Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
2 – 3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
TOTAL	

AQA

General Certificate of Secondary Education
Higher Tier
November 2014

Mathematics 43602H

Unit 2

H

Wednesday 5 November 2014 9.00 am to 10.15 am

For this paper you must have:
- mathematical instruments.

You must **not** use a calculator.

Time allowed
- 1 hour 15 minutes

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the space provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 66.
- The quality of your written communication is specifically assessed in Questions 2, 3, 8 and 15. These questions are indicated with an asterisk (*).
- You may ask for more answer paper and graph paper. These must be tagged securely to this answer booklet.

Advice
- In all calculations, show clearly how you work out your answer.

Answer **all** questions in the spaces provided.

1 $346 \times 27 = 9342$

1 (a) Work out 34.6×2.7

Circle your answer.

[1 mark]

934.2 93.42 9.342 0.9342

1 (b) Work out $\frac{9342}{270}$

Circle your answer.

[1 mark]

3460 346 34.6 3.46

***2** The price of a book is £4
In a sale the price is reduced by 30%

Work out the sale price.

[3 marks]

.....

.....

.....

.....

Answer £ .....

***3** Dipen and Nisha are planning their wedding reception.

£40 per guest

Total reduced by 5% with over 60 guests

Nisha says, "I want to invite 70 guests."

Dipen says, "If we invite one-fifth fewer guests, we will save more than £500"

Is Dipen correct?
You **must** show your working.

[6 marks]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Answer .....

11

4 These patterns are made using sticks.

Pattern 1 **Pattern 2** **Pattern 3**

The number of sticks in each pattern form a sequence.

4 (a) Show that the first five patterns use a total of 65 sticks.

[2 marks]

.....

.....

.....

.....

.....

.....

4 (b) Work out the nth term of the sequence.

[2 marks]

.....

.....

.....

Answer .....

5 Tom has £30 more than Ann.
They have £110 in total.

What fraction of the total does Tom have?

[3 marks]

.....

.....

.....

.....

.....

.....

Answer .....

6 Expand and simplify $3(2x + 5) - 2(x - 4)$

[3 marks]

.....

.....

.....

.....

Answer .....

10

7 (a) Solve $5x - 11 \geqslant 29$

[2 marks]

.....

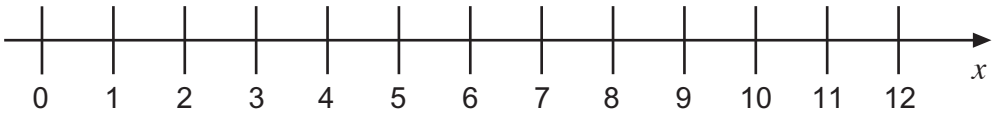
.....

Answer .....

7 (b) Show the solution of $3x < 12$ on the number line.

[2 marks]

.....



***8** There are 200 students in Year 10
110 are boys.

There are 250 students in Year 11
140 are boys.

Which year has the greater proportion of **boys**?
You **must** show your working.

[3 marks]

.....

.....

.....

.....

.....

.....

Answer .....

Turn over for the next question

7

9 (a) Factorise $x^2 + 10x + 24$

[2 marks]

.....

.....

Answer .....

9 (b) Hence or otherwise, solve $x^2 + 10x + 24 = 0$

[1 mark]

.....

Answer .....

10 One lap of a racing circuit is $3\frac{3}{4}$ km

Work out the total distance for $4\frac{1}{2}$ laps.

[3 marks]

.....

.....

.....

.....

.....

.....

Answer ..... km

11 Rearrange $4x + 3y = 12$ to make y the subject.

[2 marks]

.....

.....

.....

.....

.....

Answer .....

8

12 $y = 5x - 4$ is the equation of a straight line.

12 (a) Write down the gradient of the line $y = 5x - 4$

[1 mark]

Answer .....

12 (b) Write down the coordinates of the y-intercept of the line $y = 5x - 4$

[1 mark]

Answer (..... , ...)

13 Work out the value of $5.4 \times 10^5 \times 2 \times 10^{-2}$

Give your answer in standard form.

[2 marks]

.....

.....

.....

.....

.....

Answer .....

14 At a fish and chip shop

2 fish and 1 portion of chips cost £10.05
3 fish and 4 portions of chips cost £19.20

Work out the cost of 4 fish and 3 portions of chips.

[4 marks]

.....

.....

.....

.....

.....

.....

.....

.....

.....

Answer £ .....

Turn over for the next question

8

***15** Write $\frac{4}{x-2} - \frac{3}{x}$ as a single fraction.

[3 marks]

.....

.....

.....

.....

.....

.....

Answer .....

16 $\sqrt{10}\,(3\sqrt{20} + 7\sqrt{5})$ simplifies to $a\sqrt{2}$

Work out the value of a

[3 marks]

.....

.....

.....

.....

.....

.....

Answer .....

17 Expand and simplify $(5x - 2y)(3x - 4y)$

[3 marks]

.....

.....

.....

.....

.....

Answer .....

18 Write $x^2 + 8x + 7$ in the form $(x + a)^2 + b$

[3 marks]

.....

.....

.....

.....

.....

Answer .....

12

19 R is the total resistance in an electronic circuit.

R is calculated using the formula $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$

$R_1 = 0.6$ and $R_2 = 1.8$

Work out the value of R.

[4 marks]

.....

.....

.....

.....

.....

.....

.....

Answer .....

20 Work out the value of $8^{-\frac{2}{3}}$

[2 marks]

.....

.....

.....

.....

.....

.....

Answer .....

21 $2^m = 32$ and $9^p = 3^m$

Work out the values of m and p

[4 marks]

.....

.....

.....

.....

.....

.....

.....

.....

m = ... p = ...

END OF QUESTIONS

10

There are no questions printed on this page

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED