

First name	
Last name	
School	

CE AT 13+

CORE MATHEMATICS

ISEB

Independent Schools
Examinations Board

Specimen Calculator Paper

Date

Time allowed: 60 minutes

Instructions

Answer as many questions as you can.

You must show all your working, or you may receive no marks.

You are encouraged to cross out mistakes neatly, not erase them.

Answers given as fractions should be reduced to their lowest terms.

Answers should include correct units where necessary.

A row of dots shows where to write an answer.

Grey boxes are for your working, but extra working can be done anywhere on the paper.

If there is no row of dots, you should double underline your answer with your working in a grey box.

Write no more than 6 digits from your calculator as an answer.

ISEB makes every reasonable effort to obtain clearance to reproduce all third-party content that it uses in its assessment material. In the event that it has inadvertently used material without permission, or failed to acknowledge the copyright owner correctly, ISEB will be pleased to make appropriate amendments at the earliest possible opportunity.

All copyright acknowledgements are reproduced online in the ISEB Copyright Acknowledgement Booklet. This is produced for each series of examinations and is freely available to download at www.iseb.co.uk after the live examination series.

1. (a) Use your calculator to work out the value of

(i) $1.8 + 4.73^2$

(ii) $\frac{\sqrt{170 - 1}}{7 + 1}$

Answer: [2]

Answer: [2]

- (b) Write your answers to part (a) correct to 2 decimal places.

Answer: [1]

Answer: [1]

2. (a) Write the ratio **24 : 18** in its simplest form.

Answer: [2]

- (b) The ratio of boys to girls at a school is **7 : 3**

If there are 120 children altogether, how many girls are there?

[3]

3. Write the **next three** numbers in each sequence.

(i) **7** , **11** , **15** , **19** , , , [2]

(ii) **16** , **8** , **4** , , , [2]

4. Complete these

(i) $365.7 + \dots = 893.2$ (ii) $15.9 \times \dots = 116.07$

(iii) $\dots \div 5.2 = 9$ (iv) $24.68 - \dots = 80$

[4]

5. Write **true** or **false** under each expression below.

$$5 \times 3 = 15 + 2 = 17$$

.....

$$18 \times 4 = 9 \times 8$$

.....

$$5^2 = 5 \times 2$$

.....

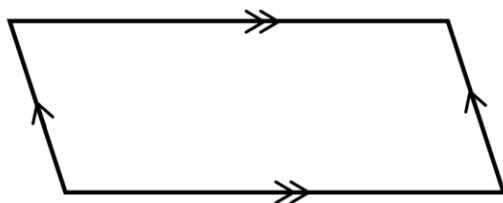
$$7 \div 28 = 28 \div 7$$

.....

[2]

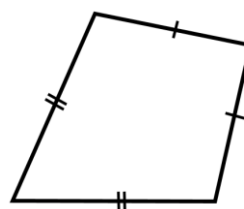
6. Write the name of each shape.

(i)



Answer:

(ii)



Answer:

[2]

7. (a) Jenson buys a car for **£127 500**
He sells it to Lewis for 12% more.
How much does Lewis pay?



[3]

- (b) In one year, Greta grows from **140 cm** to **161 cm**.
Calculate her **percentage increase** in height.

[2]

8. (a) Simplify

(i) $s + s$

=

(ii) $t \times t$

=

[2]

(iii) $8a + 3 - 2a + 5$

=

(iv) $7c^2 \times 3c$

=

[4]

(b) Multiply out the brackets and simplify

(i) $5e + 2(3e - 4)$

(ii) $10 - 3(3z - 2)$

[4]

(c) Factorise fully

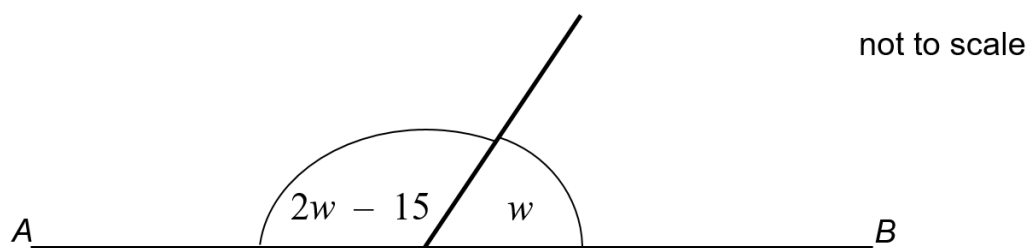
(i) $18x - 12$

(ii) $25y + 5$

[3]

9. In the diagram, AB is a straight line and the angles are marked in degrees.

Work out the size of angle w



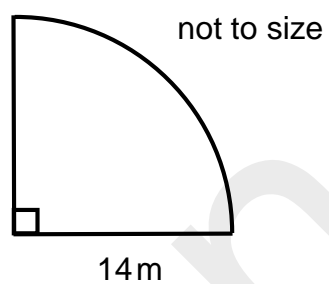
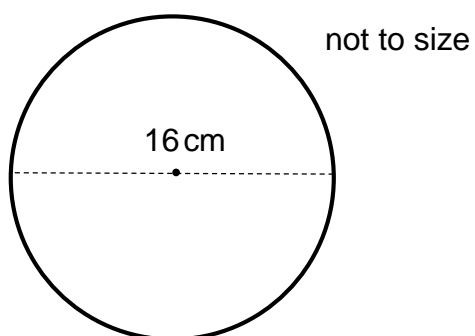
[3]

10. For this question, give answers correct to the nearest whole number.

Calculate

(i) the **circumference** of this circle.

(ii) the **area** of this quadrant.



A large empty rectangular box for writing the answer.

[6]

11. Here are Ted's scores in 12 mental tests.

8 4 7 4 6 7 8 7 9 10 4 4

(i) What was his **modal** score?

Answer: [1]

(ii) Work out his **mean** score.

[3]

(iii) Work out his **median** score.

[3]

(iv) Circle the type of average you think, in this case, is **least** appropriate?

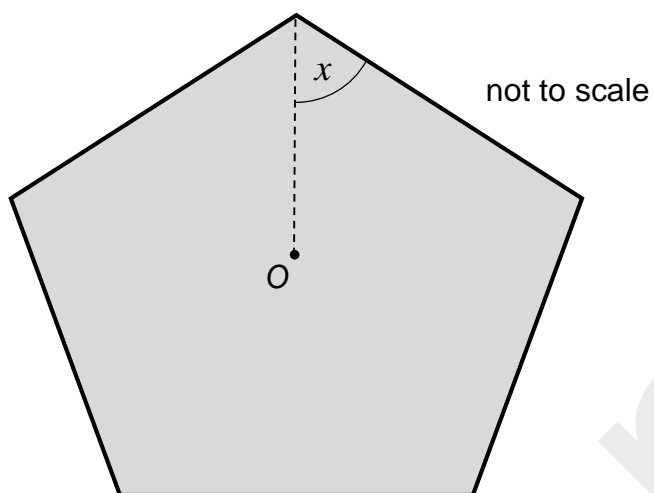
mode	mean	median
------	------	--------

Explain:

.....

[2]

12. (a) Here is a regular pentagon with centre O .

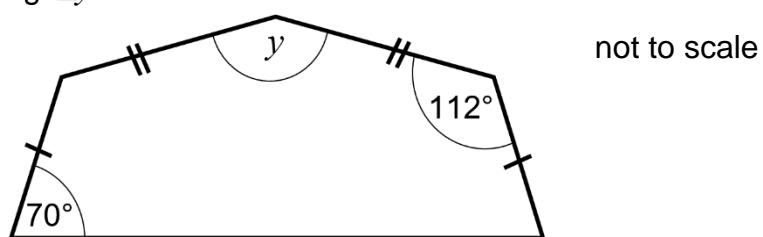


Calculate the size of angle x

[5]

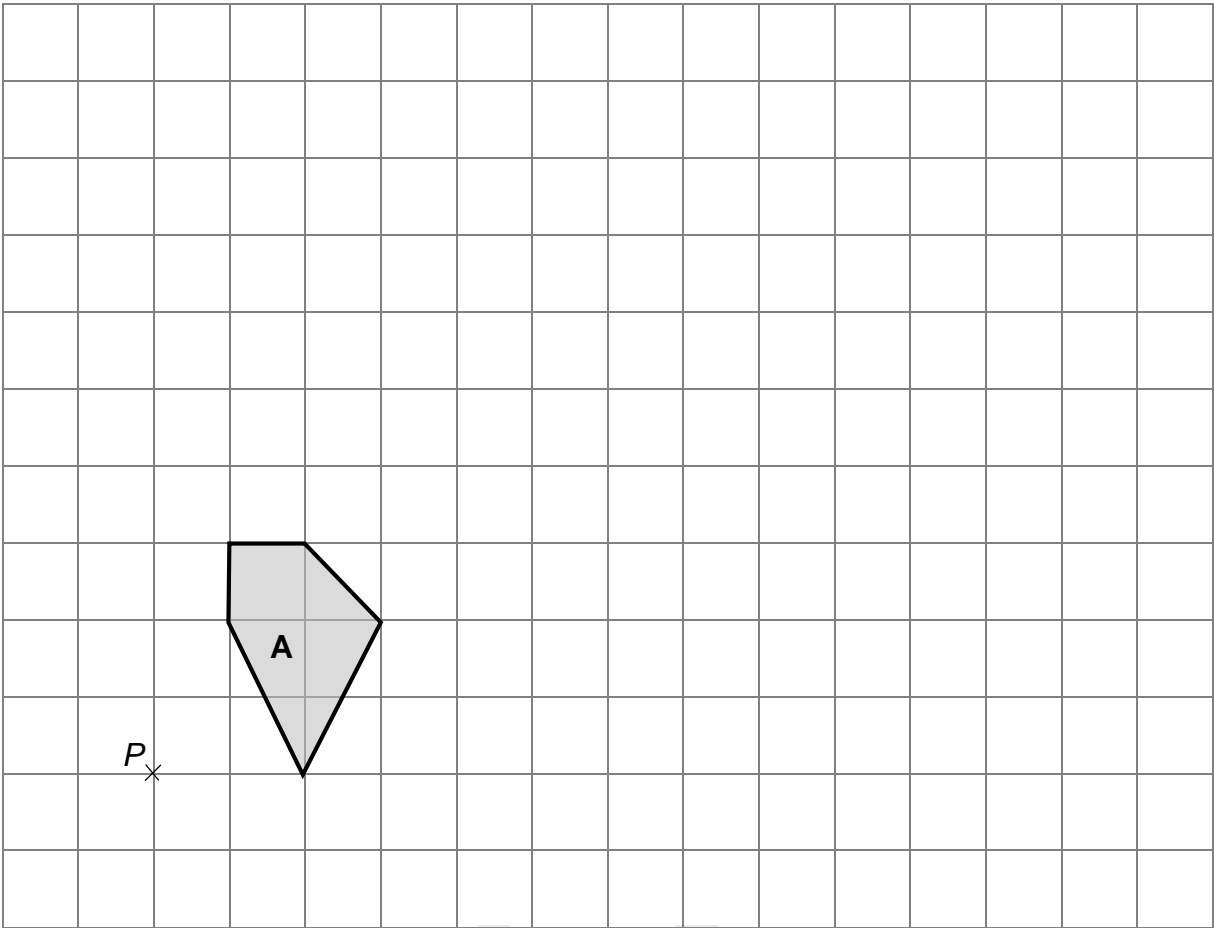
- (b) Here is another pentagon.

Calculate the size of angle y



[3]

13. Shape **A** is drawn on the centimetre grid below.



- (a) Enlarge shape **A** scale factor 3 from the centre *P*.
Label the new shape **B**.

[3]

- (b) Shape **A** has an **area of 3.5 cm^2** and a **perimeter of 7.89 cm** .

- (i) Calculate the **area** of shape **B**. (ii) Calculate the **perimeter** of shape **B**.

[4]

14. (a) Paula cycles 455 kilometres in 14 hours.

Calculate her average **speed**.

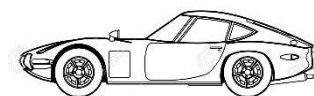


A large empty rectangular box for writing the answer to question 14(a).

[3]

- (b) Jess drives for 1 hour and 45 minutes at a speed of 28 kilometres per hour.

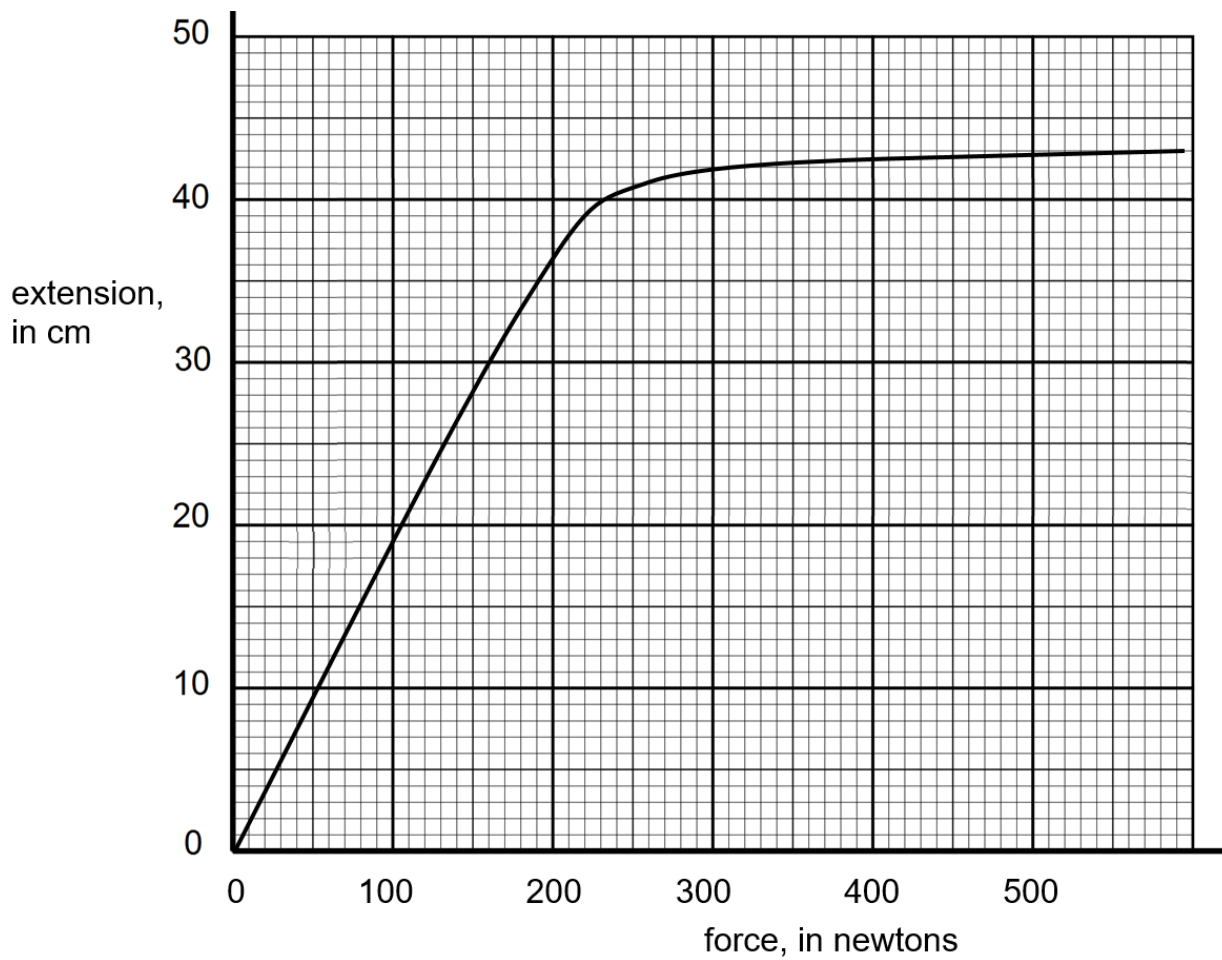
Calculate the **distance** she drives.



A large empty rectangular box for writing the answer to question 14(b).

[3]

15. This graph shows how much a rubber band stretches (extension) when a force is applied.



- (a) What is the maximum extension of the rubber band shown on the graph?

Answer: [1]

- (b) **Showing clearly where you take your readings,**

- (i) find the force needed to stretch the rubber band by 21 cm

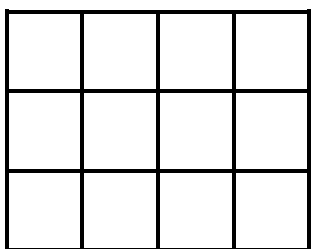
Answer: [2]

- (ii) find how far the band stretched when a force of 200 newtons was applied.

Answer: [2]

16. Here is a rectangle divided up into squares.

How many squares are here altogether?



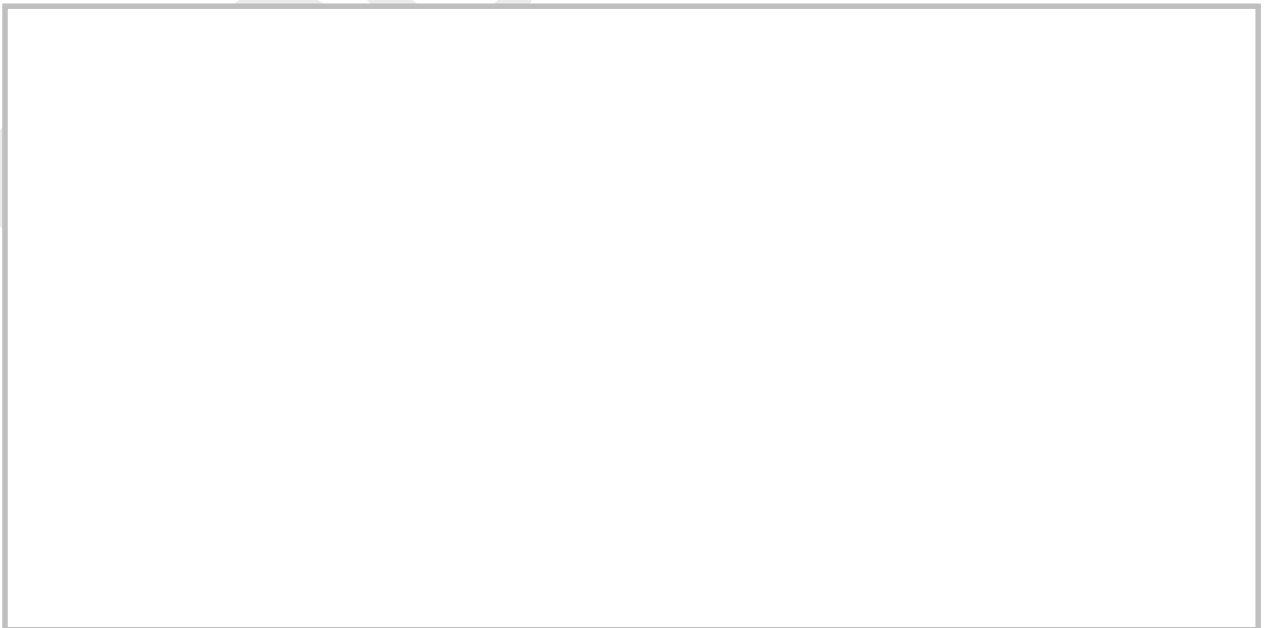
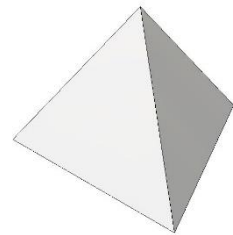
[4]

17. **Emily** has twice as many marbles as **James**.
Edward has 3 more marbles than **James**.
The three children have 23 marbles altogether.
How many marbles does James have?



[3]

18. Here is a tetrahedron.
It is a pyramid with equilateral triangular faces.
Draw as many different **nets** of a tetrahedron as you can.



[4]

19. A 10p coin has a diameter of 24.5 mm.

One mile is equal to 1.6093 km.



For charity, a straight line of 10p coins, one touching the next, **one mile long**, is laid down.

What is the total value of all the coins in the line?

A large, empty rectangular box with a thin grey border, intended for the student to write their answer to the question.

[4]

(Total marks: 100)