Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

I declare this is my own work.

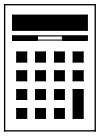
Functional Skills Level 2
MATHEMATICS

Paper 2 Calculator

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- a calculator
- mathematical instruments.



For Examiner's Use	
Question	Mark
1–5	
6	
7	
8	
9	
TOTAL	

Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.
- State the units of your answer where appropriate.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 60.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.
- If your calculator does not have a π button, take the value of π to be 3.142

Advice

In all calculations, show clearly how you work out your answer.

Do not write outside the box

Section A

Answer **all** questions in the spaces provided.

1 Here are four numbers.

11 11 13 17

Work out the median.

Circle your answer.

[1 mark]

6 11 12 13

2 Write these numbers in order, starting with the **smallest**.

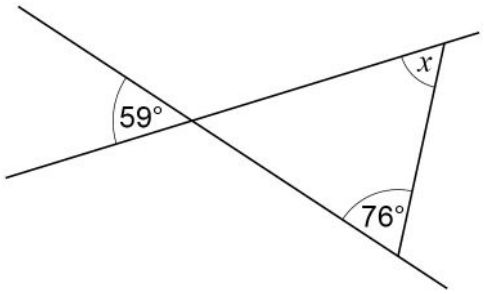
[2 marks]

–16 4 –2 –20 7 –1

Answer _____ , _____ , _____ , _____ , _____ , _____

Do not write outside the box

3 Here is a diagram made of three straight lines.



Not drawn accurately

Work out the size of angle x.

[3 marks]

$x =$ _____ °

4 Work out the percentage increase from 250 to 330

[3 marks]

Answer _____ %

Turn over ►

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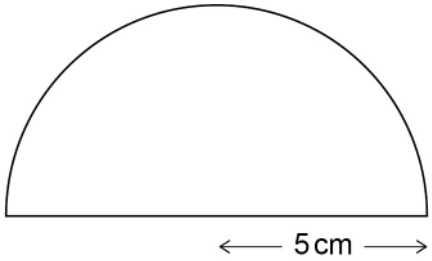
5 The radius of a semicircle is 5 cm



Not drawn accurately

Work out the **perimeter** of the semicircle.

[3 marks]

Answer _____ cm

12

Do not write outside the box

Section B

Answer **all** questions in the spaces provided.

6 **Holiday**

Ruth is on holiday.

6 (a) The hotel where Ruth is staying has

a total of 720 rooms

four different types of room.

The table shows information about the rooms.

Type of room	Fraction of total rooms
Single	$\frac{11}{40}$
Double	$\frac{7}{16}$
Family	
Luxury	$\frac{1}{5}$

Show that **more than** 8% of the rooms are Family rooms.

[3 marks]

Do not write outside the box

6 (b) During the holiday each guest visits either a castle, a zoo or a museum.

The probability that a guest, chosen at random,

visits the castle is 0.55

visits the zoo is **twice** the probability that they visit the museum.

Two guests are chosen at random.

Work out the probability that **both** guests visit the museum.

[4 marks]

Answer _____

Do not write outside the box

6 (c) Ruth saves £3000 to pay for another holiday in 4 years' time.

She sees adverts for two banks.

Bank A	**Bank B**
2.1% **compound** interest per year	1.6% **simple** interest per year

Ruth says,

> "The total interest for 4 years will be at least £65 **greater** if I invest the £3000 in Bank A."

Show that she is correct.

[5 marks]

12

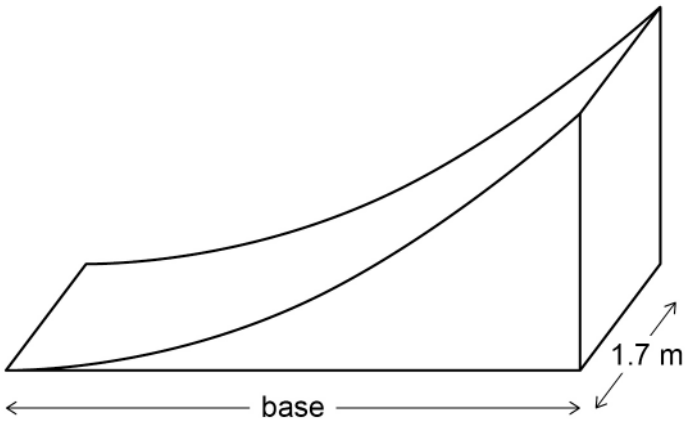
Turn over for the next question

Do not write outside the box

7 **Skateboarding**

Jess is organising a skateboarding competition.

7 (a) Here is a diagram of a skateboarding ramp.



Here is a scale drawing of the front elevation of the skateboarding ramp.

It is drawn on centimetre square paper.

Scale: 2 centimetres represents 0.3 metres

Here is the formula to calculate the volume of the ramp.

$$\text{Volume} = (\text{length of base})^3 \times 1.7 \div 12$$

The ramp is made of concrete.

The density of concrete is 2400 kilograms per cubic metre.

Work out the mass of the ramp.

[6 marks]

Answer _____ kg

Question 7 continues on the next page

Do not write outside the box

7 (b) 160 skateboarders enter the competition.

The skateboarders are adults or children.

Each skateboarder does the Yogi run **or** the Zulu run.

40% of the skateboarders do the Zulu run.

18 of the children do the Yogi run.

20 **more** adults do the Yogi run than the Zulu run.

One skateboarder is chosen at random.

Work out the probability that the skateboarder is a **child**.

You may use the table to help you.

[6 marks]

	Yogi	**Zulu**	**Total**
Child	18		
Adult			
Total			160

Answer _____

12

Do not write outside the box

8 **Walking Marathon**

Janik is walking a marathon to raise money for charity.

8 (a) The marathon is 26.2 miles long.

Janik

starts at 9.30 am

walks at a constant speed of 4 miles per hour

takes 3 breaks that are 15 minutes each.

Will Janik finish the marathon before 5 pm?

You **must** show your working.

[4 marks]

Question 8 continues on the next page

Do not write outside the box

8 (b) This year 30 000 people walked the marathon.

The table shows the time it took the walkers to complete the marathon.

Time, t (hours)	**Frequency**	**Mid-point**	
$5 < t \leq 7$	5001		
$7 < t \leq 9$	14 516		
$9 < t \leq 11$	8465		
$11 < t \leq 13$	2018		
	Total = 30 000		

Last year, the mean time was 9.2 hours.

The marathon organiser says,

"This year, the mean time was lower by **more than** half an hour."

Is the organiser correct?

You **must** show your working.

[5 marks]

Do not write outside the box

8 (c) The 30 000 people in the marathon were in the ratio

adults : children = 11 : 1

Each adult paid an entry fee of £38

Children walked for free.

The charity's target was to raise £1 million from entry fees.

Did the charity meet its target?

You **must** show your working.

[3 marks]

12

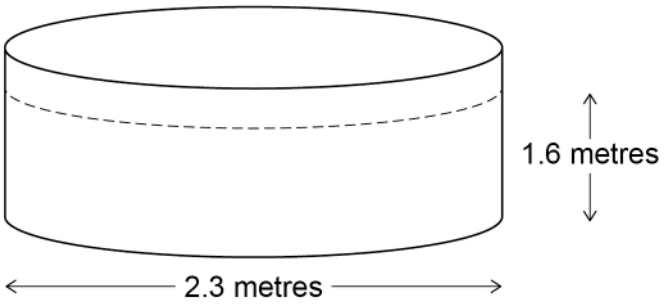
Turn over for the next question

Do not write outside the box

9 **Garden Pool**

Chen has a pool in his garden.

9 (a) Chen's pool is cylindrical.



The diameter of the pool is 2.3 metres.

Chen wants the depth of the water to be 1.6 metres.

The hosepipe fills the pool at a rate of 50 litres every 4 minutes.

1000 litres = 1 cubic metre

How many minutes will it take for the pool to go from empty to the required depth?

[6 marks]

Answer _____ minutes

Do not write outside the box

9 (b) Chen needs to buy 3 gallons of cleaning chemical to put in the pool.

He sees this advert online.

Pool cleaning chemical

£8.49 per 1-litre bottle

Buy 4 or more bottles and get $\frac{1}{6}$ off the total cost

Chen says,

"It will cost **less than** £100 to buy the bottles of chemical I need."

Is Chen correct?

You **must** show your working.

1 gallon = 4.546 litres

[6 marks]

12

END OF QUESTIONS

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