Centre Number

Candidate Number

Mathematics

Unit **M2**

(With calculator)

Foundation Tier

PRACTICE PAPER

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Write your answers in the spaces provided in the question paper.
Complete in blue or black ink only. **Do not write in pencil or with a gel pen**.
Answer **all twenty-five** questions.
Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
You can use a calculator for this paper.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
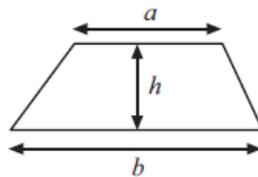Functional Elements will be assessed in this paper.
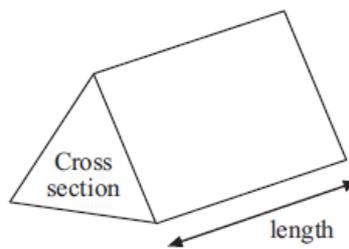You should have a ruler, compasses and protractor.
The Formula Sheet is on page 2.

Formula Sheet

Area of trapezium $= \frac{1}{2}(a + b)h$

Volume of prism = area of cross section × length
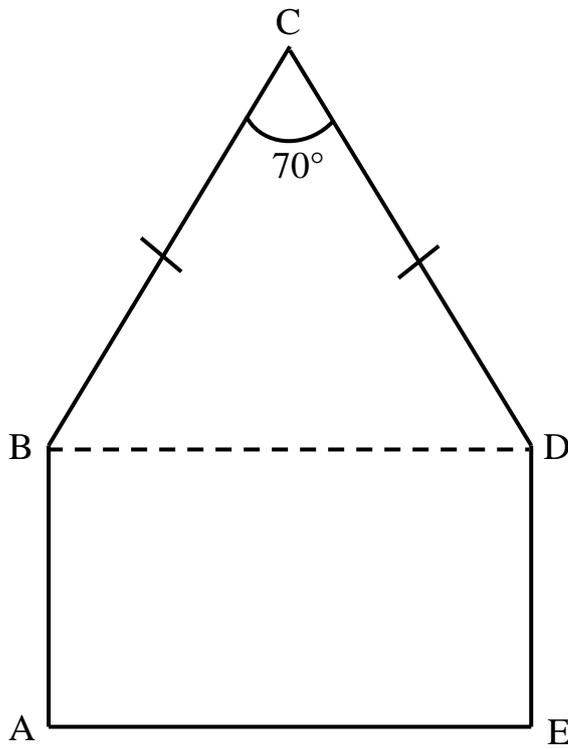
1.

Diagram not drawn accurately

BCD is an isosceles triangle.

ABDE is a rectangle.
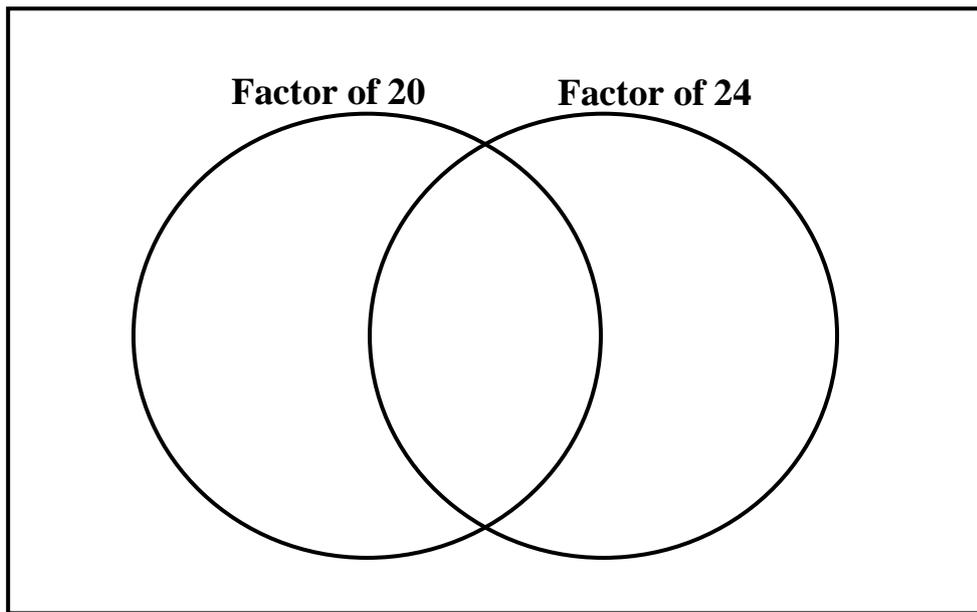
Work out the size of each angle in the shape.

    (a) Angle BAE   Answer _____° [1]

    (b) Angle CBD   Answer _____° [2]

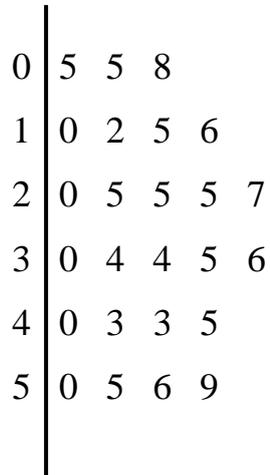   **(c)** Angle CDE   Answer _____° [1]

2.

Factor of 20   Factor of 24

Place all these numbers in the Venn Diagram.

1	2	3	4	5	6	7	8	9	10

[3]

3. The stem and leaf diagram shows the number of minutes some students
spend outdoors on average each day.

```
0 | 5  5  8
1 | 0  2  5  6
2 | 0  5  5  5  7
3 | 0  4  4  5  6
4 | 0  3  3  5
5 | 0  5  6  9
```

Key

$5 \mid 9 = 59$ minutes

(a) What is the mode?

Answer _____ minutes [1]

(b) What is the median?

Answer _____ minutes [1]

(c) Another student spends on average 1 hour each day outdoors.

    (i) Show this on the stem and leaf diagram. [1]

    (ii) What is the new median time when this student is included?

Answer _____ minutes [1]

4. Mary would like to buy a new phone.

She sees a phone online which costs £290 plus a delivery charge of £4.50

She sees the same phone in a local shop which costs £235 plus VAT at 20%.

Where is the phone cheaper for Mary to buy and by how much?

Answer_____ by £_____ [4]

5. The temperature in 6 different cities was recorded on Monday morning.

–7 °C , –4 °C , 16 °C , –8 °C , 4 °C , 11 °C

(a) What is the range of the temperatures?

Answer _____ °C [2]

(b) Work out the mean temperature.

Answer _____ °C [3]

6. A cruise ship travels at an average speed of 40 km/hr.

Work out the distance it covers in 8 hours and fifteen minutes.

Answer _____ km   [2]

7.

(a) Solve $\dfrac{x}{3} - 2 = 4$

Answer _____ [2]

(b) Factorise $8e - 12$

Answer _____ [1]

(c) Given that m = 10 and p = 3

Work out the value of T when $T = p^2 - 2m$

Answer _____ [2]

8. Decide if each of these is TRUE or FALSE.

Circle the correct answer.

(a) $10^2 = 20$ TRUE   FALSE

(b) $(3 + 5)^2 = 64$ TRUE   FALSE

(c) $(-6)^2 = -36$ TRUE   FALSE

(d) $(-2)^3 = -8$ TRUE   FALSE

(e) $7^2 \times 7^4 = 7^6$ TRUE   FALSE

(f) $(9^3)^2 = 9^5$ TRUE   FALSE

[6]

9. There are 24 classes in St. George's High School. Each class has 28 pupils.

55 pupils are absent one day.

What percentage of the pupils are absent?

Give your answer correct to one decimal place.

Answer _____ % [3]

10. A football costs £18
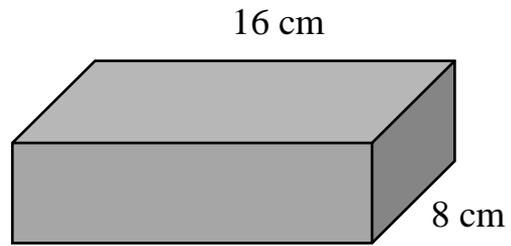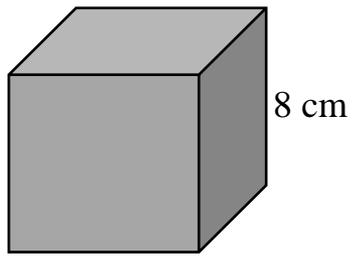
A football shirt costs £43

In a sale, footballs are reduced by 10% and football shirts are reduced by 30%.

Owen buys 2 footballs and one football shirt in the sale.

Work out the total amount that Owen pays.

Answer   £_____   [4]

11. Small boxes are made in a factory.

8 cm

16 cm

8 cm

The cube and the cuboid shown have the same volume.

Which box has the least surface area and by how much?

Answer_____ by _____cm^2 [5]

12.

There are 640 students in a school.

$\frac{2}{5}$ of the students are boys.

$\frac{1}{3}$ of the girls wear glasses.

$\frac{1}{4}$ of the boys wear glasses.

Use this information to complete the 2-way table.

	girls	boys	**Total**
glasses			
not glasses			
Total			

[4]

13. Jack has bought a plot of land

Work out the perimeter.

Answer _____ m [2]

14. Pete's garden is a rectangle measuring 12m by 10m.

15% of the total area is a vegetable patch.

$\frac{3}{8}$ of the total area is a flower bed.

The rest of the area is lawn.

Pete sprays the lawn.

The spray costs £0.35 per 3 m^2.

Work out how much it will cost to spray the lawn.

Answer £_____ [4]

15. Sarah needed some repairs done to her car. She took it to a mechanic.

Her car needed new parts at a cost of £105.

It also needed 4 new tyres at a cost of £55 each.

The mechanic charged £18 per hour for labour.
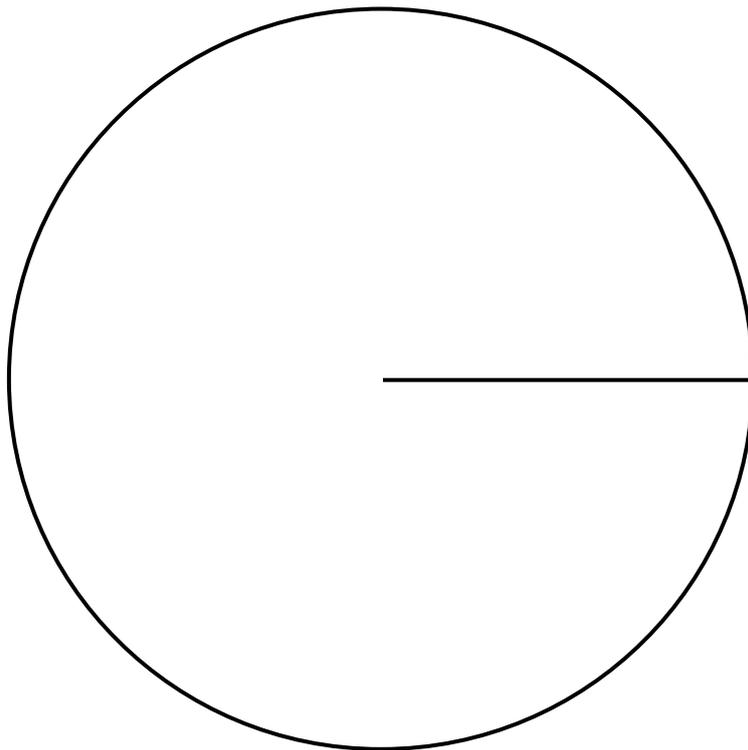
Sarah paid a total of £379

Work out how many hours the mechanic charged Sarah for labour.

Answer _____ [3]

16. Brian recorded the number of tractors sold in a year.

Make of Tractor	Number sold
New Holland	27
John Deere	40
Massey Ferguson	34
Case	14
Other	5

Draw a pie-chart to illustrate this data.

[4]

17. Max bought a calf weighing 240 kg.

After 4 months the calf weighed 330 kg.

Work out the percentage increase in the calf's weight.

Answer _____ %   [2]

18. Eve completed 5 Spanish tests and got a mean score of 73%.

She got scores of 70%, 82%, 65% and 90% in her first 4 tests.

Work out the range for **all 5** of her tests.

Answer _____ %   [3]

19. Write 600 as a product of prime factors.
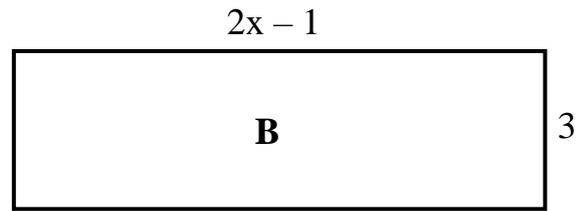
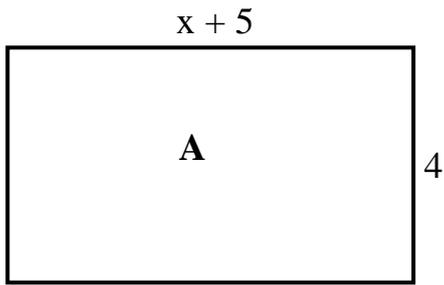Give your answer using index notation.

Answer _____ [3]

20.

(a) Work out the Highest Common Factor of 48 and 72

Answer _____ [2]

(b) Work out the Lowest Common Multiple of 35 and 40

Answer _____ [2]

21.

x + 5

A
4

2x − 1

B
3

(a) Write an expression for the area of rectangle A.

Answer _____ [1]

(b) Write an expression for the area of rectangle B.

Answer _____ [1]

(c) The area of rectangle A is equal to the area of rectangle B.

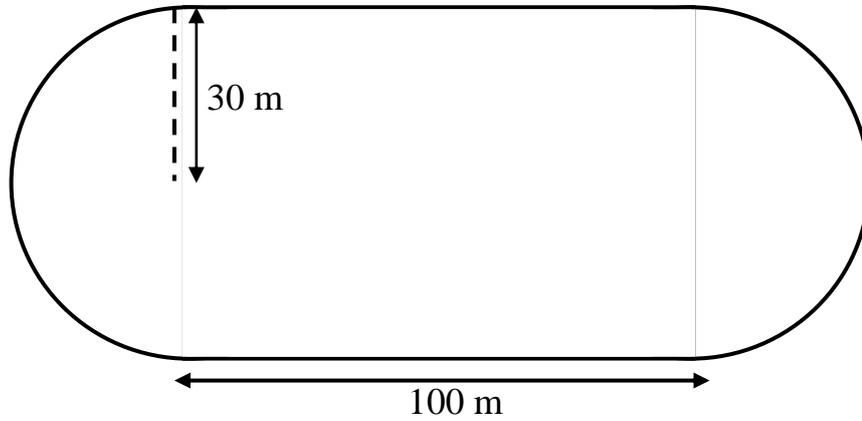Write an equation and solve it to find x.

equation _____ [1]

Answer x = _____ [3]

(d) What is the perimeter of rectangle A?

Answer _____ [2]

22. A running track has two semi-circular ends of radius 30m and two straights of length 100m.

Jenny runs around the track.

She wants to cover a distance of 5 km.

What is the least number of complete laps she must run in order to cover the 5 km?

Answer _____ [4]

23. A manager wants to know how long customers are in his shop.

He records the times on a Tuesday morning between 9 am and 10 am.

Time, t (minutes)	Frequency		
$0 < t \leq 5$	16		
$5 < t \leq 10$	13		
$10 < t \leq 20$	3		
$20 < t \leq 30$	8		

(a) Work out an estimate for the mean time spent in the shop.

Answer _____ minutes [4]

(b) Write down 2 comments on the manager's method of collecting his data.

1 _____ [1]

2 _____ [1]

24. A ship sails 30 km due North and then 45 km due West. It then sails
directly back to the starting point.

Work out the total distance travelled.

Answer _____ km   [4]

25. Mark services cars. In one week, he serviced a total of 40 cars and observed the following.

- 17 cars had a sun roof.
- 11 cars had heated seats and a sun roof.
- 5 cars had heated seats, a sun roof and cruise control.
- 9 cars had a sun roof and cruise control.
- 13 cars had heated seats and cruise control.
- 18 cars had cruise control.
- 10 cars had none of the three features.

Complete the Venn Diagram to show all this information

Heated seats   **Sun roof**

Cruise control

[4]
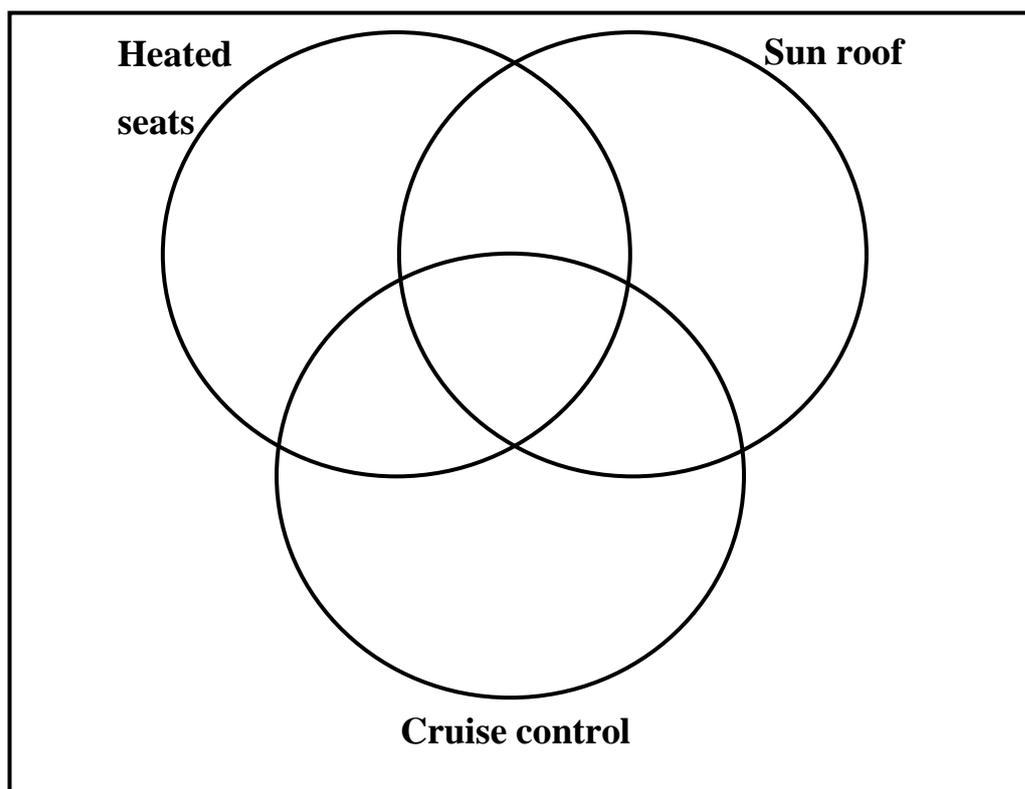
THIS IS THE END OF THE QUESTION PAPER