**GCSE Mathematics**

**Practice Tests: Set 18**

**Paper 1F (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
* Questions are in order of mean difficulty as found by students achieving Grade 4.
* 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 NINETEEN questions.**

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

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

**1** The pictogram shows information about the number of ice creams Sandeep sold on each

of four days last week.

(*a*)How many ice creams did Sandeep sell on Thursday?

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

(**1)**

Sandeep sold 30 ice creams on Friday.

(*b*)Complete the pictogram to show the number of ice creams Sandeep sold on Friday.

**(1)**

(*c*)On which day was the least number of ice creams sold?

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

(**1)**

(*d*)Work out the total number of ice creams Sandeep sold last week.

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

(**2)**

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

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

**2**(*a*)Simplify 4*x* + 5*x* – 2*x*

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

(**1)**

(*b*)Simplify 4*p* × 7

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

(**1)**

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

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

**3** Here are five fractions.

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

Two of the fractions in the table are equivalent to 

(*a*)Put a tick (✓) in the box underneath each of these two fractions.

**(2)**

The diagram shows an 8-sided polygon and its diagonals.

(*b*)Write down the mathematical name of an 8-sided polygon.

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

(**1)**

(*c*)Shade  of the polygon shown in the diagram above.

**(1)**

The area of a polygon is 56 cm2

(*d*)Find  of 56

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

(**2)**

**(Total for Question 3 is 6 marks)**

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

**4**(*a*)Change 5.48 metres into centimetres.

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

**(1)**

(*b*)Change 4600 millilitres into litres.

….................................................... litres

**(1)**

Here is an isosceles triangle *ABC*.

*AC* = 5 cm.

The perimeter of the triangle is 32 cm.

(*c*)Work out the length of *AB*.

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

**(2)**

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

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

**5** Here are the first four terms of a number sequence.

4 8 12 16

(*a*)Write down the next term of the sequence.

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

(**1)**

(*b*)Explain how you found your answer to part (*a*).

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

**(1)**

(*c*)Find an expression, in terms of *n*, for the *n*th term of the sequence.

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

(**1)**

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

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

**6** Adisha plays basketball for her school.

Here is the number of points that she scored in each of nine games.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15 | 16 | 15 | 18 | 17 | 15 | 13 | 19 | 18 |

(*a*)Find the mode of the numbers of points that Adisha scored.

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

(**1)**

(*b*)Work out the range of the numbers of points that Adisha scored.

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

(**2)**

**(Total for Question 6 is 3 marks)**

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

**7**(*a*)Solve 5*x* = 20

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

(**1)**

(*b*)Simplify 3*a* × 8*b*

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

(**1)**

(*c*)Simplify 8*w* – 4*y* + *w* – 3*y*

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

(**2)**

(*d*)Factorise fully 16 + 12*t*

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

(**2)**

**(Total for Question 7 is 6 marks)**

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

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

Start with the smallest number.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2.12 | 2.19 | 2.07 | 2.1 | 2.001 |

………………………………………………................................................................

(**1)**

(*b*)Write down the value of 6 in the number 54.623

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

(**1)**

(*c*)Write the number 3.4896 correct to 2 decimal places.

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

(**1)**

(*d*)Write 0.6 as a percentage.

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

**(1)**

**(Total for Question 8 is 4 marks)**

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

**9** The table shows the temperatures recorded at midnight and at midday for each of five

North American cities on a Monday one week.

|  |  |  |
| --- | --- | --- |
| **City** | **Midnight temperature (°C)** | **Midday temperature (°C)** |
| Boston | –2 | 14 |
| Houston | 11 | 20 |
| Chicago | –8 | 7 |
| Detroit | –7 | –1 |
| New York | 0 | 12 |

(*a*)Which city had the lowest midnight temperature?

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

(**1)**

(*b*)Find the difference between the midnight temperature and midday temperature for Boston.

......................................................°C

**(1)**

From Monday to Thursday, the midday temperature in Detroit increased by 2°C each day.

(*c*)Work out the midday temperature in Detroit on Thursday.

......................................................°C

**(2)**

**(Total for Question 9 is 4 marks)**

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

**10**(*a*)Write down the value of *m*, given that 34 × 35 = 3*m*

*m* = .......................................................

(**1)**

(*b*)Write down the value of *n*, given that (53)7 = 5*n*

*n* = .......................................................

(**1)**

(*c*)Find the value of *p*, given that 

*p* = .......................................................

(**2)**

**(Total for Question 10 is 4 marks)**

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

**TURN OVER FOR QUESTION 11**

**11** The accurate scale diagram shows the map of an island drawn on a centimetre grid.

The position of Aaron’s house is *A*.

The position of Bharat’s house is *B*.

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

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

**(1)**

(*b*)By measurement, find the bearing of *A* from *B*.

......................................................°

**(2)**

(*c*)Measure the length of the line *AB*.

Give your answer in centimetres correct to one decimal place.

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

**(1)**

Aaron cycled along a straight path from his house to Bharat’s house.

The scale of the map is 1 cm represents 5 km.

(*d*)Work out the distance, in kilometres, that Aaron cycled.

…...................................................km

**(1)**

Aaron left his house at 10 45 a.m. and arrived at Bharat’s house at 1 05 p.m.

(*e*)How long did Aaron’s cycle ride take him?

Give your answer in hours and minutes.

.............................. hours .............................. minutes

**(2)**

**(Total for Question 11 is 7 marks)**

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

**12 E** = {2, 4, 6, 8, 10, 12, 14, 16, 18}

*X* = {4, 8, 12, 16}

*Y* = {6, 12, 18}

(*a*)Complete the Venn diagram for this information.

**(3)**

A number is chosen at random from **E**

(*b*)Find the probability that the number is in the set *X*  *Y*

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

(**2)**

**(Total for Question 12 is 5 marks)**

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

**13**(*a*)Show that 

**(2)**

(*b*)Show that 

**(2)**

**(Total for Question 13 is 4 marks)**

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

**14**(*a*)Simplify **

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

(**1)**

(*b*)Expand and simplify (*x* – 3)(*x* + 1)

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

(**2)**

**(Total for Question 14 is 3 marks)**

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

**15** On the grid below, draw the graph of *y* = 1 – 3*x* for values of *x* from – 2 to 3

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

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

**16**

(*a*)Describe fully the single transformation that maps shape **P** onto shape **Q**.

………………………………………………………………………………………………

………………………………………………………………………………………………

………………………………………………………………………………………………

**(3)**

(*b*)On the grid, reflect shape **P** in the line with equation *x* = 5

Label your shape **R**.

**(2)**

**(Total for Question 16 is 5 marks)**

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

**17** The diagram shows two congruent triangles, *ABC* and *DEF*, drawn on a centimetre grid.

Find the area of the region **R**, shown shaded in the diagram.

...................................................... cm2

**(Total for Question 17 is 3 marks)**

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

**18**(*a*)Simplify (3*x2y*)0

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

(**1)**

(*b*)(i) Factorise *x2* – 5*x* – 36

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

**(2)**

(ii) Hence solve *x2* – 5*x* – 36 = 0

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

(**1)**

**(Total for Question 18 is 4 marks)**

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

**19** (i) Solve the inequalities –7 ≤ 2*x* – 3 < 5

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

(**3)**

(ii) On the number line, represent the solution set to part (i)

**(2)**

**(Total for Question 19 is 5 marks)**

**TOTAL FOR PAPER IS 80 MARKS**