answers if you have time at the end

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)



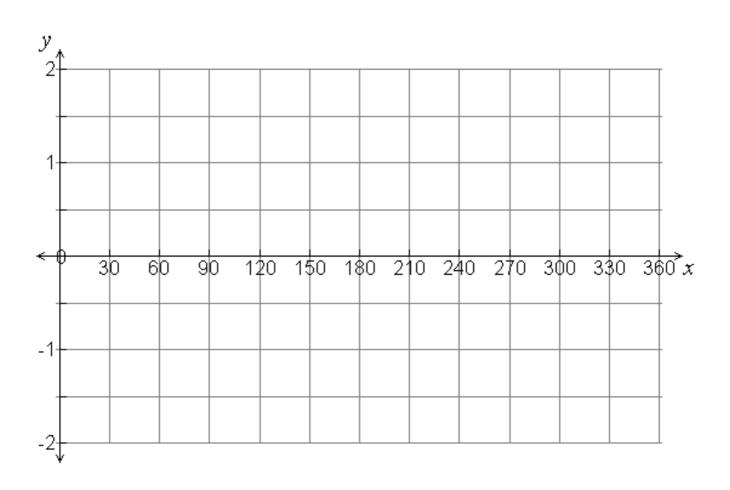
2.(a) Complete the table of values for $y = \sin(x)$

(2)

| X | 0 | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | 330 | 360 |
|---|---|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| У | | | | | | | | | | | | | |

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

(2)



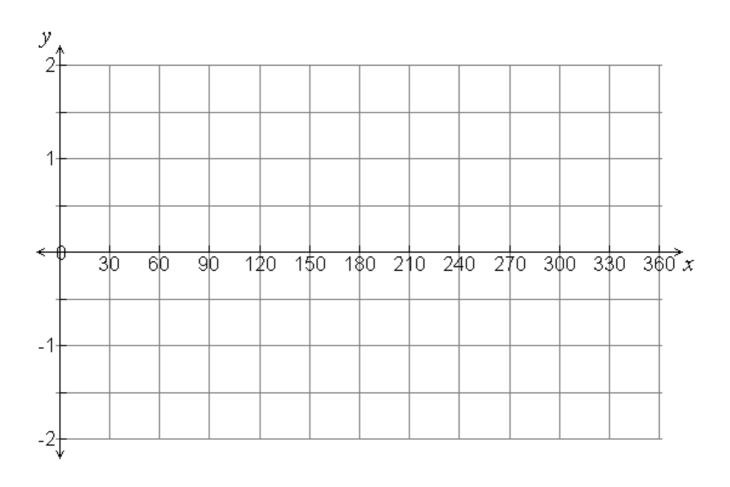
3.(a) Complete the table of values for y = cos(x)

(2)

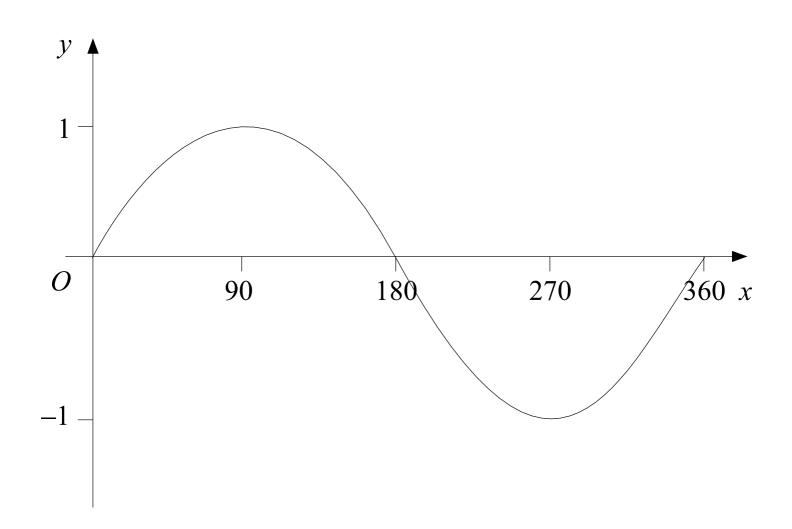
| X | 0 | 30 | 60 | 90 | 120 | 150 | 180 | 210 | 240 | 270 | 300 | 330 | 360 |
|---|---|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| У | | | | | | | | | | | | | |

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 $0 \le x \le 360$



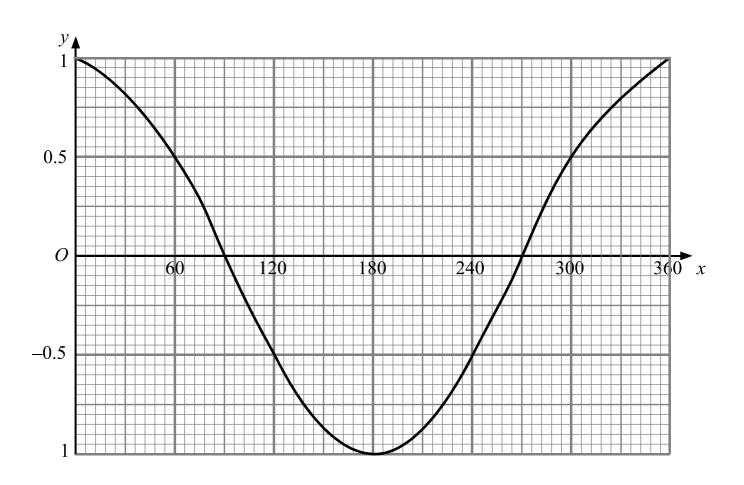
- a) Given that $\sin 30^{\circ} = \frac{1}{2}$, write down the value of:
 - i) sin 150°

.....(1)

ii) sin 330°

.....(1)

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

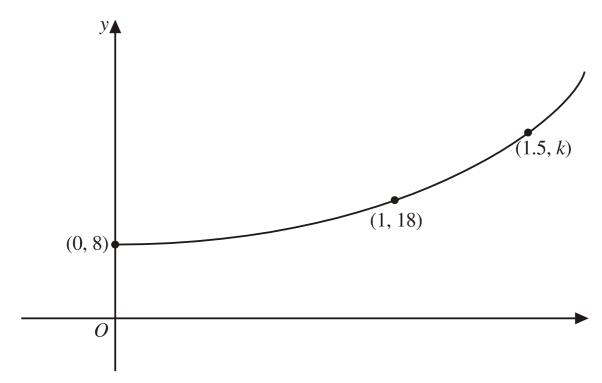


a) Use the graph to find estimates of the solutions, in the interval $0 \le x \le 360$, of the equation:

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.

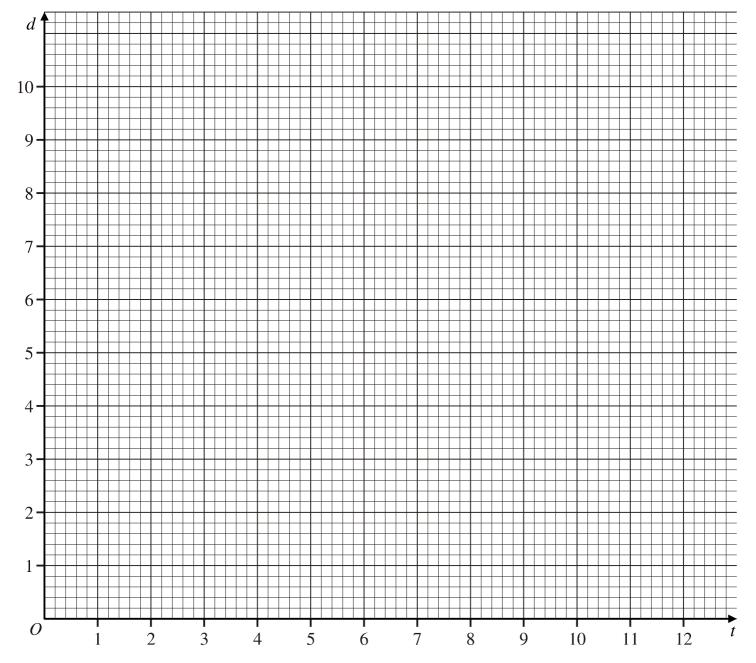


The points with coordinates (0, 8), (1, 18) and (1.5, k) lie on the graph. Calculate the values of p, q and k.

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



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

..... and (1)