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.

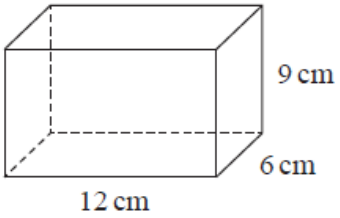

Diagram **NOT** accurately drawn

Work out the volume of the cuboid.

..... cm^3

(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)

3 $T = 6p - 4d$

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

$T =$ .....

(2)

$T = 6p - 4d$

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

$p =$ .....

(3)

(*c*) Solve $4(x - 3) = 7x + 15$

Show clear algebraic working.

$x =$ .....

(3)

(Total for Question 3 is 8 marks)

4 Here is a rhombus.

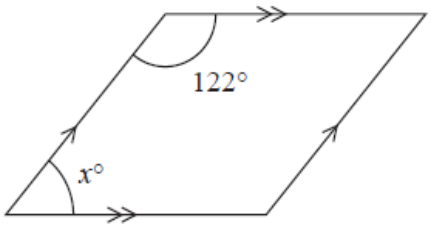

Diagram **NOT** accurately drawn

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 $\frac{4}{9}$

(*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 $\frac{1}{2}$

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

.....

(2)

(Total for Question 5 is 4 marks)

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)

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

Cyclone Bank	Tornado Bank
Invest 25 000 dollars 4.5% compound interest per year for 3 years	Invest 25 000 dollars Receive 1150 dollars interest each year for 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)

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)

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**
$0 < S \leq 8$	6
$8 < S \leq 16$	14
$16 < S \leq 24$	19
$24 < S \leq 32$	25
$32 < S \leq 40$	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)

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

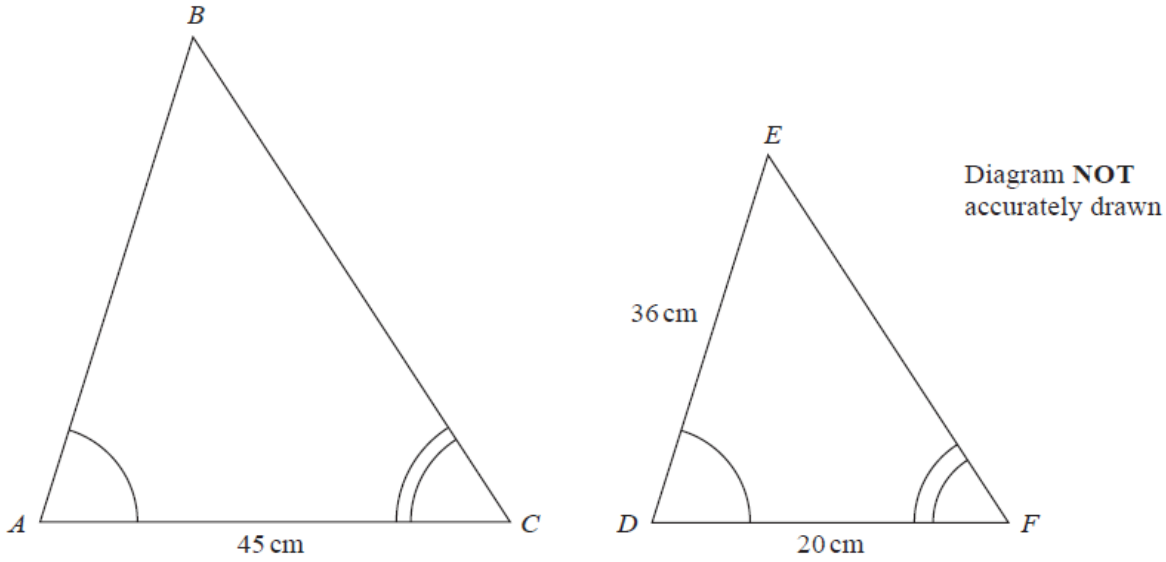
Ravina drives 60 km from her home to get to an appointment.
She drives at an average speed of 80 km/h.

At what time does Ravina get to her appointment?

.....

(Total for Question 10 is 3 marks)

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)

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)

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

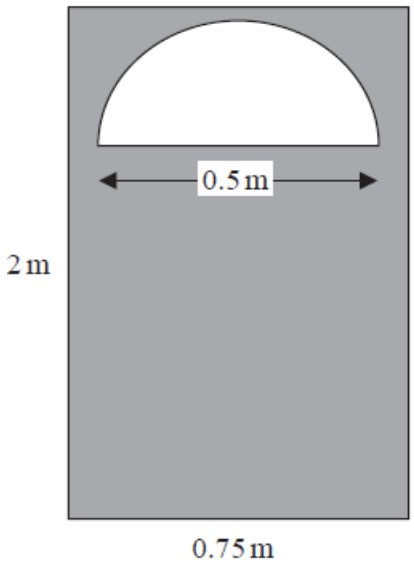


Diagram **NOT** accurately drawn

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 m^2 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)

14 Yasmin has some identical rectangular tiles.
Each tile is L cm by W cm.

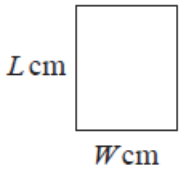


Diagram **NOT** accurately drawn

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

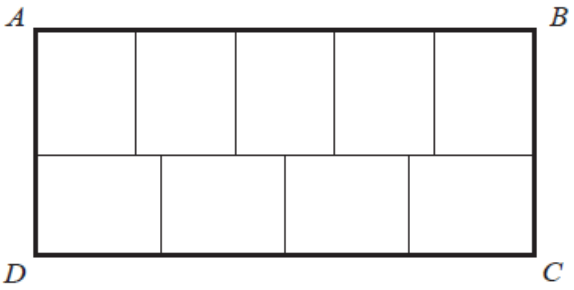


Diagram **NOT** accurately drawn

The area of $ABCD$ is 1620 cm^2

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

L = ... W = ...

(Total for Question 14 is 5 marks)

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

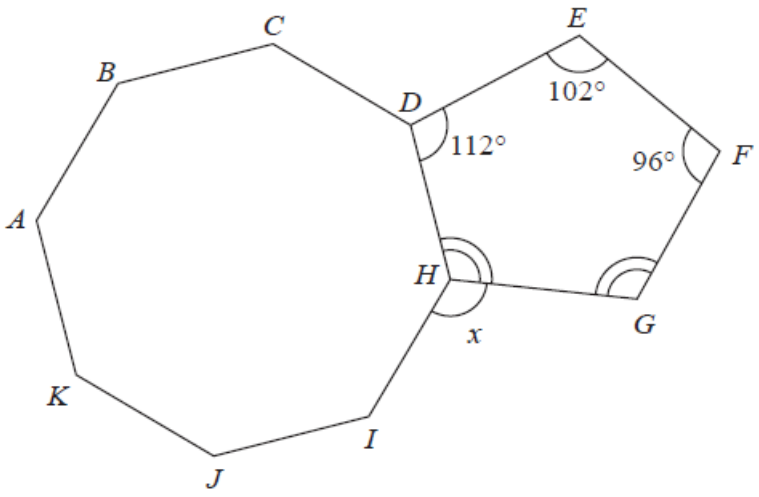


Diagram **NOT** accurately drawn

Angle *GHD* = angle *FGH*.

Work out the size of the angle marked *x*.
Show your working clearly.

.....°

(Total for Question 15 is 5 marks)

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

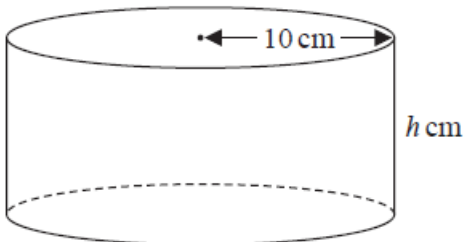


Diagram **NOT** accurately drawn

The mass of the cylinder is 5.4 kg.
The density of aluminium is 0.0027 kg/cm^3

Calculate the value of h.
Give your answer correct to one decimal place.

h = ...

(Total for Question 16 is 5 marks)

17 A rainwater tank contains 2.4×10^7 raindrops.
The rainwater tank also contains 1.75×10^6 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)

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

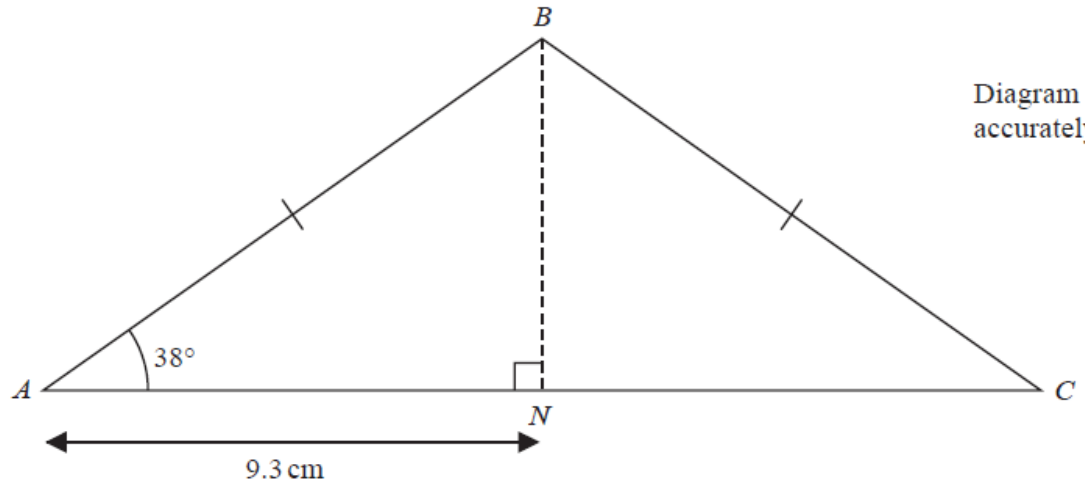
Michael buys 10 apples and 10 pears.

Work out how much Michael pays for his 10 apples and 10 pears.
Show your working clearly.

$ .....

(Total for Question 18 is 5 marks)

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