**GCSE Mathematics**

**Practice Tests: Set 12**

**Paper 1H (Non-calculator)**

**Time: 1 hour 30 minutes**

You should have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

**Instructions**

* Use **black** ink or ball-point pen.
* **Fill in the boxes** at the top of this page with your name,
centre number and candidate number.
* Answer **all** questions.
* Answer the questions in the spaces provided

– *there may be more space than you need*.

* **Calculators may not be used.**
* Diagrams are NOT accurately drawn, unless otherwise indicated.
* You must **show all your working out.**

**Information**

* The total mark for this paper is 80
* 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.

**Answer all questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

**1** The diagram shows a triangle.

Work out the value of *x*.

*x* = .......................................................

**(Total for Question 1 is 4 marks)**

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**2** (*a*)Simplify **

.......................................................

**(1)**

(*b*)Write  as a single power of 7

.......................................................

**(2)**

**(Total for Question 2 is 3 marks)**

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**3** Expand and simplify (*m* − 8)(*m* + 5)

.......................................................

**(Total for Question 3 is 2 marks)**

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**4** The diagram shows a shape.

The shape has area 129 cm2

Work out the value of *x*.

*x* = .......................................................

**(Total for Question 4 is 4 marks)**

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**5** Show that 

**(Total for Question 5 is 3 marks)**

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**6** Solve 3(2*x* − 5) = 

Show clear algebraic working.

*x* = .......................................................

**(Total for Question 6 is 4 marks)**

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**7** Factorise fully 5*y* + 20*y*2

.......................................................

**(Total for Question 7 is 2 marks)**

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**8** Solve the inequality 2*x* + 7 > 4

.......................................................

**(Total for Question 8 is 2 marks)**

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**9** Solve *x*2 – 3*x* – 40 = 0

Show clear algebraic working.

.......................................................

 **(Total for Question 9 is 3 marks)**

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**10**

The diagram shows a cuboid of volume *V* cm3

Show that *V* = 15 + 16*x* − *x*2 − 2*x*3

 **(Total for Question 10 is 3 marks)**

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**11** Find the lowest common multiple (LCM) of 28 and 105

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**(Total for Question 11 is 2 marks)**

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**12** The weight of a cat is 4.3 kg correct to 2 significant figures.

(*a*)Write down the upper bound of the weight of the cat.

...................................................... kg

**(1)**

(*b*)Write down the lower bound of the weight of the cat.

...................................................... kg

**(1)**

 **(Total for Question 11 is 2 marks)**

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**13**

On the grid, enlarge the shaded shape with scale factor  and centre (1, 2)

**(Total for Question 13 is 2 marks)**

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**14** Use ruler and compasses to construct the bisector of angle *BAC*.

You must show all your construction lines.

**(Total for Question 14 is 2 marks)**

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**15** A total of 80 men and women took part in a race.

The cumulative frequency graph gives information about the times, in minutes, they took

for the race.

(*a*)Use the graph to find an estimate for the interquartile range.

....................................................... minutes

**(2)**

60% of the men took 50 minutes or less for the race.

No women took 50 minutes or less for the race.

(*b*)Work out an estimate for the number of men who took part in the race.

.......................................................

**(3)**

**(Total for Question 15 is 5 marks)**

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**16** Simplify (*p*2 + 3)0

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**(Total for Question 16 is 1 mark)**

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**17** Make *x* the subject of *y* = **

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**(Total for Question 17 is 4 marks)**

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**18** Show that 

Show each stage of your working.

 **(Total for Question 18 is 3 marks)**

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**19** Here are six graphs.

Complete the table below with the letter of the graph that could represent each given

equation.

Write your answers on the dotted lines.

|  |  |
| --- | --- |
| **Equation** | **Graph** |
| *y* =  | ............................ |
| *y* =  | ............................ |
| *y* =  | ............................ |

**(Total for Question 19 is 3 marks)**

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**20** Simplify fully 

 **(Total for Question 20 is 3 marks)**

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**21** The shaded region in the diagram is bounded by three lines.

The equation of one of the lines is given.

Write down the three inequalities that define the shaded region.

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.......................................................

.......................................................

**(Total for Question 21 is 3 marks)**

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**22** Change 32.4 m3 into cm3

....................................................... cm3

**(Total for Question 22 is 2 marks)**

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**23** The line with equation *y* = *x* + 2 intersects the curve with equation *x*2 + *y*2 – 2*y* = 24 at

the points *A* and *B*.

Find the coordinates of *A* and *B*.

Show clear algebraic working.

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

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

**(Total for Question 23 is 5 marks)**

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**24**

*ABC* is a triangle.

The midpoint of *BC* is *M*.

*P* is a point on *AM*.

 = 4**a**

 = 2**b**

 = **a** + **b**

Find the ratio *AP* : *PM*

.......................................................

**(Total for Question 24 is 3 marks)**

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**25** Express



as a single fraction in its simplest form.

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**(Total for Question 25 is 4 marks)**

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**26** The area of a rectangle is 18 cm2

The length of the rectangle is ( + 1) cm.

Without using a calculator and showing each stage of your working,

find the width of the rectangle.

Give your answer in the form *a* + *c* where *a*, *b* and *c* are integers.

....................................................... cm

**(Total for Question 26 is 3 marks)**

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**27** Prove that the difference between two consecutive square numbers is always an odd number.

Show clear algebraic working.

**(Total for Question 27 is 3 marks)**

**TOTAL FOR PAPER IS 80 MARKS**

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