

GCSE Mathematics

Delta Paper 2 (2019):

Paper 2F (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
- 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 questions.
Write your answers in the spaces provided.
You must write down all the stages in your working.

1. The table shows the lowest temperature over six months for Winnipeg in Canada.

Month	July	August	September	October	November	December
Lowest temperature (°C)	13	12	6	0	-9	-18

(a) Which of these six months has the lowest temperature?

.....

(1)

(b) Work out the difference between the lowest temperatures in August and November.

..... °C

(1)

The lowest temperature in March was 23 °C lower than the lowest temperature in August.

(c) Work out the lowest temperature in March.

..... °C

(1)

(Total for Question 1 is 3 marks)

2. The ratio of boys to girls at a party is 4:5.
 What fraction of the children are girls?

.....

(Total for Question 2 is 1 mark)

3. Write these decimals in order of size.
 Start with the smallest decimal.

0.607 0.66 0.0632 0.615 0.00679

.....

(Total for Question 3 is 1 mark)

4. Solve $\frac{x}{3} = 9$









$x =$


(Total for Question 4 is 1 mark)

5. Calvin asked some teachers how many children they have.
The table shows information about his results.

Number of children	0	1	2	3
Number of teachers	8	24	16	10

Calvin started to draw a pictogram for the information in the table.
He showed the information for teachers with 0 and 1 child.

Number of children						
0						
1						
2						
3						

- (a) How many teachers does  represent?

.....
(1)

- (b) Complete the pictogram for the information in the table.

(2)

- (c) Find the total number of teachers Calvin asked.

.....
(1)

- (d) Find the ratio of the number of teachers with 1 child to the number of teachers with 2 children.
Give your ratio in its simplest form.

.....
(2)

(Total for Question 5 is 6 marks)

6.

(a) Simplify $3c^2 + 5c^2 - c^2$

.....
(1)

(b) Simplify $4x - 3y + 5x - 2y$

.....
(2)

(Total for Question 6 is 3 marks)

7. Here is a sequence of patterns made from dots.



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

(1)

This rule can be used to find the number of dots in a pattern of the sequence.

Multiply the Pattern number by 3 and then add 2

(b) Work out the number of dots in Pattern number 7.

.....
(2)

A pattern has exactly 41 dots.

(c) Work out the Pattern number.

.....
(2)

T is the number of dots in Pattern number n .

(d) Write down a formula for T in terms of n .

.....
(3)

(Total for Question 7 is 8 marks)

8.

(a) Make t the subject of $k = \frac{t-e}{2}$

.....
(2)

(b) Simplify $p^8 \div p^3$

.....
(1)

(c) Simplify n^0

.....
(1)

(d) Simplify $(3x^2y^5)^3$

.....
(2)

(Total for Question 8 is 6 marks)

9. There are 80 counters in a bag.

The counters are either red or blue.

The ratio of the number of red counters to the number of blue counters is 3 : 1

Michael takes 15% of the red counters out of the bag.

Alison takes $\frac{1}{5}$ of the blue counters out of the bag.

How many counters are now in the bag?

.....

(Total for Question 9 is 5 marks)

10.

(a) Work out the value of $2f + 7$ when $f = 8$

.....
(2)

$$T = 3g + 5h$$

$$g = -2$$

$$h = 4$$

(b) Work out the value of T .

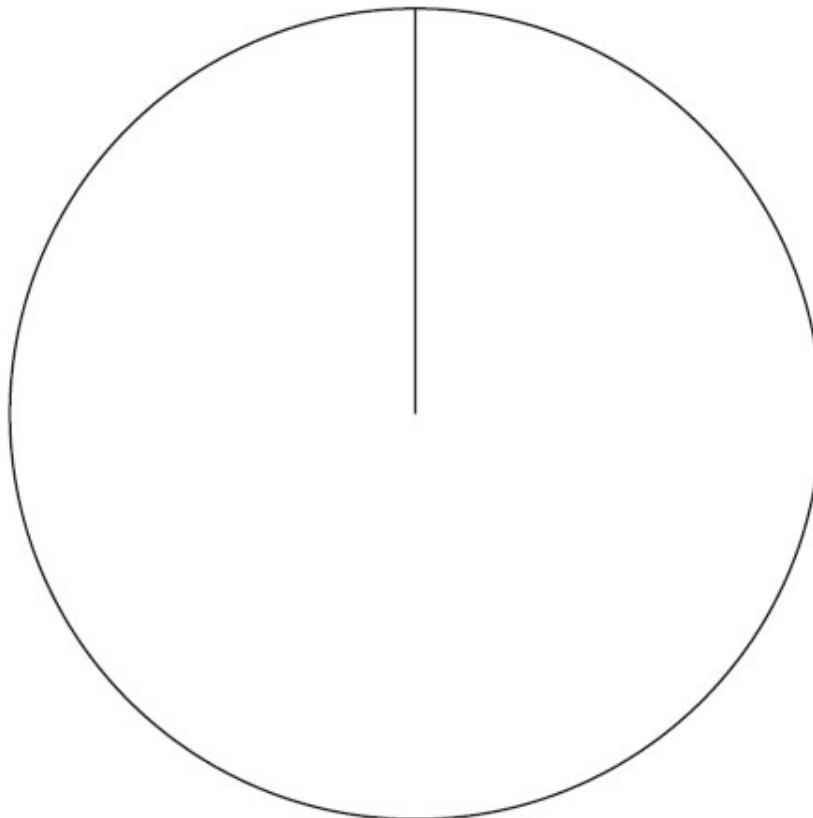
.....
(2)

(Total for Question 10 is 4 marks)

11. A group of Year 10 students was asked to choose a new subject to study.
The table shows information about the choices.

Subject	Number of students	
Construction	40	
Hairdressing	56	
Tourism	24	

(a) Draw an accurate pie chart to show this information.



(3)

A group of Year 11 students was also asked to choose a new subject to study.
This pie chart shows information about their choices.



Danny says

"The pie charts show that hairdressing was chosen by more Year 11 students than by Year 10 students."

(b) Is Danny correct?

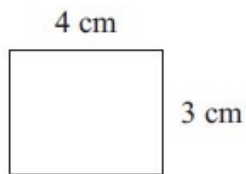
You must explain your answer.

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

(1)

(Total for Question 11 is 4 marks)

12. A small photograph has a length of 4 cm and a width of 3 cm. Shez enlarges the small photograph to make a large photograph. The large photograph has a width of 15 cm.



Small photograph



Large photograph

Diagram **NOT** accurately drawn

The two photographs are similar rectangles.
Work out the length of the large photograph.

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

13.

- (a) Factorise $x^2 - 169$

.....
(1)

- (b) Expand and simplify $(3x + 2)(2x - 1)$

.....
(2)

(Total for Question 13 is 3 marks)

14.

$$\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$$

$$A = \{\text{multiples of 2}\}$$

$$A \cap B = \{2, 6\}$$

$$A \cup B = \{1, 2, 3, 4, 6, 8, 9, 10\}$$

Draw a Venn diagram for this information.

(Total for Question 14 is 4 marks)

15.

Lyn measures the length, x cm, of a piece of string as 3.5 cm correct to the nearest millimetre.

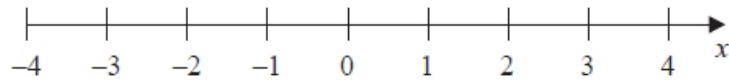
Write down the error interval for x .

.....
(Total for Question 15 is 2 marks)

16.

(a) $x > -2$

Show this inequality on the number line.



(2)

(b) Work out the greatest integer that satisfies the inequality

$$4y - 1 < y + 7$$

.....
(3)

(Total for Question 16 is 5 marks)

17. Given that

$$a : b = 8 : 5 \quad \text{and} \quad b : c = 3 : 4$$

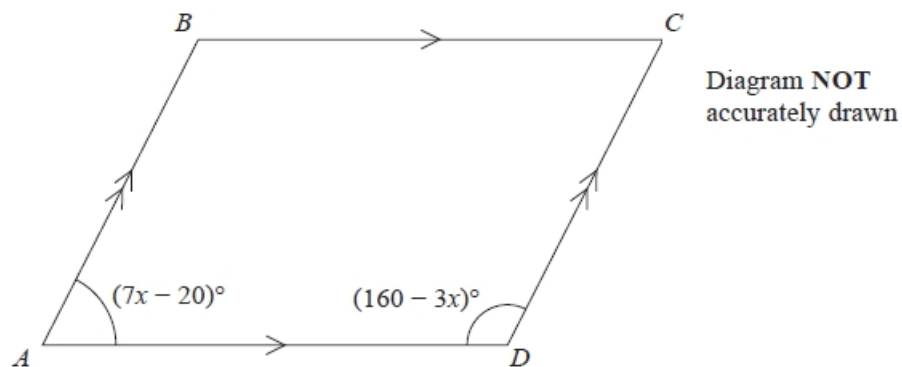
find the ratio

$$a : b : c$$

Give your answer in its simplest form.

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

18. The diagram shows a parallelogram $ABCD$.



Angle $BAD = (7x - 20)^\circ$

Angle $ADC = (160 - 3x)^\circ$

Work out the value of x .

Show clear algebraic working.

$x = \dots\dots\dots$

(Total for Question 18 is 3 marks)

19.

(a) Write 4.7×10^{-1} as an ordinary number.

.....

(1)

(b) Work out the value of $(2.4 \times 10^3) \times (9.5 \times 10^5)$

Give your answer in standard form.

.....

(2)

(Total for Question 19 is 3 marks)

20.

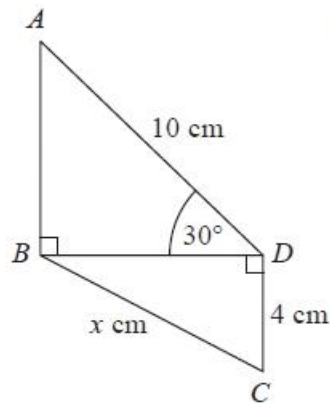


Diagram NOT
accurately drawn

In the diagram,

triangles ABD and BCD are right-angled triangles

$AD = 10$ cm

$CD = 4$ cm

Angle $ADB = 30^\circ$

Work out the value of x .

Give your answer correct to 2 decimal places.

.....cm

(Total for Question 20 is 4 marks)

21. Solve the simultaneous equations

$$\begin{aligned}4x + 2y &= 7 \\3x - 5y &= -24\end{aligned}$$

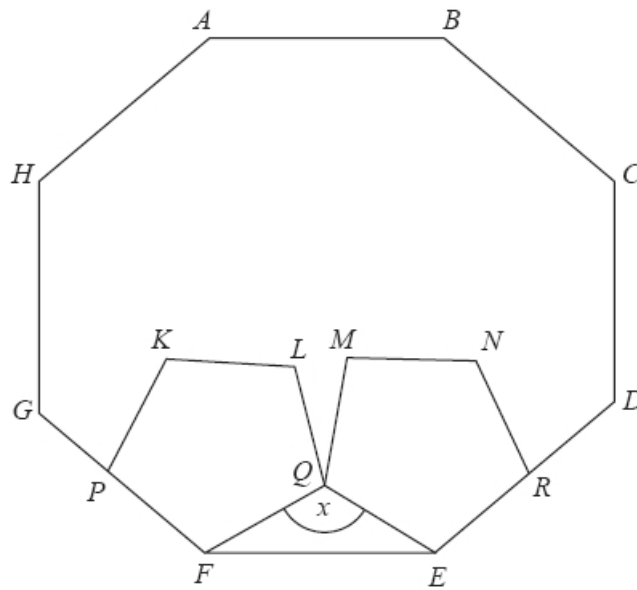
$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 21 is 4 marks)

22.

Diagram NOT
accurately drawn



$ABCDEFGH$ is a regular octagon.
 $KLQFP$ and $MNREQ$ are two identical regular pentagons.

Work out the size of the angle marked x .
 You must show all your working.

.....°

(Total for Question 22 is 4 marks)
TOTAL FOR PAPER IS 80 MARKS