GCSE Mathematics Practice Tests: Set 19

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 xxx questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Write $\dfrac{5}{8}$ as a decimal.

....

(Total for Question 1 is 1 mark)

2 Write $\dfrac{39}{150}$ as a percentage.

....%

(Total for Question 2 is 1 mark)

3 Here is a number machine.

input $\longrightarrow$ $\times 5$ $\longrightarrow$ $+3$ $\longrightarrow$ output
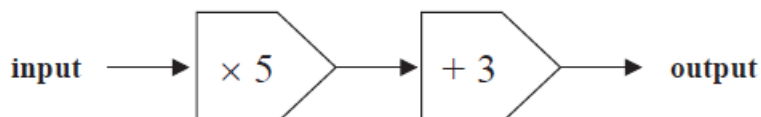
Work out the input when the output is 108

....

(Total for Question 3 is 2 marks)

4 Here is a sequence of patterns made from counters.

Pattern
number 1

Pattern
number 2
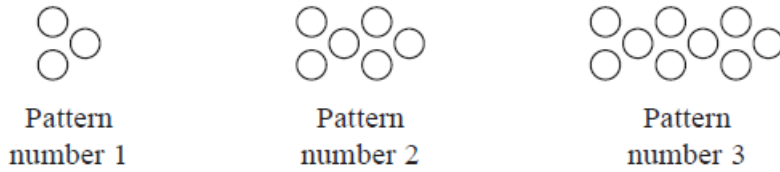
Pattern
number 3

(*a*) In the space below, draw Pattern number 4

(1)

(*b*) Complete the table.

Pattern number	1	2	3	4	5
Number of counters	3	6	9		

(1)

(*c*) Work out the number of counters in Pattern number 10

....

(1)

Sven has exactly 70 counters.

(*d*) Can Sven make Pattern number 25 using his 70 counters?

Tick the appropriate box below.

Yes   No

☐   ☐

Give a reason for your answer.

.

....

....

(1)

(Total for Question 4 is 4 marks)

5   Angelina buys

3 packets of seeds at £2.45 each packet

2 bags of compost at £6.20 each bag

and   4 plant pots

Each plant pot costs the same amount of money.

Angelina paid a total of £34.35 for the seeds, compost and plant pots.

Work out the cost of each plant pot.

£..

(Total for Question 5 is 4 marks)

6 Bohai works in a shop that sells mobile phones.
Last week he sold one mobile phone to each of 300 customers.
The incomplete two-way table shows some information about these mobile phones.

	32GB	64 GB	128GB	Total
type A	75		83	195
type B		29		
Total	127			300

(*a*) Complete the two-way table.

(3)

Bohai selects at random one of these 300 customers.

(*b*) Write down the probability that this customer bought a type **B**, 64 GB mobile phone.

....
(1)

Bohai now selects at random one of the customers who bought a type **A** phone last week.

(*c*) Write down the probability that this customer bought a 128 GB mobile phone.

....
(2)

(Total for Question 6 is 6 marks)

7 (*a*) Use your calculator to work out the value of

$$\frac{7.45}{4.3^2 - 2.9}$$

Give your answer as a decimal.
Write down all the figures on your calculator display.

....
(2)

(*b*) Write your answer to part (*a*) correct to 3 decimal places.

....
(1)

(Total for Question 7 is 3 marks)

---

8 Mairi has a 2 metre length of string.
She cuts from the string as many lengths of 35 centimetres as possible.

Work out the length of string that she has left.
Give your answer in centimetres.

.... cm
(Total for Question 8 is 3 marks)

9 The diagram shows triangle *ABD*
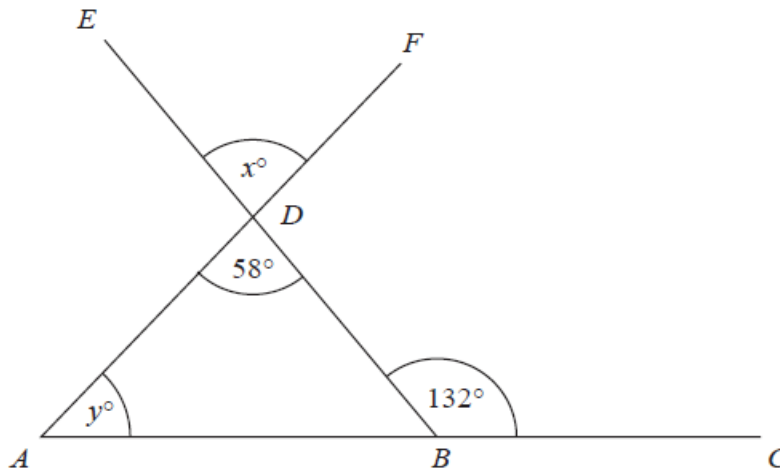

Diagram **NOT** accurately drawn

ABC, *BDE* and *ADF* are straight lines.

angle *CBD* = 132°   angle *ADB* = 58°

(*a*) (i) Write down the value of *x*

x = ...

(ii) Give a reason for your answer.

.

....

(2)

(*b*) Work out the value of *y*

y = ...

(2)

(Total for Question 9 is 4 marks)

10 Here is a conversion graph to change between Canadian dollars and pounds (£)
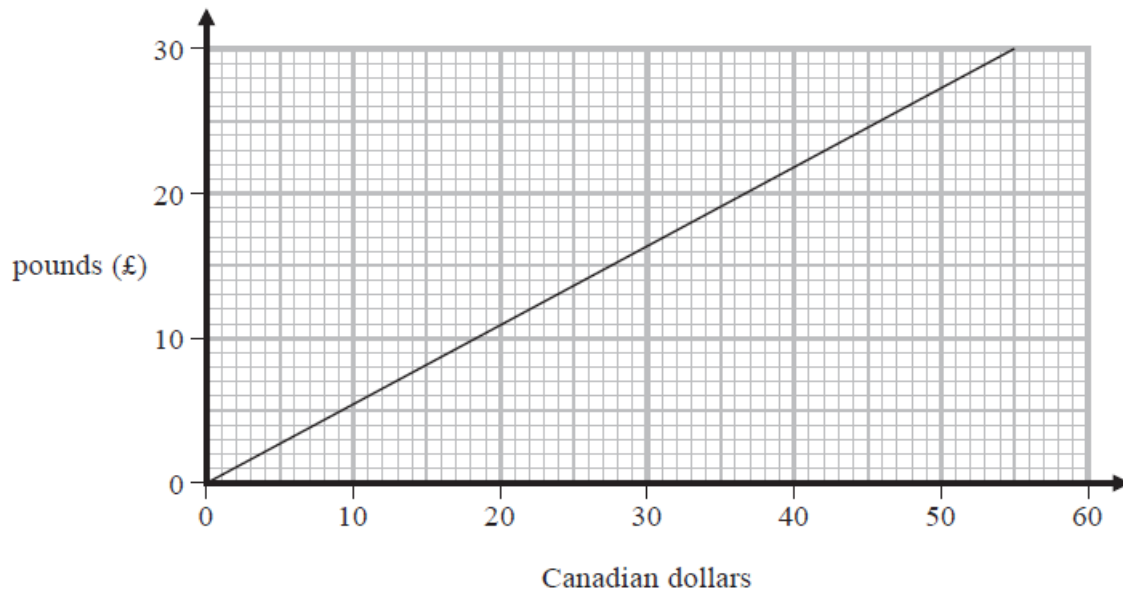
Canadian dollars

(a) Use the graph to change

  (i) 46 Canadian dollars to pounds (£)

£...

  (ii) £10 to Canadian dollars.

.... Canadian dollars

(2)

Alana is on holiday in London and is going to Paris.
She is going to book a hotel in Paris.
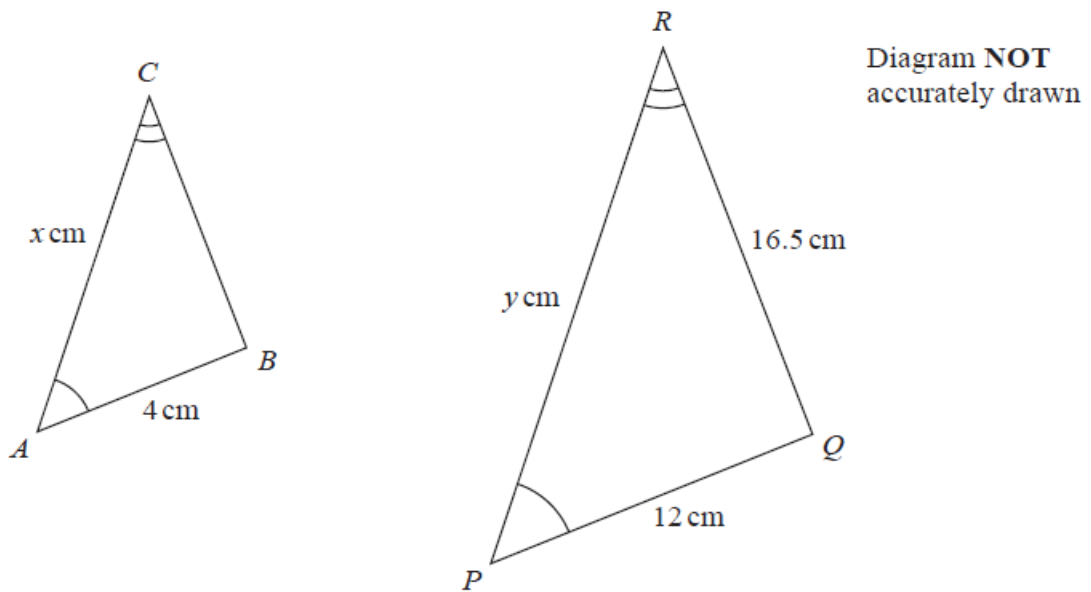She knows that

| 1 pound (£) = 1.2 euros |

(b) Change 528 euros to Canadian dollars.

.... Canadian dollars

(3)

(Total for Question 10 is 5 marks)

11

Triangle *ABC* is similar to triangle *PQR*

AB = 4 cm   PQ = 12 cm   RQ = 16.5 cm   AC = x cm   PR = y cm

(*a*) Calculate the length of *BC*

.... cm

(2)

(*b*) Write down an expression for *y* in terms of *x*

y = ...

(1)

(Total for Question 11 is 3 marks)

12 Find the lowest common multiple (LCM) of 28, 42 and 63
Show your working clearly.

....

(Total for Question 12 is 3 marks)

13 Here is a list of the ingredients needed to make 12 chocolate brownies.

Chocolate brownies
Ingredients for 12 brownies

150 g flour

250 g chocolate spread

3 eggs

Thalia buys exactly enough of these ingredients to make 120 of these brownies.

1.5 kg of flour costs £1.30
500 g of chocolate spread costs £2.60
6 eggs cost £1.10

Thalia sells all 120 brownies at £0.40 each.

Work out the profit that she makes.

£..

(Total for Question 13 is 5 marks)

14 Sarah makes and sells mugs.

One day she makes 150 mugs.
Her total cost for making these mugs is £1140

Of these mugs

$\dfrac{2}{5}$ are small mugs

32% are medium mugs

and   the rest are large mugs

Here is Sarah's price list for selling each mug.

MUGS	
Small	£8.50
Medium	£11.20
Large	£14.20

Sarah sells all 150 mugs.

Work out her percentage profit.
Give your answer correct to the nearest whole number.

....%

(Total for Question 14 is 5 marks)

15 Iman walked for 3 hours 15 minutes.
He walked a distance of 18.2 kilometres.

Work out Iman's average speed for his walk.
Give your answer in km/h

.... km / h

(Total for Question 15 is 3 marks)

16 A circle has a **diameter** of 14 cm.

Calculate the area of the circle.
Give your answer correct to 3 significant figures.

.... cm^2

(Total for Question 16 is 2 marks)

17   Danil, Gabriel and Hadley share some money in the ratios 3 : 5 : 9

The difference between the amount of money that Gabriel receives and the amount of money that Hadley receives is £196

Work out the amount of money that Danil receives.

£..

(Total for Question 17 is 3 marks)

18 Jenny has six cards.

Each card has a whole number written on it so that

   the smallest number is 5
   the largest number is 24
   the median of the six numbers is 14
   the mode of the six numbers is 8

Jenny arranges her cards so that the numbers are in order of size.

(*a*) For the remaining four cards, write on each dotted line a number that could be on the card.

                                                                                                (3)

A basketball team plays 6 games.

After playing 5 games, the team has a mean score of 21 points per game.
After playing 6 games, the team has a mean score of 23 points per game.

(*b*) Work out the number of points the team scored in its 6th game.

                                         ....
                                                                                                (3)

                                                        (Total for Question 18 is 6 marks)

19 A bag contains only pink sweets, white sweets, green sweets and red sweets.

The table gives each of the probabilities that, when a sweet is taken at random from the bag, the sweet will be green or the sweet will be red.

Sweet	pink	white	green	red
Probability			0.2	0.35

The ratio
   number of pink sweets : number of white sweets = 2 : 1

There are 28 red sweets in the bag.

Work out the number of white sweets in the bag.

....

(Total for Question 19 is 5 marks)

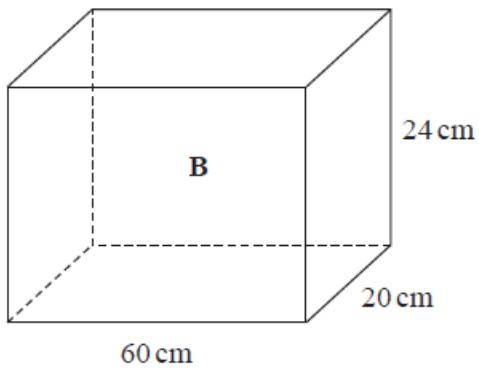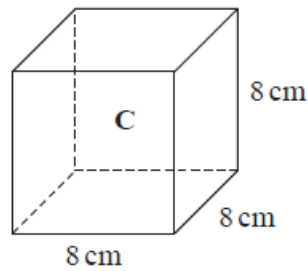**20**   The diagram shows a box **B** and a carton **C**

Diagram **NOT** accurately drawn

The box **B** is in the shape of a cuboid.
Each carton **C** is in the shape of an 8 cm cube.

Martha is going to put as many of the cartons as possible into the box.
She has enough cartons to do this.

Martha will then fill the remaining space inside the box with packing material.

Work out the volume of the space inside the box that Martha will fill with packing material.

.... cm³

(Total for Question 20 is 5 marks)

21 The diagram shows a classroom wall in the shape of a trapezium.
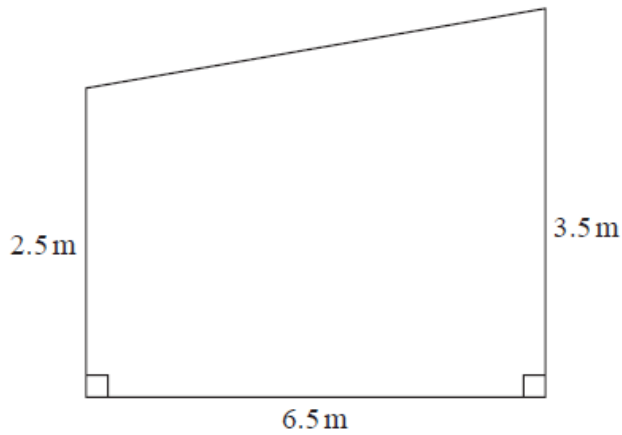

Diagram **NOT** accurately drawn

Dion wants to paint the classroom wall completely twice.
He knows that each tin of paint will cover 12 m^2

He is going to have to buy all the paint he needs.

Work out the least number of tins of paint that Dion will need to buy.
Show your working clearly.

....

(Total for Question 21 is 4 marks)

22 $\frac{3}{8}$ of the members of a squash club are children.

$\frac{5}{6}$ of these children are right-handed.

What fraction of the members of the squash club are right-handed children?

Give your answer as a fraction in its simplest form.
Show your working clearly.

....

(Total for Question 22 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

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