

THE ENGLISH SCHOOL NICOSIA
YEAR 3 MID-PROGRAMME ENTRY EXAMINATIONS 2025

MATHEMATICS



Saturday 31st MAY, 2025

Time allowed: 2 hours

Instructions to candidates

Answer all the questions in the spaces provided.

Without sufficient working, correct answers may be awarded no marks.

Information to candidates

This paper has 25 questions.

There are 22 pages in this question paper.

Full marks may be obtained for answers to all questions.

The total mark for this paper is 120.

The marks for each question are shown in round brackets, e.g. (2)

Total marks for each question are given at the end of that question, e.g. **Total: 4 marks**

Calculators are allowed.

Advice for candidates

Write your answers neatly and in good English.

Work steadily through the paper.

Do not spend too long on one question.

Show all stages in any calculations.

Materials required for the paper

Calculator, ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser. Tracing paper may be used.

1. A map has a scale of 8 cm to 1 km
a) Write this scale as a ratio in its simplest form.

..... : (2)

The distance between two lakes is 4.5 km.

- b) How far will this be on the map?

..... (2)

Total: 4 marks

-
2. a) Franco buys a house for £146500.
He sells the house for £158220.

Calculate the percentage profit Franco makes.

.....% (3)

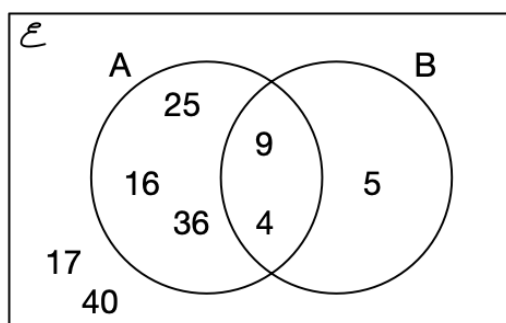
- b) Maria invests €4500 in a savings account for 3 years.
The account pays simple interest at a rate of 1.8% per year.

Work out the total amount of interest Maria gets by the end of the 3 years.

..... (2)

Total: 5 marks

3. Here is a Venn diagram.



List the members of the set

a) $A \cap B$

b) $A \cup B$

..... (1)

c) A'

..... (1)

..... (1)

One of the numbers in the diagram is chosen at random.

d) Find the probability that the number is in set B'

..... (1)

Total: 4 marks

4. Express $\frac{2x+1}{4} - \frac{x-2}{3x}$ as a single fraction in its simplest form.

Show clearly all steps in your working.

.....

Total: 3 marks

5. a) Work out $(3.4 \times 10^{12}) \div (1.2 \times 10^{-3})$.
Give your answer in standard form, correct to 3 significant figures.

..... (2)

- b) Work out the value of $(2.5 \times 10^6) + (4.8 \times 10^8)$.
Give your answer in standard form.

..... (3)

Total: 5 marks

6. Factorise fully the following expressions:

a) $18a^2bc - 30abc^2$

..... (2)

b) $x^2 - 2x - 24$

..... (2)

c) $25 - 9m^2$

..... (2)

d) $2w^2 - 26w + 72$

..... (3)

Total: 9 marks

7.

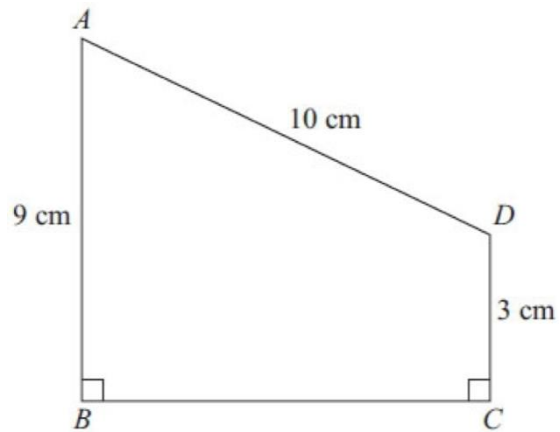


Diagram **NOT**
accurately drawn

ABCD is a trapezium.

$AD = 10 \text{ cm}$

$AB = 9 \text{ cm}$

$DC = 3 \text{ cm}$

$\text{Angle } ABC = \text{Angle } BCD = 90^\circ$

Calculate the length of AC.

Give your answer correct to 2 decimal places.

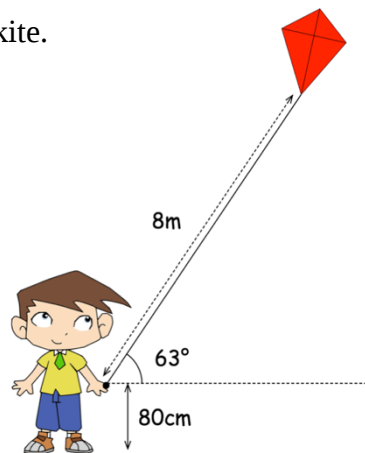
.....

Total: 5 marks

8. Expand and simplify $(x - 2)(2x - 1)^2$

.....
Total: 3 marks

9. Humphrey is flying a kite.



The handle is held 80cm above the ground.
The kite is on a string which is 8m long.
The string makes an angle of 63° with the horizontal.

Calculate the height of the bottom of the kite above the ground.
Give your answer correct to 1 decimal place.

.....
Total: 4 marks

10. Simplify the following expressions:

a) $(5np^3)^3$

..... (2)

b) $\frac{32q^9r^4}{4q^3r}$

..... (2)

Total: 4 marks

11. Correct to 2 significant figures, the area of a square is 230 cm^2 .
Calculate the lower bound for the perimeter of the square.

.....

Total: 3 marks

12. Solve the following equations:

a) $2x^2 = 72$

..... (3)

b) $6(1 - 2x) - 3(x + 1) = 0$

..... (3)

c) $\frac{1}{4}(17 - 2x) = \frac{1}{2}(4x + 3)$

..... (4)

Total: 10 marks

13. The diagram shows a quadrilateral ABCD.

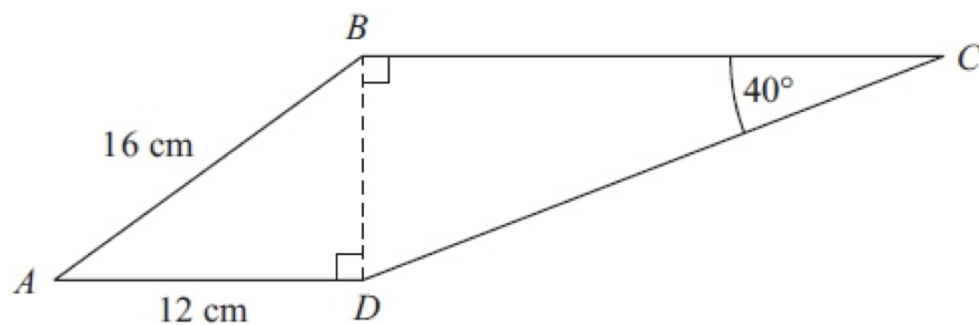


Diagram **NOT** accurately drawn.

$AB = 16 \text{ cm.}$

$AD = 12 \text{ cm.}$

$\text{Angle } BCD = 40^\circ.$

$\text{Angle } ADB = \text{Angle } CBD = 90^\circ.$

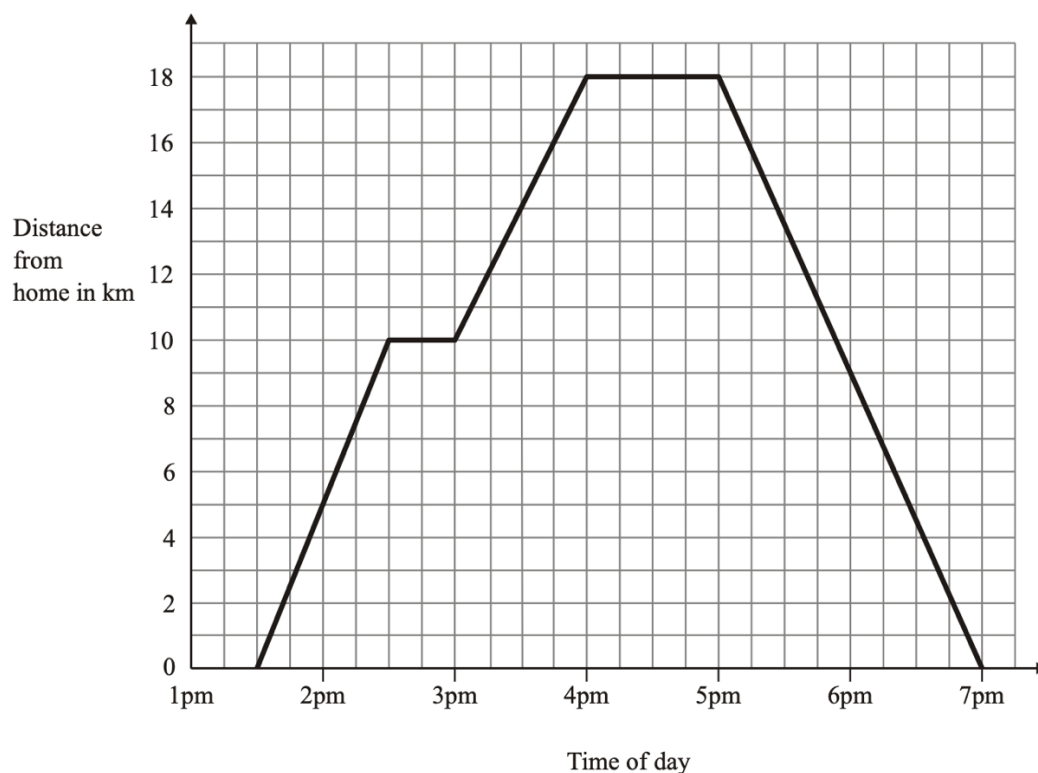
Calculate the length of CD.

Give your answer correct to 3 significant figures.

.....

Total: 5 marks

14. Pete went to visit his friend and then returned home.
The travel graph shows some information about Pete's journey.



- a) Write down the time that Pete started his journey.

..... (1)

At 2:30 pm Pete stopped for a rest.

- b) (i) Find the distance from home when he stopped for his rest.

..... km

- (ii) How many minutes was this rest?

..... minutes (2)

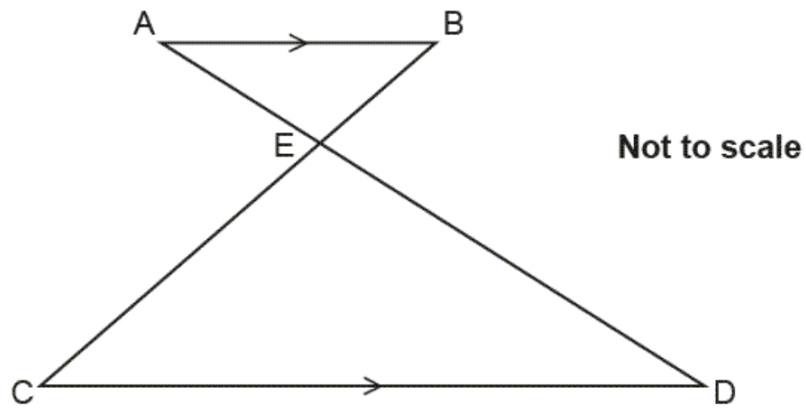
Pete stayed with his friend for one hour.
He then returned home.

- c) Work out the total distance travelled by Pete.

..... km (1)

Total: 4 marks

15. In the diagram AB is parallel to CD .
 AED and BEC are straight lines.



Prove that triangle ABE is similar to triangle CDE .

Total: 4 marks

16. Martha bought a new caravan.

The cost of the caravan is £35000 plus VAT at 20%.

Matha paid a £15000 deposit and the rest of the total cost over 48 equal monthly payments.

Work out the amount of each monthly payment.

£.....

Total: 4 marks

17. The number of days, D , to complete research is inversely proportional to the number of people, P , who are working.

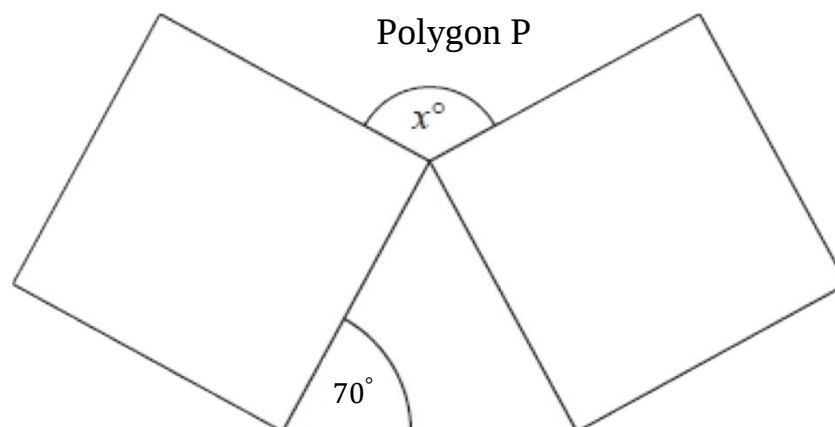
The research takes 125 days to complete if 16 people work on it.

Find how many people are needed to complete the research in 40 days.

.....

Total: 5 marks

18.



This diagram is made up of two identical squares and a triangle.

A regular polygon P is shown on the diagram.

a) Find the size of the angle marked x° .

..... (3)

b) How many sides does this polygon have?
You must show your working.

..... (2)

Total: 5 marks

- 19.** A straight line passes through the points $(0,5)$ and $(3,17)$.

Find the equation of the straight line.

.....

Total: 3 marks

- 20.** A statue and a model of the statue are mathematically similar.

The statue has a total surface area of 3600 cm^2 .

The model has a total surface area of 625 cm^2 .

The volume of the model is 750 cm^3 .

Work out the volume of the statue.

.....

Total: 3 marks

21. Lee completes a journey in three stages.

In stage 1 of his journey, he drives at an average speed of 30 km/h for 45 minutes.

a) How far does Lee travel in stage 1 of his journey?

.....km (2)

In stage 2 of his journey, Lee drives at an average speed of 50 km/h for 2 hours and 48 minutes.

Altogether, over all three stages, Lee drives 200 km in 4 hours.

b) What is his average speed, in km/h, in stage 3 of his journey?
Give your answer in 3 significant figures.

.....km/h (4)

Total: 6 marks

22. A solid is made of wood.

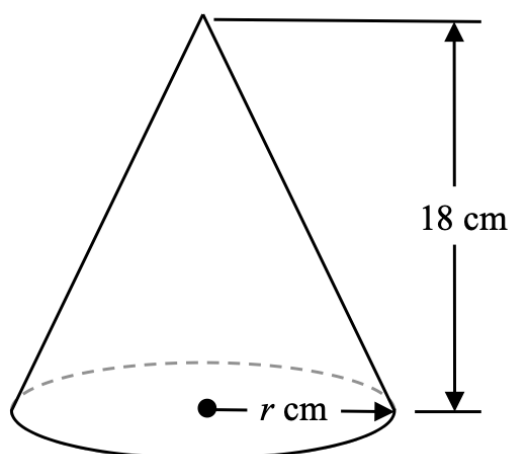


Diagram **NOT**
accurately drawn

The height of the cone is 18 cm.

The mass of the cone is 0.98 kg.

The wood has a density of 0.43 g/cm^3 .

Find the radius of the cone.

Give your answer correct to 2 significant figures.

.....

Total: 5 marks

23. Becky has a biased 6-sided dice.

The table gives information about the probability that, when the dice is thrown, it will land on each number.

Number	1	2	3	4	5	6
Probability	$2x$	0.18	$2x$	$3x$	0.26	x

Becky is going to throw the dice 200 times.

Work out an estimate for the number of times that the dice will land on an even number.

.....

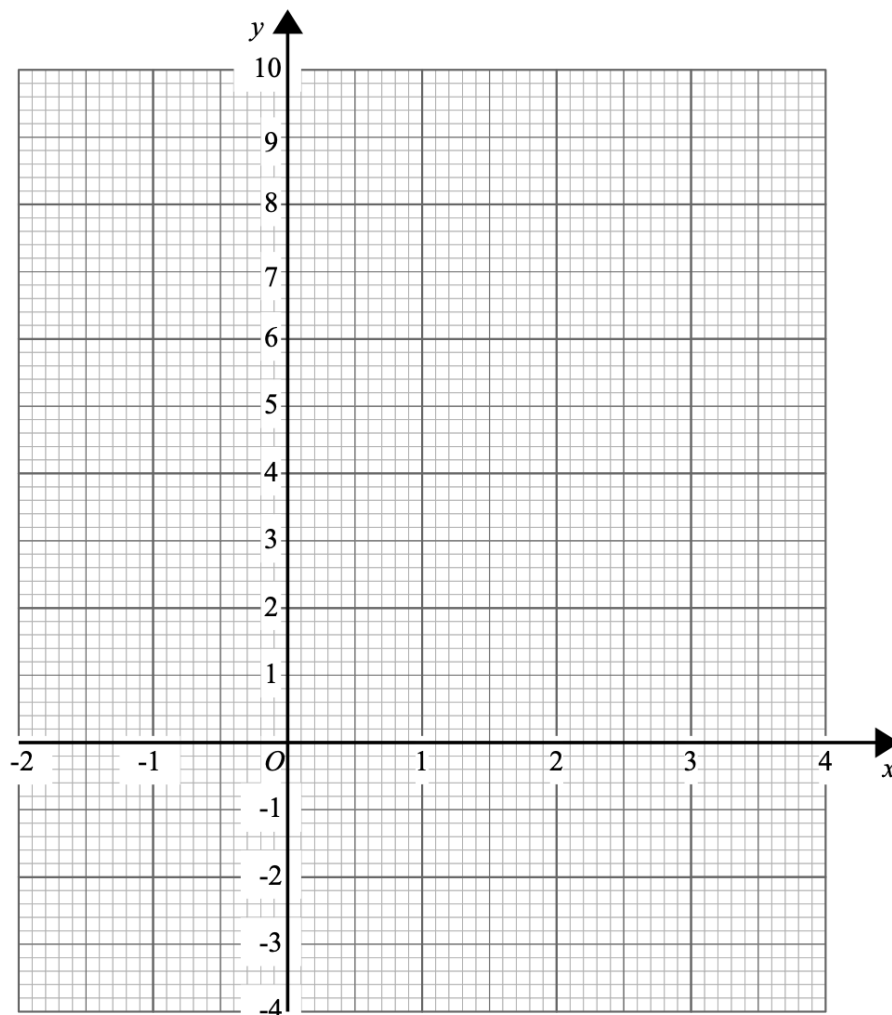
Total: 4 marks

24. Complete the table of values for $y = x^2 - 3x - 1$

x	-2	-1	0	1	2	3	4
y							

(2)

a) On the grid draw the graph of $y = x^2 - 3x - 1$ for values of x from -2 to 4



(2)

b) Use the graph to find an estimate for the coordinates of the minimum point on the graph $y = x^2 - 3x - 1$.

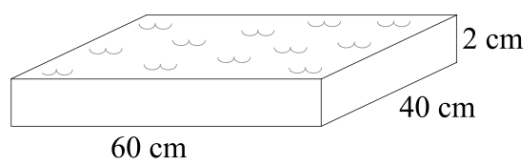
..... (2)

c) Find the solutions to the equation $y = x^2 - 3x - 1$

..... (2)

Total: 8 marks

25.



Diagrams **NOT**
accurately drawn

A rectangular tray has length 60 cm, width 40 cm and depth 2 cm.

It is full of water.

The water is poured into an empty cylinder of diameter 8 cm.

Calculate the depth, in cm, of water in the cylinder.

Give your answer correct to 3 significant figures.

..... cm

Total: 5 marks

TOTAL FOR PAPER IS 120 MARKS

END OF PAPER

EXTRA PAPER

EXTRA PAPER