**GCSE Mathematics**

**Practice Tests: Set 18**

**Paper 2F/3F (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 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 diagram shows a cuboid.

Work out the volume of the cuboid.

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

**(Total for Question 1 is 2 marks)**

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**2**(*a*)Write 25 as a fraction of 145

Give your fraction in its simplest form.

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

(**2)**

(*b*)Work out 9 as a percentage of 25

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

**(2)**

The cost of 16 sandwiches of the same type is 28 euros.

(*c*)Work out the cost of 27 of these sandwiches.

....................................................... euros

**(2)**

**(Total for Question 2 is 6 marks)**

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**3** *T* = 6*p* – 4*d*

(*a*)Work out the value of *T* when *p* = 8 and *d* = 3

*T* = .......................................................

(**2)**

*T* = 6*p* – 4*d*

(*b*)Work out the value of *p* when *T* = – 41 and *d* = 5

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

(**3)**

(*c*)Solve 4(*x* – 3) = 7*x* + 15

Show clear algebraic working.

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

(**3)**

**(Total for Question 3 is 8 marks)**

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**4** Here is a rhombus.

Work out the value of *x*.

Give a reason for your answer.

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

(**Total for Question 4 is 3 marks)**

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**5** There are 54 fish in a tank.

Some of the fish are white and the rest of the fish are red.

Jeevan takes at random a fish from the tank.

The probability that he takes a white fish is 

(*a*)Work out the number of white fish originally in the tank.

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

(**2)**

Jeevan puts the fish he took out, back into the tank.

He puts some more white fish into the tank.

Jeevan takes at random a fish from the tank.

The probability that he takes a white fish is now 

(*b*)Work out the number of white fish Jeevan put into the tank.

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

(**2)**

**(Total for Question 5 is 4 marks)**

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**6** Victor buys 12 bottles of apple juice for a total cost of $21

Victor sells all 12 bottles at $2.45 each bottle.

Work out Victor’s percentage profit.

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

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

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**7** Ali and Badia each have 25 000 dollars to invest.

|  |  |
| --- | --- |
| **Cyclone Bank** | **Tornado Bank** |
| Invest 25 000 dollars4.5% compound interest per yearfor 3 years | Invest 25 000 dollarsReceive 1150 dollars interest each yearfor 3 years |

Ali invests in the Cyclone Bank for 3 years.

Badia invests in the Tornado Bank for 3 years.

By the end of the 3 years, Ali will have received more interest than Badia.

How much more?

Show your working clearly.

Give your answer correct to the nearest dollar.

....................................................... dollars

**(Total for Question 7 is 4 marks)**

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**8** Trains leave Agra station to go to New Delhi every 40 minutes.

Trains leave Agra station to go to Mumbai every 48 minutes.

At 6 a.m. a train leaves Agra station to go to New Delhi and at the same time a train leaves

Agra station to go to Mumbai.

Work out the next time a train leaves Agra station to go to New Delhi and at the same

time a train leaves Agra station to go to Mumbai.

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

(**Total for Question 8 is 3 marks)**

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**9** The table gives information about the amounts of money, in euros, that 70 of Anjali’s

friends spent last Saturday.

|  |  |
| --- | --- |
| **Money spent (*S* euros)** | **Frequency** |
| 0 < *S* ≤ 8 | 6 |
| 8 < *S* ≤ 16 | 14 |
| 16 < *S* ≤ 24 | 19 |
| 24 < *S* ≤ 32 | 25 |
| 32 < *S* ≤ 40 | 6 |

One of Anjali’s 70 friends is going to be chosen at random.

(*a*)Find the probability that this friend spent more than 24 euros last Saturday.

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

(**1)**

(*b*)Work out an estimate for the mean amount of money spent by Anjali’s friends last Saturday.

Give your answer correct to 2 decimal places.

....................................................... euros

**(4)**

**(Total for Question 9 is 5 marks)**

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**10** Ravina leaves her home at 1 35 p.m. in her car.

Ravina drives 60 km from her home to get to an appointment.

She drives at an average speed of 80 km/h.

At what time does Ravina get to her appointment?

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

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

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**11** *ABC* and *DEF* are similar triangles.

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

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

**(2)**

Given that *BC* = 54 cm,

(*b*)work out the length of *EF*.

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

**(2)**

**(Total for Question 11 is 4 marks)**

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**12** In 2018, the population of Sydney was 5.48 million.

This was 22% of the total population of Australia.

Work out the total population of Australia in 2018

Give your answer correct to 3 significant figures.

...................................................... million

**(Total for Question 12 is 3 marks)**

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**13** The diagram shows the front of a wooden door with a semicircular glass window.

Julie wants to apply 2 coats of wood varnish to the front of the door, shown shaded in

the diagram.

250 millilitres of wood varnish covers 4 m2 of the wood.

Work out how many millilitres of wood varnish Julie will need.

Give your answer correct to the nearest millilitre.

...................................................... millilitres

**(Total for Question 13 is 5 marks)**

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**14** Yasmin has some identical rectangular tiles.

Each tile is *L* cm by *W* cm.

Using 9 of her tiles, Yasmin makes rectangle *ABCD* shown in the diagram below.

The area of *ABCD* is 1620 cm2

Work out the value of *L* and the value of *W*.

*L* = ............................. *W* = .............................

(**Total for Question 14 is 5 marks)**

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**15** The diagram shows a regular octagon *ABCDHIJK* and a pentagon *DEFGH*.

Angle *GHD* = angle *FGH*.

Work out the size of the angle marked *x*.

Show your working clearly.

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

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**16** A solid aluminium cylinder has radius 10 cm and height *h* cm.

The mass of the cylinder is 5.4 kg.

The density of aluminium is 0.0027 kg/cm3

Calculate the value of *h*.

Give your answer correct to one decimal place.

*h* = ......................................................

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

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**17** A rainwater tank contains 2.4 × 107 raindrops.

The rainwater tank also contains 1.75 × 106 bacteria.

Work out the number of bacteria per raindrop in the tank.

Give your answer in standard form correct to 2 significant figures.

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

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

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**18** Alison buys 5 apples and 3 pears for a total cost of $1.96

Greg buys 3 apples and 2 pears for a total cost of $1.22

Michael buys 10 apples and 10 pears.

Work out how much Michael pays for his 10 apples and 10 pears.

Show your working clearly.

$ ......................................................

(**Total for Question 18 is 5 marks)**

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**19** *ABC* is an isosceles triangle with *BA* = *BC*.

*N* is the point on *AC* such that *AN* = 9.3 cm and *BN* is perpendicular to *AC*.

Work out the perimeter of triangle *ABC*.

Give your answer correct to 3 significant figures.

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

**(Total for Question 19 is 4 marks)**

**TOTAL FOR PAPER IS 80 MARKS**