

Entry Exam

Mathematics

2SLO

11 04 2022

Candidate's Name

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- Do not open this examination paper until instructed to do so.
- Calculator is **NOT allowed** for this paper.
- Write your workings, explanations and answers in the places provided only.
- Give all answers exactly.
- Additional draft space is provided at the end of the paper.
- Time **70 minutes**

Question	1	2	3	4	5	Total
Marks						
Max Marks	7	4	4	6	4	25

Q1

Solve this inequality.

$$(x-3)^2 - \frac{x^2-3}{3} - 9 < \frac{(x-2)(x+2)}{6} + \frac{1}{2}x^2$$

a) Does the number 'm', defined below, satisfy the above inequality?

$$m = \frac{\sqrt{3^2 + 4^2} + (\frac{1}{5})^{-2}}{(2 - (-3)^2) \cdot \sqrt{\frac{1}{7^2}}}$$

b) Evaluate.

$$n = \sqrt{13^2 \cdot 6 + 13^2 \cdot 5 + 13^2 \cdot 12 + 13^2 \cdot 2}$$

Q2

Paul has many books on his shelf. One day he concluded that he had too many of them and sold 25% of the books. He then kept on buying new books and, soon after the reduction, the number increased by 14%. At the end he had 684 books.

- a. How many books did Paul have initially?
- b. Which number of books (initial or final) was smaller and by how many percent?

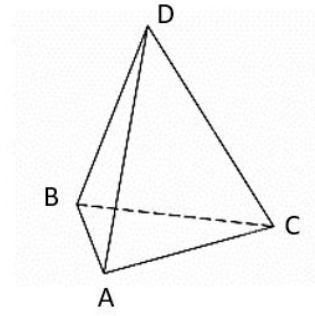
Q3

Six years ago, Tom's father was three times as old as Tom was then. In 11 years, the sum of their ages will be 100. How old is Tom and his father now?

Q4

In the right triangular pyramid shown, $AB = BC = CA = 2\sqrt{3}$ cm and $AD = BD = CD = 6$ cm

- a) Calculate the total surface area of the prism.
- b) Calculate the volume of the prism.



Q5

If the length of each side of a rectangle is increased by 2 cm then its area would increase by 18 cm^2 .

By how many cm^2 would the area of this original rectangle change if each side were decreased by 1 cm?