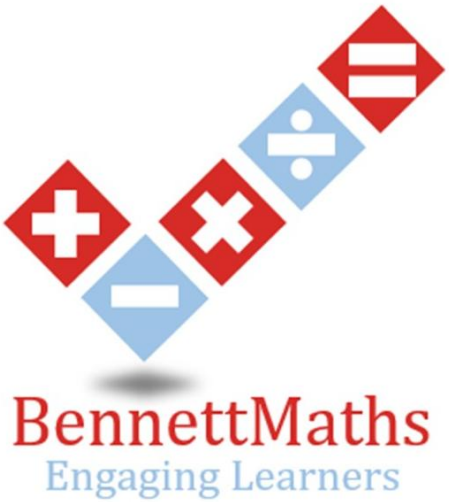


Name: _____

BennettMaths Edexcel 2H – Part 3

17 (*a*) Show that the equation $x^4 - 2x^2 - 2 = 0$ can be written in the form $x = \sqrt[4]{2x^2 + 2}$

(1)

(*b*) Starting with $x_0 = 1.5$
use the iteration formula $x_{n+1} = \sqrt[4]{2x_n^{\ 2} + 2}$ three times to find an estimate for a solution of $x^4 - 2x^2 - 2 = 0$

.....

(3)

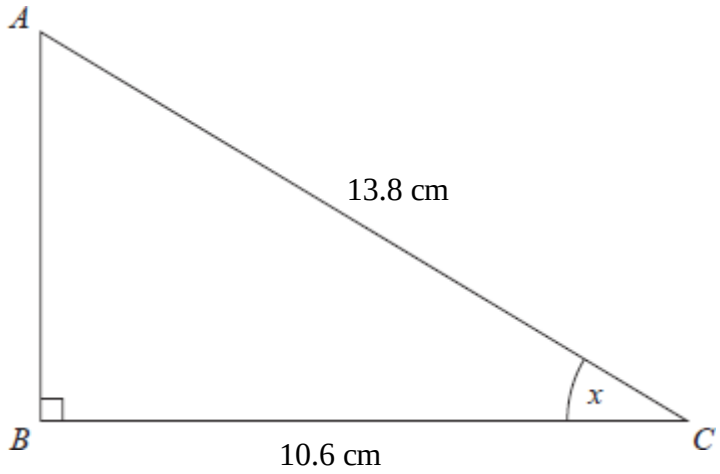
(Total for Question 17 is 4 marks)

18 $9a : 7c = 4 : 7$
$3b : 5c = 5 : 3$

Show that $a + b : b + c = 29 : 34$

(Total for Question 18 is 3 marks)

19 *ABC* is a right-angled triangle.



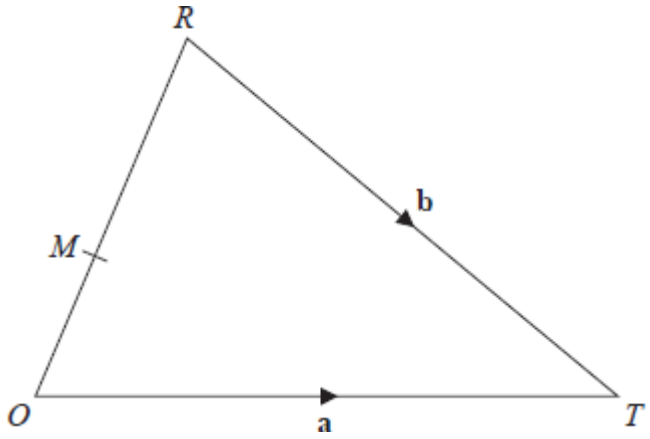
AC = 13.8 cm correct to the nearest mm.
BC = 10.6 cm correct to the nearest mm.

Calculate the upper bound for the size of the angle marked *x*.
You must show all your working.

.....°

(Total for Question 19 is 3 marks)

20 *ORT* is a triangle.



$\overrightarrow{OT}$ = **a** $\overrightarrow{RT}$ = **b**

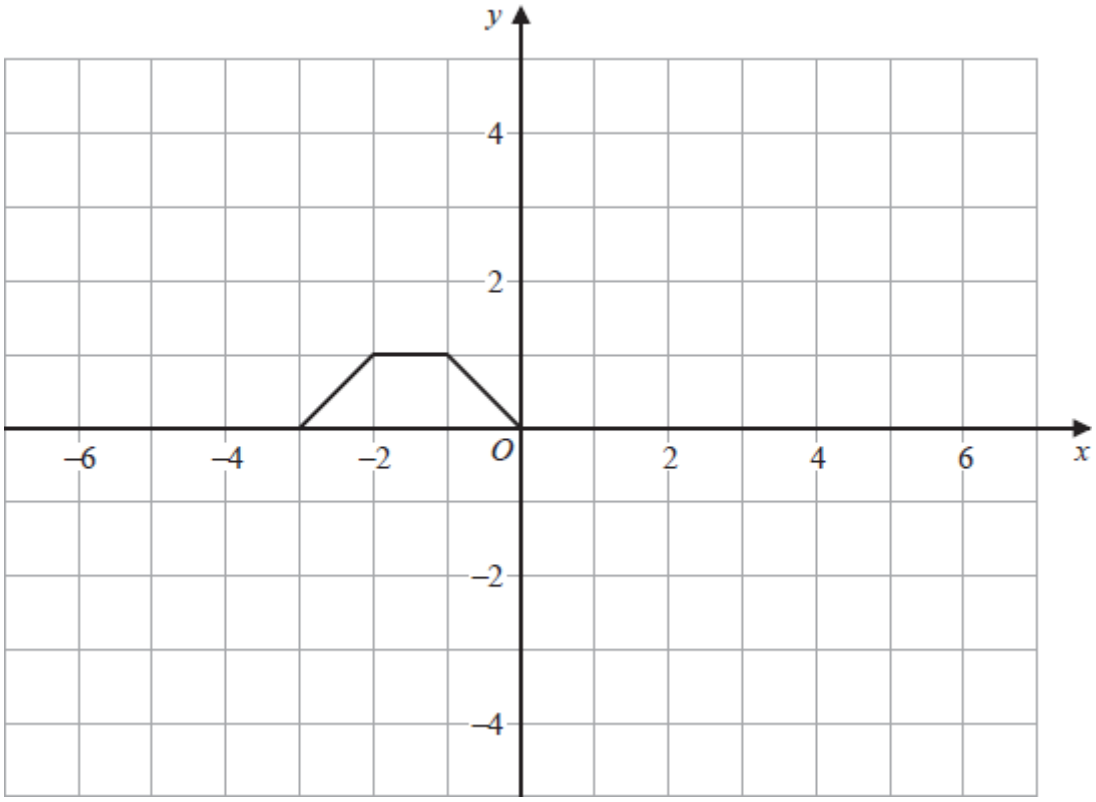
M is the point on *OR* such that *OM* : *MR* = 3 : 4

Express $\overrightarrow{MT}$ in terms of **a** and **b**.
Give your answer in its simplest form.

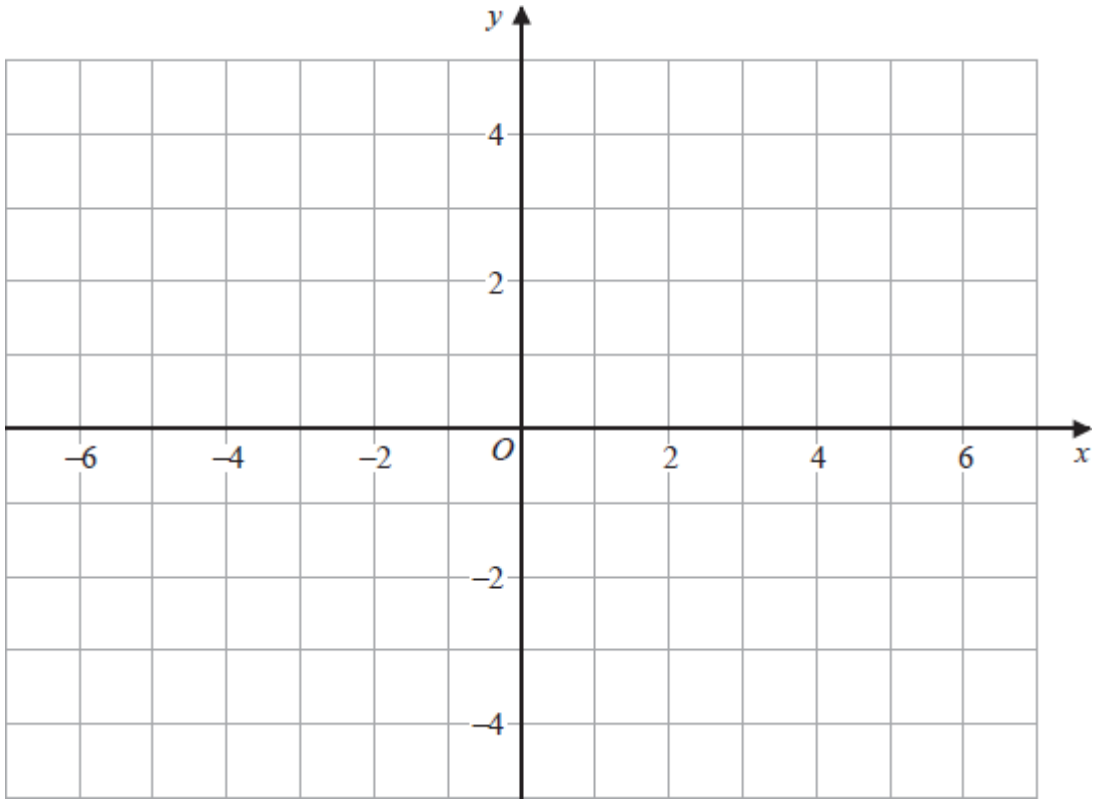
.....

(Total for Question 20 is 4 marks)

21 Here is the graph of $y = f(x)$

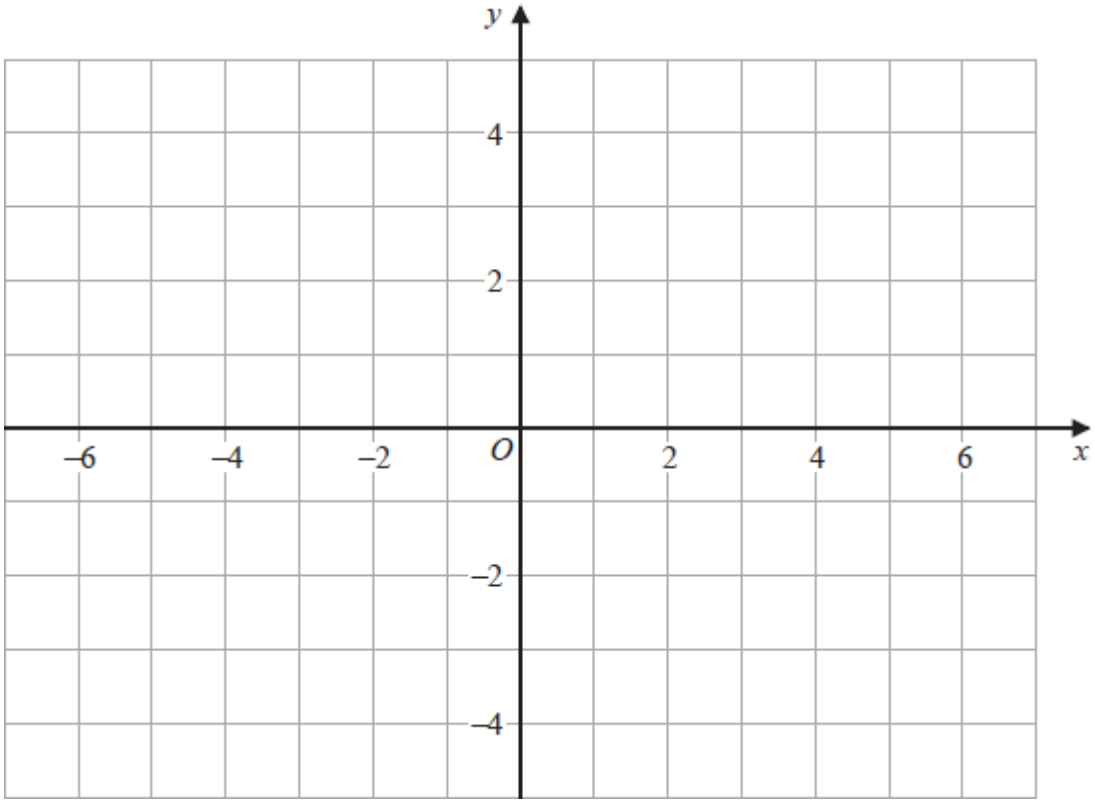


(*a*) On the grid below, draw the graph of $y = f(x) + 3$



(1)

(*b*) On the grid below, draw the graph of $y = -f(x)$



(1)

(Total for Question 21 is 2 marks)

22 There are only white eggs and brown eggs in a box.

The number of white eggs is three times the number of brown eggs.

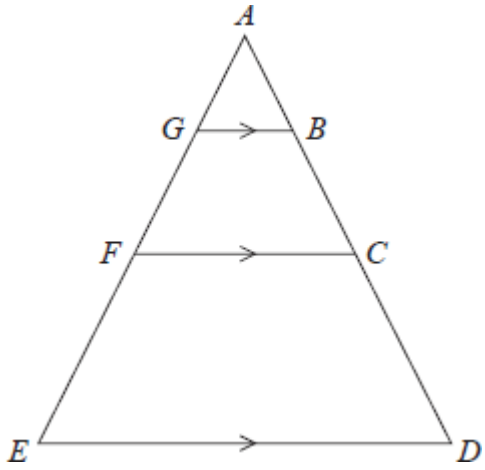
Rick takes at random one egg from the box.
He records the colour of the egg and then replaces it in the box.
Rick does this n times, where $n \geq 2$

Write down an expression, in terms of n, for the probability that Rick gets a white egg at least once and a brown egg at least once.

.....

(Total for Question 22 is 2 marks)

23 Here are three similar triangles, *ABG*, *ACF* and *ADE*.



ABCD and *AGFE* are straight lines.

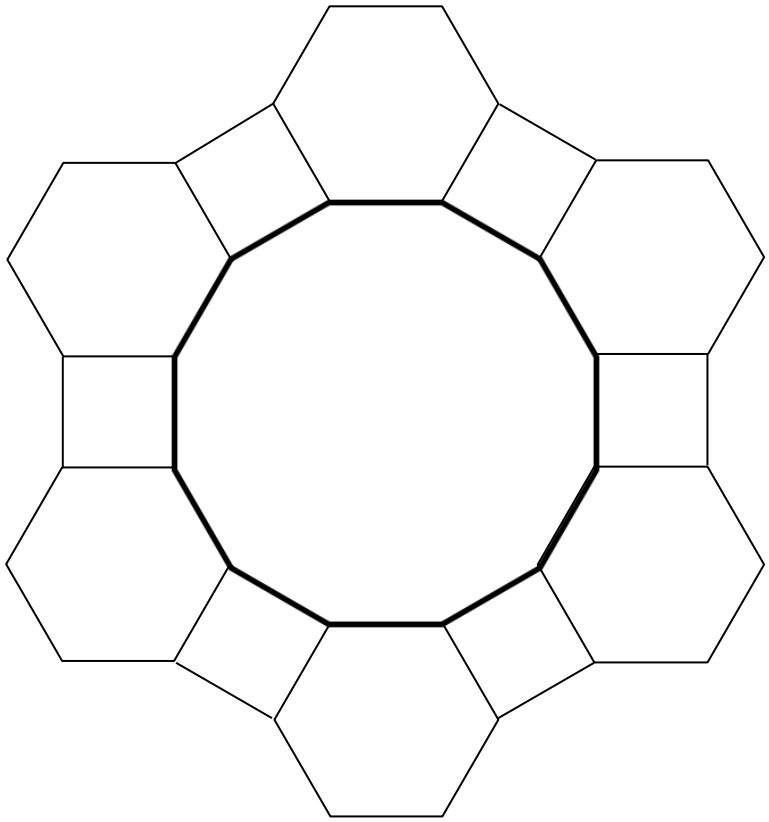
AB : *BC* : *CD* = 1 : 3 : 5

Show that

area of *ABG* : area of *BCFG* : area of *CDEF* = 1 : 15 : 65

(Total for Question 23 is 3 marks)

24 The diagram shows 6 identical regular hexagons and 6 squares joined to enclose a regular 12-sided dodecagon.



Each hexagon has sides of length a. Each square has sides of length a.

Find, in terms of a, an expression for the area of the enclosed dodecagon.

Give your answer in the form $\frac{pa^2}{\tan 15°}$ where p is an integer.

You must show all your working.

.....

(Total for Question 24 is 5 marks)