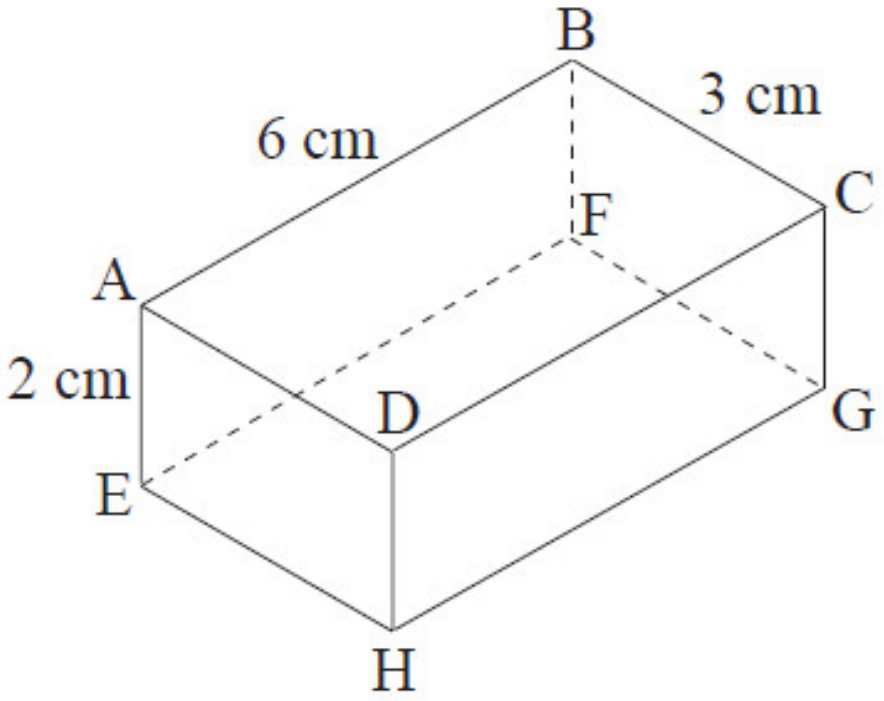
Exercise 1 Calc. : ✗

The vectors $\vec{u}$ and $\vec{v}$ are given, with $\vec{u} = \begin{pmatrix} -4 \\ 2 \end{pmatrix}$ and $\vec{v} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$.	
1. Calculate $\vec{u} \cdot \vec{v}$.	3 marks
2. Determine whether the vectors $\vec{u}$ and $\vec{v}$ are parallel or not.	3 marks

Exercise 2 Calc. : ✗

1. Evaluate $2 \cdot \log_4(3) + \log_4(4) - \log_4(36)$	3 marks
2. Solve $\log(2x) - \log(6 - x) = 0$	3 marks

Exercise 3 Calc. : ✗



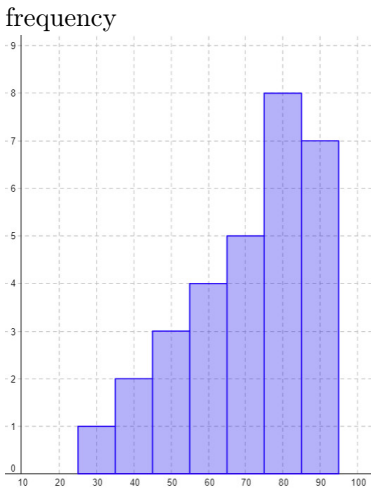
The diagram represents a rectangular box. Given that AB = 6 cm, BC = 3 cm and AE = 2 cm, calculate the length of the diagonal AG.	7 marks

Exercise 4 Calc. : ✗

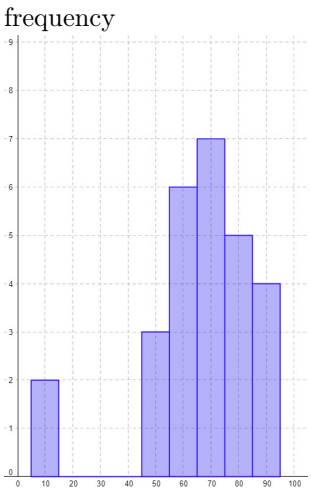
In a certain country 20% of the population suffers from hay fever. People can undergo a skin prick test to find out whether they have hay fever. The skin prick test has a sensitivity of 75%. This means that 75% of the people with hay fever, test positive on the skin prick test. The skin prick test has a specificity of 90%. This means that 90% of the people who don't have hay fever, test negative on the skin prick test. A person chosen at random undergoes the skin prick test. What is the probability that this person has a positive test result?	4 marks

Exercise 5 Calc. : ✗

The exam grades (as a percentage) for maths and chemistry are given in the histograms below.



Exam grades maths



Exam grades chemistry

1. State whether the average maths exam grade is greater than/smaller than/equal to the median. Explain your answer without making any calculations. — 3 marks

2. The chemistry teacher and the math teacher want to compare their grades. Which measure of central tendency do you recommend for such a comparison: the mean or the median? Explain your answer. — 3 marks

3. The average math exam grade is 71 percent and the standard deviation is 17 percent. When the results are published on the report card, the math teacher must rescale the results to a scale of 10. What will be the mean and standard deviation of the maths grade on the report card? — 3 marks

4. The average math exam grade is 71 percent and the standard deviation is 17 percent. The math teacher decides to give each student an extra 5 percent. What will be the new mean and standard deviation? — 3 marks