GCSE Mathematics Practice Tests: Set 20

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 TWENTY EIGHT questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1   Write $\dfrac{9}{20}$ as a decimal.

....

(Total for Question 1 is 1 mark)

2   Work out $\dfrac{4}{5}$ of 80

....

(Total for Question 2 is 1 mark)

3   Here are four fractions.

$$\dfrac{1}{3} \qquad \dfrac{2}{5} \qquad \dfrac{3}{8} \qquad \dfrac{4}{11}$$

When written as a decimal, **one** of these fractions will give a terminating decimal.

Write down the fraction.

....

(Total for Question 3 is 1 mark)

4   Danielle is going to print some business cards.

She uses this rule to work out the total cost, in euros, of printing the business cards.

> Total cost = price per card × number of cards + fixed fee

price per card = 0.14 euros
fixed fee = 25 euros

Danielle is going to print 350 business cards.

Work out the total cost of printing the business cards.

.... euros

(Total for Question 4 is 3 marks)

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5   *ABC* is a straight line and *BCD* is a triangle.
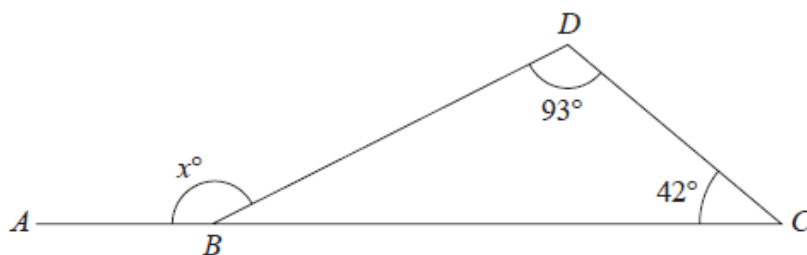
Diagram **NOT**
accurately drawn

Work out the value of *x*

$x =$ ....

(Total for Question 5 is 2 marks)

6 Thabisa is organising a trip to the theatre.

The cost of a ticket for each adult is £11.75
The total cost of the tickets for 12 adults and 5 children is £181

Work out the cost of a ticket for each child.

£ ....

(Total for Question 6 is 3 marks)

7 Each time John plays a game, the probability that he wins the game is 0.65

John is going to play the game 300 times.

Work out an estimate for the number of games that John wins.

....

(Total for Question 7 is 2 marks)

8 (*a*) Write the ratio 42 : 96 in its simplest form.

....

(2)

There are only apples and pears in a fruit basket so that

the number of apples : the number of pears = 4 : 11

(*b*) What fraction of the fruit in the basket is pears?

....

(1)

(Total for Question 8 is 3 marks)

9 Work out the value of $\sqrt{7.4} + \dfrac{5.1^2}{3}$

Write down all the figures on your calculator display.

....

(Total for Question 9 is 2 marks)

10 Roberto is going to go on holiday.

He has two coupons that will save him money on his holiday.

Coupon A	**Coupon B**
18% off the cost of the accommodation	12.5% off the total cost of the accommodation **and** the flights

For Roberto's holiday

the cost of the accommodation is $1600
the cost of the flights is $800

Roberto can only use one of the coupons.
He wants to save as much money as he can.

Which of the two coupons, **A** or **B**, should he use?
Show your working clearly.

(Total for Question 10 is 3 marks)

11 A tin contains tea bags with a choice of four different flavours of tea.
The four flavours of tea are Assam or Darjeeling or Nilgiri or Rize.

Sara takes at random a tea bag from the tin.

The table shows each of the probabilities that the flavour of the tea Sara takes is Assam or Darjeeling or Rize.

Flavour of tea	Assam	Darjeeling	Nilgiri	Rize
Probability	0.38	0.24		0.16

(*a*) Work out the probability that the flavour of the tea Sara takes is Nilgiri.

....
(2)

(*b*) Work out the probability that the flavour of the tea Sara takes is either Darjeeling or Rize.

....
(2)

(Total for Question 11 is 4 marks)

12 $T = 5m - 6n$

Work out the value of *T* when *m* = 4.2 and *n* = –2.5

$T = $ ....

(Total for Question 12 is 2 marks)

13   *PO*, *RO*, *SO* and *TO* are four straight lines.

Diagram **NOT** accurately drawn
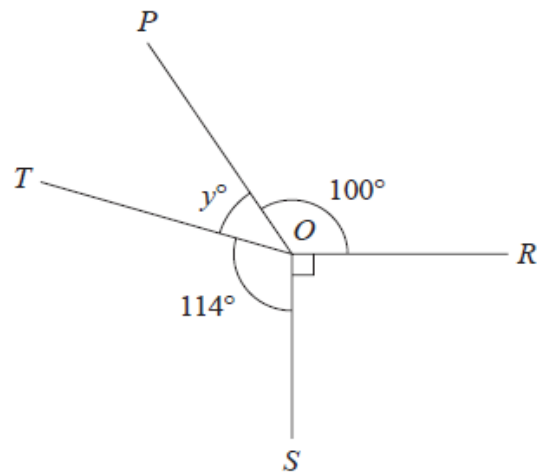
(i)   Work out the value of *y*

y = ...

(2)

(ii) Give a reason for your answer.

………………………………………………………...

(1)

(Total for Question 13 is 3 marks)

14 Maria is going to make some flapjacks.

Here are four of the ingredients that she will use.

175 g butter
175 g syrup
175 g sugar
330 g oats

What percentage of these four ingredients is oats?
Give your answer correct to 3 significant figures.

.... %

(Total for Question 14 is 3 marks)

15 Lauren has 3 litres of fruit juice.
She is going to use the fruit juice to make some drinks for a party.
Each cup of drink will contain 225 millilitres of fruit juice.

Lauren is going to make as many cups of drink as possible.

Work out how much fruit juice Lauren has left when she has made as many cups of drink as possible.
Give your answer in millilitres.

.... millilitres

(Total for Question 15 is 4 marks)

16 Here is a quadrilateral.
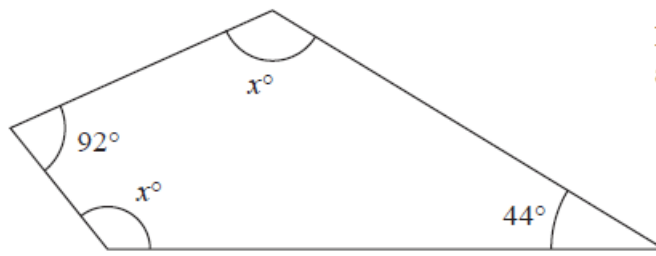
Diagram **NOT** accurately drawn

(i) Work out the value of x

$x =$ ....
(3)

(ii) Give a reason for your answer.

....

(1)

(Total for Question 16 is 4 marks)

17 Work out the lowest common multiple (LCM) of 36 and 120

....
(Total for Question 17 is 2 marks)

18 Here is a square.

Diagram **NOT** accurately drawn

The perimeter of the square is 24 cm.

The shaded rectangle below is made from 4 of these squares.

Diagram **NOT** accurately drawn

Work out the perimeter of the shaded rectangle.

.... cm

(Total for Question 18 is 3 marks)

19 Mary saves for a holiday each year.

In 2020 she saved a total of $720
In 2021, each month she saved $78

The total amount Mary saved in 2021 was P% more than the total she saved in 2020

Work out the value of P

....

(Total for Question 19 is 4 marks)

20 In November, Andre received a monthly salary of £2500.

Of this he spent

40% on his rent
£300 on leisure

The rest of Andre's monthly salary was spent on household bills and on food where

the amount spent on household bills : the amount spent on food = 3 : 7

Work out how much of his November monthly salary Andre spent on food.

£..

(Total for Question 20 is 4 marks)

21 Anjali, Ravina and Sandeep were the three candidates in an election.

Heidi draws a pie chart for the number of votes received by each of the three candidates.

The angle in the pie chart for the number of votes received by Anjali is 90°
The angle in the pie chart for the number of votes received by Ravina is 160°

Ravina received 400 votes.

Work out the number of votes Sandeep received.

....

(Total for Question 21 is 3 marks)

22 (*a*) Write down the value of x^0

....
(1)

Given that $2^{-3} \times 2^9 = 2^n$

(*b*) find the value of *n*

$n =$ ....
(1)

Given that $\dfrac{7^{206} \times 7^m}{7^{214}} = 7^{-3}$

(*c*) find the value of *m*

$m =$ ....
(2)

(Total for Question 22 is 4 marks)

23 The accurate scale drawing shows the position of a college *C* and a train station *S*
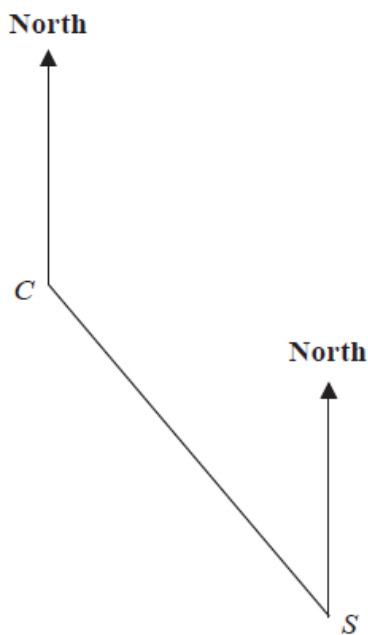
Scale: 1 cm represents 500 m

(*a*) Find the bearing of *S* from *C*

....°
(1)

For Charles,
1 step = 0.44 m

(*b*) Work out the number of steps Charles walks as he goes in a straight line from the college to the train station.
Give your answer correct to the nearest whole number of steps.

....
(4)

(Total for Question 23 is 5 marks)

24 50 students have lessons at a dance school.
Two of the lessons are ballet lessons (B) and tap lessons (T).
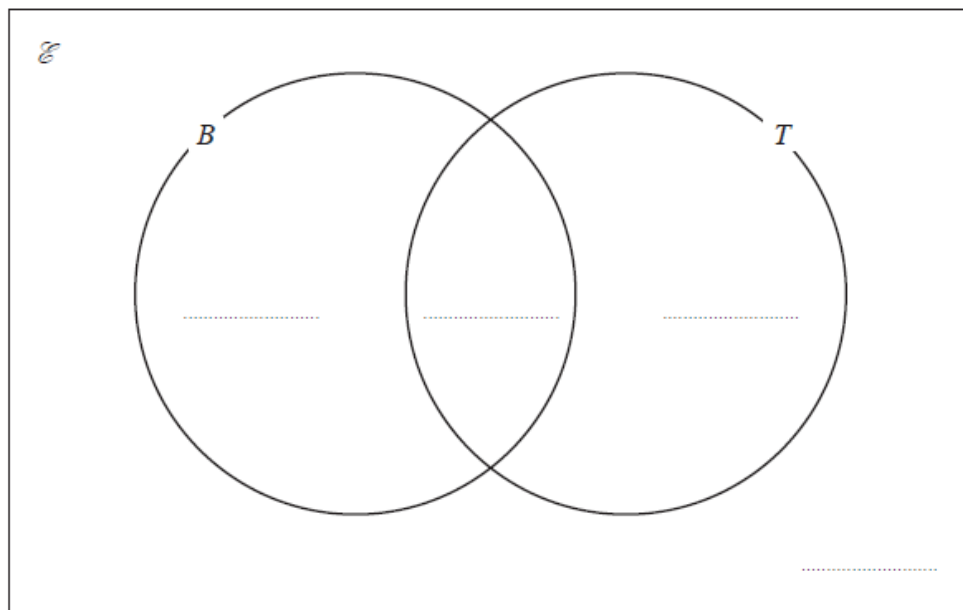
Of the 50 students

       31 have ballet lessons
       27 have tap lessons
       18 have ballet lessons and tap lessons

Complete the Venn diagram for this information.

(Total for Question 24 is 3 marks)

25 Shane invests £7200 for 3 years in a savings account.
He gets 2.5% per year compound interest.

How much money will Shane have in his savings account at the end of 3 years?
Give your answer to the nearest pound.

£..

(Total for Question 25 is 3 marks)

26 The table shows information about the number of eggs laid by each of 36 hens in one week.

Number of eggs	Frequency
0	5
1	5
2	3
3	10
4	7
5	6

Work out the mean number of eggs laid.

....

(Total for Question 26 is 3 marks)

27 The diagram shows a solid wooden cuboid.
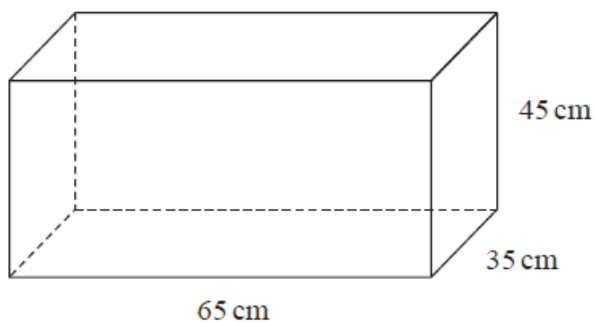

The cuboid measures 65 cm by 35 cm by 45 cm.

A machine cuts the cuboid to make cubes.
Each cube has edges of length 5 cm.

Work out the maximum number of cubes that can be made from the cuboid.

....

(Total for Question 27 is 3 marks)

28 $A = 5^2 \times 7^4 \times 11^p$

$B = 5^m \times 7^{n-5} \times 11$

m, n and p are integers such that

$m > 2$

$n > 10$

$p > 1$

Find the highest common factor (HCF) of A and B
Give your answer as a product of powers of its prime factors.

....

(Total for Question 28 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS