**Time: 40 minutes**

**Practice paper 2**

**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.
* Without sufficient working, correct answers may be awarded no marks.
* Answer the questions in the spaces provided
*– there may be more space than you need.*
* **Calculators may be used.**
* You must **NOT** write anything on the formulae page.

 Anything you write on the formulae page will gain NO credit.

**Information**

* The total mark for this paper is….
* 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.
* Check your answers if you have time at the end.

**Answer ALL TWENTY THREE questions.**

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

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

**1** (*a*)Write these numbers in order of size.

Start with the smallest number.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| −4 | 7 | −1 | 3 | −8 |

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

**(1)**

(*b*)Write these numbers in order of size.

Start with the smallest number.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0.078 | 0.4 | 0.407 | 0.8 | 0.007 |

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

**(1)**

(*c*)Write  as a decimal.

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

**(1)**

(*d*)Write 0.9 as a percentage.

......................................... %

**(1)**

(*e*)Find the number that is exactly halfway between 0.3 and 0.4.

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

**(1)**

**(Total for Question 1 is 5 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**5** (*a*)Which one of these fractions is equivalent to ?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |

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

**(1)**

(*b*)Work out  of 840 kg.

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

**(2)**

There are 240 cars in a car park.

96 of these cars are red.

(*c*)What fraction of the cars in the car park are red?

 Give your fraction in its simplest form.

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

**(2)**

 of a number is 8.

(*d*)What is the number?

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

**(2)**

**(Total for Question 5 is 7 marks)**

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**7**

(*a*)Write down the coordinates of point *A*.

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

**(1)**

(*b*)Plot the point (−4, −3)

 Label your point *B*.

**(1)**

(*c*)On the grid, draw the line with equation *x* = 3

**(1)**

**(Total for Question 7 is 3 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**9** *M* = 2*t2* – 7*t*

(*a*)Work out the value of *M* when *t* = –3

*M* =.........................................

**(2)**

(*b*)Solve 4(*x* + 3) = 9*x* – 10

 Show clear algebraic working.

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

**(3)**

*y* is an integer.

−2 < *y* ⩽ 3

(*c*)Write down all the possible values of *y*.

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

**(2)**

**(Total for Question 9 is 7 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**11** Point *A* has coordinates (−4, 9)

Point *B* has coordinates (1, 5)

Find the coordinates of the midpoint of *AB*.

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

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

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**13** There are 6 batteries in a small packet of batteries.

There are 9 batteries in a large packet of batteries.

Chow buys *m* small packets of batteries and *g* large packets of batteries.

The total number of batteries Chow buys is *T*.

Write down a formula, in terms of *m* and *g*, for *T*.

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**(Total for Question 13 is 3 marks)**

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**14 E** = {4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15}

*A* = {multiples of 5}

*B* = {odd numbers}

(*a*)List the members of the set

(i) *A*  *B*

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

(ii) *A*  *B*

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

**(2)**

The set *C* has 6 members and *B*  *C* = 

(*b*)List the members of set *C*.

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**(2)**

**(Total for Question 14 is 4 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**15** Find the lowest common multiple (LCM) of 20, 30 and 45.

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**(Total for Question 15 is 3 marks)**

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**16** The first four terms of an arithmetic sequence are

5 9 13 17

(*a*) Write down an expression, in terms of *n*, for the *n*th term.

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

**(2)**

(*b*) Write down an expression, in terms of *n*, for the (*n* + 1)th term.

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

**(1)**

**(Total for Question 16 is 3 marks)**

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**17**

(*a*)On the grid, translate triangle **A** by the vector 

**(1)**

(*b*)Describe fully the single transformation that maps triangle **A** onto triangle **B**.

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**(3)**

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

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**18** Each interior angle of a regular polygon is 156°

Work out the number of sides of the polygon.

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

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**21.** (*a*) Expand and simplify (*y* + 10)( *y* – 2)

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**(2)**

(*b*) Factorise fully 20*e*5*f* 2 – 16*e*2*f*

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

**(2)**

**(Total for Question 21 is 4 marks)**

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**22** The diagram shows the path of an athlete on a running track.

The path consists of two straight lengths and a semicircle at each end.

Each straight length is 85 metres.

Each semicircle has a radius of 36.6 metres.

Calculate the area enclosed by the path.

Give your answer correct to 3 significant figures.

................................ m2

**(Total for Question 22 is 4 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**23** In a sale, normal prices are reduced by 18%

 The sale price of an umbrella is £25.83.

Work out the normal price of the umbrella.

£.......................................................

**(Total for Question 23 is 3 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**TOTAL FOR PAPER IS**