Write your name here

Surname	Other Names

Mathematics

2019 Practice Paper
Paper 3 (Calculator)
Foundation Tier

Time: 1 hour 30 minutes

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

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.**

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.

1 Write 6461 correct to the nearest hundred

.....

(Total for question 1 is 1 mark)

2 Work out $\frac{1}{7}$ of 84

.....

(Total for question 2 is 1 mark)

3 Work out 10% of £95

£.....

(Total for question 3 is 1 mark)

4 One night the temperature in Paris was –6°C.
The temperature in Moscow was 4°C less than the temperature in Paris.

What was the temperature at Moscow?

….....°C

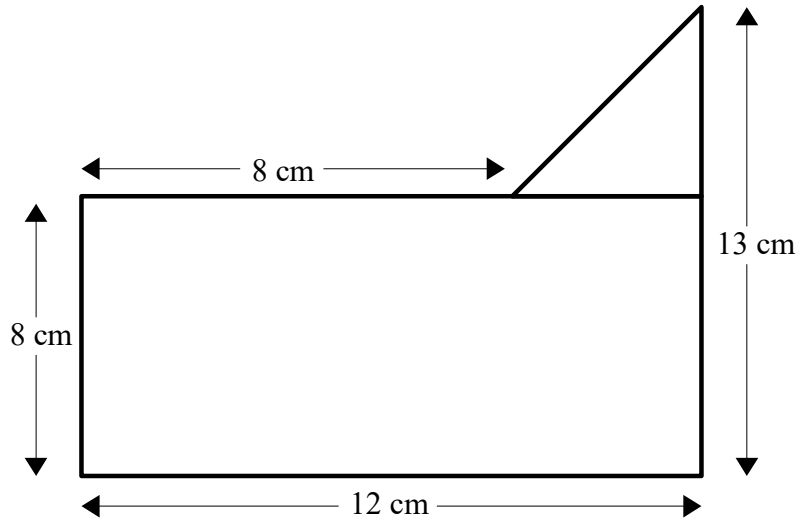
(Total for question 4 is 1 mark)

5 Change 3.5 metres into centimetres

.....centimetres

(Total for question 5 is 1 mark)

6 A shape is made from a triangle and a rectangle.



Work out the total area of the shape.

….....cm^2

(Total for question 6 is 3 marks)

7 Poppy wants to buy as many chocolate bars as she can.

She has £5 to spend on chocolate bars.

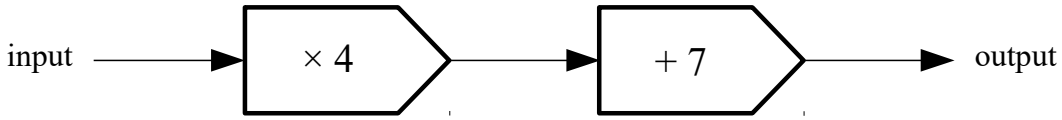
Each chocolate bar costs 42p

Work out how much change Poppy will get from £5.

.....

(Total for question 7 is 3 marks)

8 Here is a number machine.



(a) Find the output when the input is 5

.....

(b) Find the output when the input is –3 (1)

.....

(c) Find the input when the output is 71 (1)

.....

(2)

(Total for question 8 is 4 marks)

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9 (a) Write the ratio $15 : 35$ in its simplest form.

.....

(1)

(b) There are red shapes and blue shapes in a box, $\frac{2}{3}$ of the shapes are red.

Write the ratio of red shapes to blue shapes.

.....

(1)

(Total for question 9 is 2 marks)

10 Which is greater

25% of 90 or 28% of 82

You must show your working.

….....….....….....

(Total for question 10 is 3 marks)

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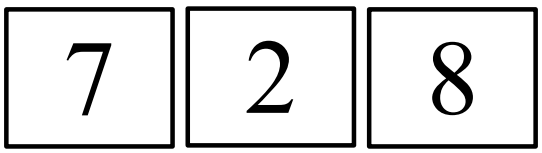
11 Here are three cards. Each card has a number on it.



Write down all the possible three digit numbers that can be made using these three cards.

……

……

(Total for question 11 is 2 marks)

12 Amy, Harry and Emily all save part of their salary each month.

Amy saves $\frac{2}{15}$ of her salary

The amount Harry saves to the amount he spends is in the ratio 1:6

Emily **spends** 86% of her salary.

(a) Show that Harry saves the largest proportion of his salary.

(b) Lily says:

"This means Harry saves the most money each month"

Give a reason to say whether Lily is or is not correct.

……

……...

(Total for question 12 is 3 marks)

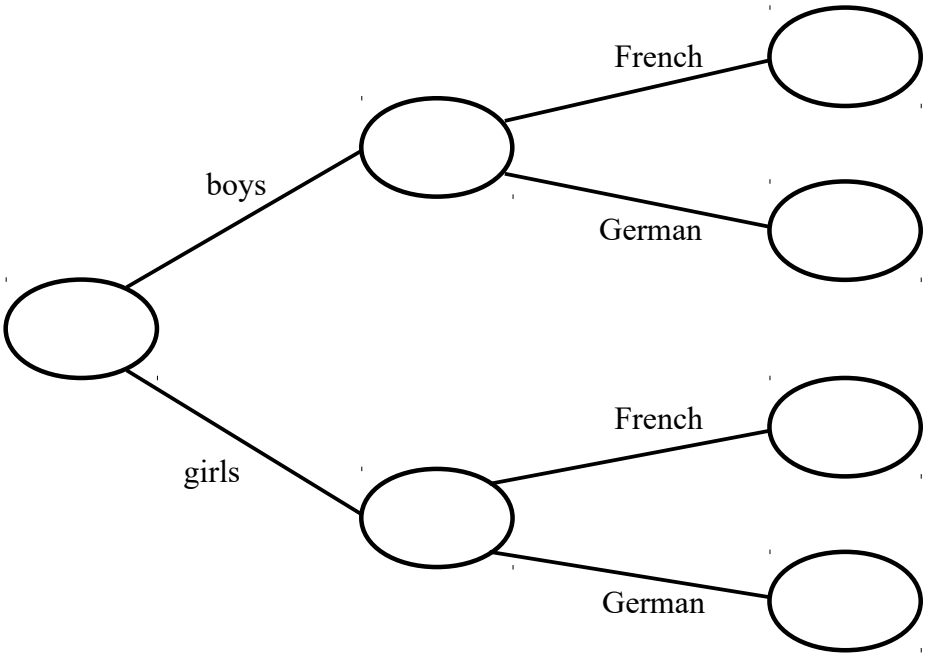
13 60 students study a language at a school.
Each student either studies French or German.

36 of the students are boys.

$\frac{2}{3}$ of the boys study French

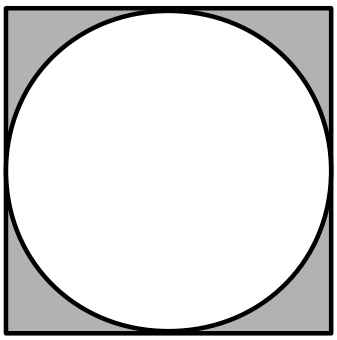
40 students study French

Use this information to complete the frequency tree.



(Total for question 13 is 4 marks)

14 A circle is enclosed by a square as shown in the diagram.



Each side of the square measures 8cm.

Find the area of the shaded region.

Give your answer correct to 1 decimal place.

….....….....cm^2

(Total for question 14 is 3 marks)

15 (a) Make n the subject of $m = n^2 + 3$

….....…

(2)

(b) Simplify $5m^2 \times 3m^4$

….....…

(1)

(c) Expand and simplify $(x + 3)(x – 5)$

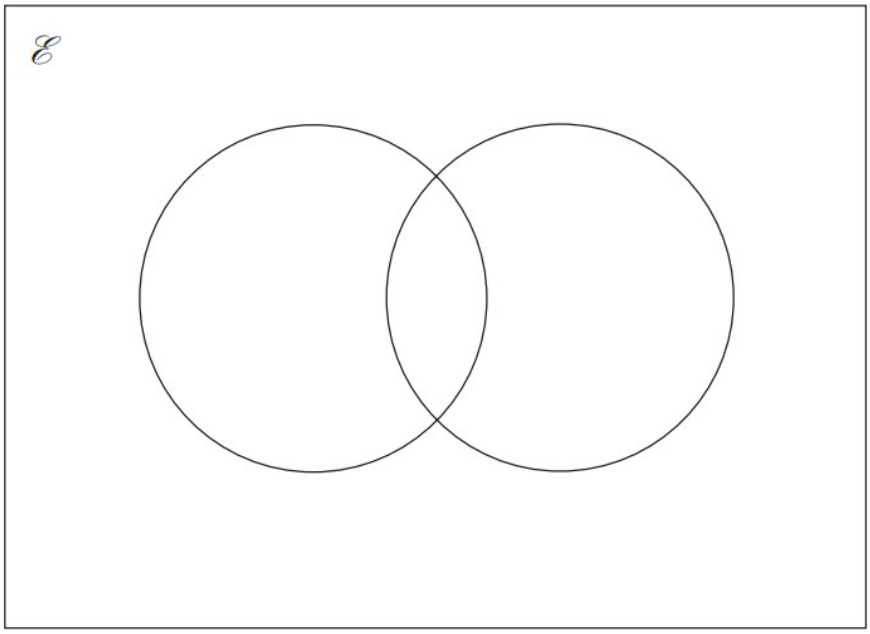
….....…

(2)

(Total for question 15 is 5 marks)

16 $\mathscr{E}$ = {even numbers between 1 and 31}
A = {2, 4, 8, 14, 18, 22, 28}
B = {8, 10, 16, 18, 22, 30}

(a) Complete the Venn diagram to represent this information.



(4)

A number is chosen at random from the universal set, $\mathscr{E}$

(b) What is the probability that the number is in the set $A \cup B$?

….....……

(2)

(Total for question 16 is 6 marks)

17 The frequency table shows the time taken for 100 people to travel to an event.

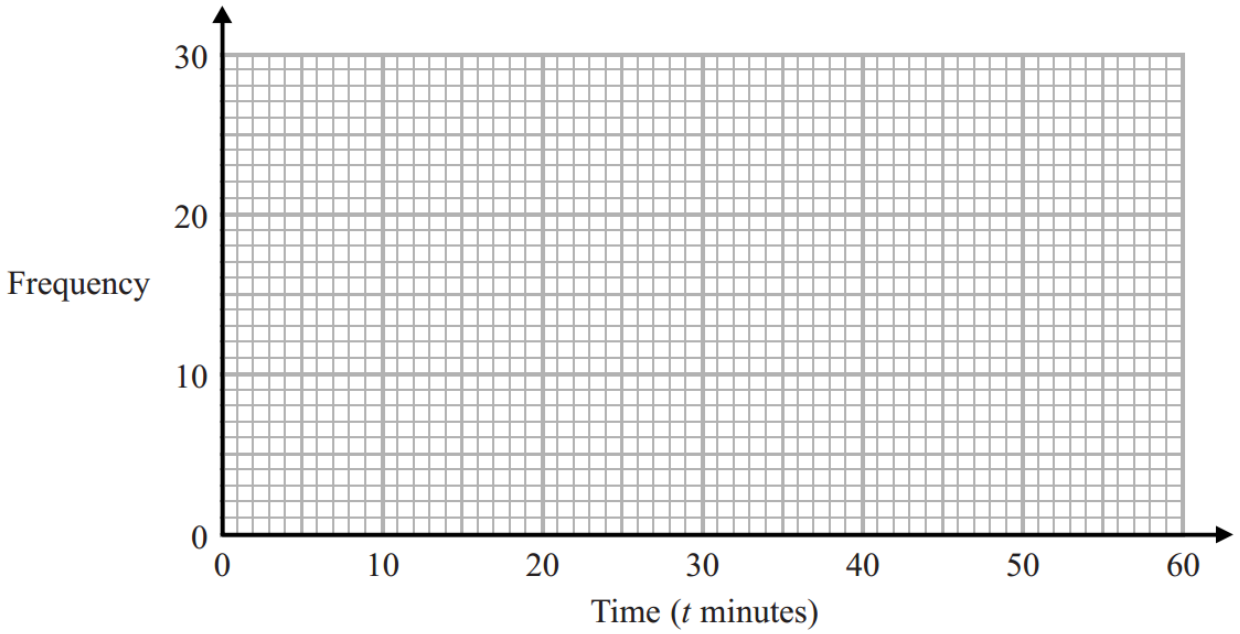
Time (minutes)	Frequency
$0 < t \leqslant 10$	14
$10 < t \leqslant 20$	16
$20 < t \leqslant 30$	23
$30 < t \leqslant 40$	29
$40 < t \leqslant 50$	12
$50 < t \leqslant 60$	6

(a) Find the percentage of people that travelled for more than 30 minutes to the event

.....%

(1)

(b) Draw a frequency polygon for the information on the table.



(2)

(Total for question 17 is 3 marks)

18 (a) Find the reciprocal of 8

.....…

(1)

(b) Use your calculator to work out $(2 \cos 40° + 3 \sin 25°)^3$
Write down all the figures on your calculator display.

….....….....…

(2)

(Total for question 18 is 3 marks)

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19 Solve the simultaneous equations

$2x + 5y = 2$
$7x - 4y = -1$

x = ...…

y = ...…

(Total for question 19 is 3 marks)

20 A is the point with coordinates (3, 8)
B is the point with coordinates (x, 13)

The gradient of AB is 2.5
Work out the value of x

.....

(Total for question 20 is 2 marks)

21 (a) Olivia is going to invest some money for 5 years.

She can choose from two options:

Investment A: 2.7% compound interest per annum

Investment B: 2.8% simple interest per annum

Which investment should Olivia choose
You must show your working.

(Total for question 21 is 4 marks)

22 The exchange rate in London is £1 = $1.31

The exchange rate in New York is $1 = £0.79

Bernie wants to change some pounds into dollars.

In which of these cities would Bernie get the most dollars?
You must show your working.

(Total for question 22 is 3 marks)

23 Each year Rose buys an annual ticket for his train journey to work.

The price of Rose's ticket increased by 2% in 2017 and 3% in 2018.

The ticket cost £2534 in 2018.

What was the price of the ticket in 2016?

£……

(Total for question 23 is 3 marks)

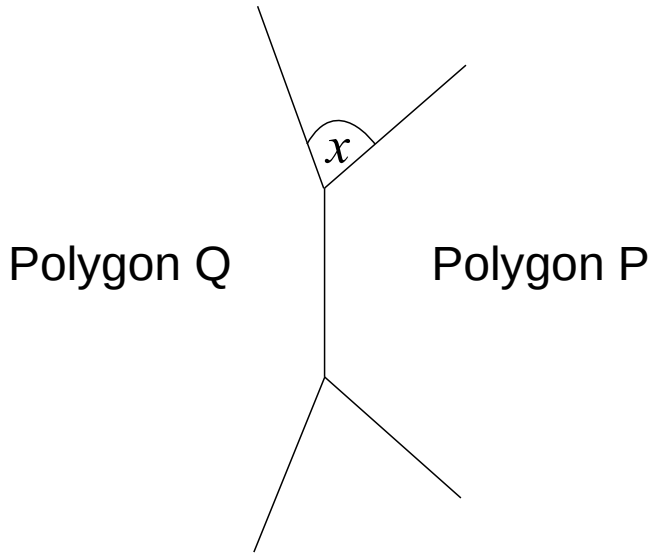
24 Last year Patrick paid £2534 for his annual train ticket.
This year he has to pay £2612 for his annual train ticket.

Work out the percentage increase in the cost of his train ticket.
Give your answer correct to 3 significant figures.

……%

(Total for question 24 is 3 marks)

25 Two regular polygons P and Q have a common side as shown in the diagram.



Polygon P has n sides. Polygon Q has twice as many sides as Polygon P.

Find the size of angle x in terms of n.

….....……

(Total for question 25 is 3 marks)

26 Liquid **A** has a density of 1.2 g/cm^3

150 cm^3 of Liquid **A** is mixed with some of Liquid **B** to make Liquid **C**.

Liquid **C** has a mass of 210 g and a density of 1.12 g/cm^3

Find the density of Liquid **B**.

…….g/cm^3

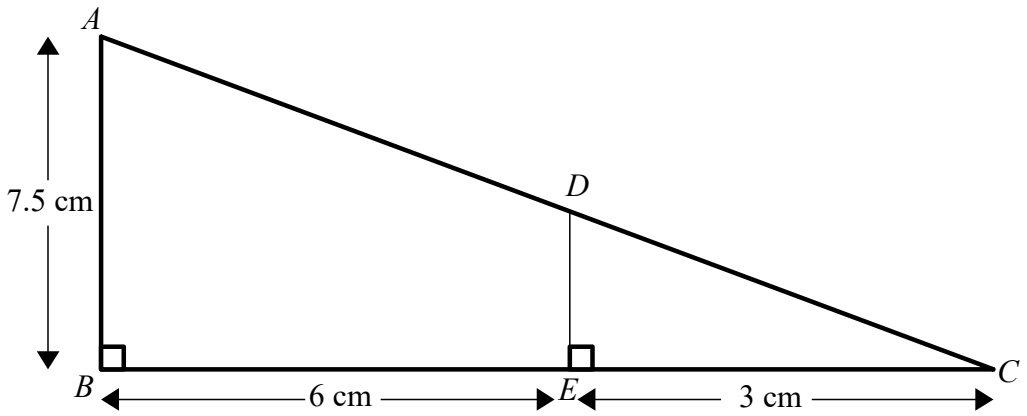
(Total for question 26 is 3 marks)

27 Solve $n^2 - 49 = 0$

….....….

(Total for question 27 is 2 marks)

28



(a) Find the length of *DE*

….....cm

(2)

(b) Find the length of *DC*
Give your answer correct to 1 decimal place.

….....cm

(3)

(Total for question 28 is 5 marks)