Exercise 1 Calc. : ✓

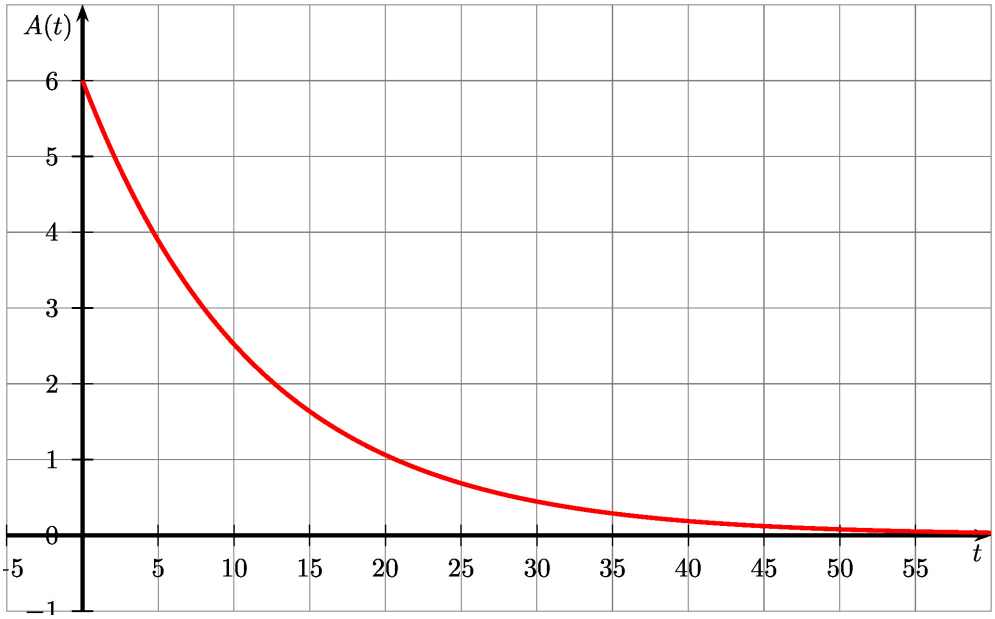
Medical doctors often use radioactive iodine a tracer when diagnosing some thyroid gland disorders. The iodine decays in such a way after t days, the amount left is given by:

$$A(t) = 6 \cdot 0.917^t$$

where $A(t)$ is measured in grams.

1. **Calculate** the initial amount of iodine. — 1 mark
2. **Calculate** how much iodine remains after 15 days (**round** to two decimals) — 1 mark
3. **Calculate** the date when the amount of iodine drops below 1 gram (**round** to 1 day). — 2 marks

The diagram below shows the elimination of iodine from the body:



4. Based on this graph and the expression of the function, **explain** why the iodine is not completely removed from the body. — 1 mark

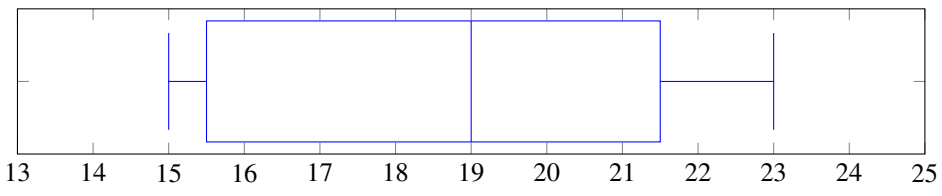
Exercise 2 Calc. : ✓

An athlete, specialist in the shot put, participates in the eliminatory events with a view to his possible selection for the European championships. He is required to make 12 throws, the lengths of which, in meters, are given below:

18.6, 19.4, 20.8, 15.9, 17.7, 21.1, 19.8, 15.2, 17.2, 16.5, 20.5, 21.9

1. **Find** the mean of the series of throws. **Interpret** this result with a sentence. — 1 mark
2. **Find** the median of the series of throws. **Interpret** this result with a sentence. — 1 mark
3. **Determine** the quartiles of the series of throws and **draw** the box-plot. — 2 marks

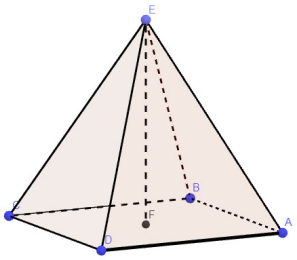
Another athlete has also made 12 throws, and the box and whiskers plot of those throws, in meters, are given below:



4. **Compare** the series of throws of those 2 athletes. — 2 marks

Exercise 3 Calc. : ✓

The Louvre pyramid in Paris is a regular square-based pyramid of 21.6 m height. The square base measures 35 m each side. The triangular faces are made of glass.

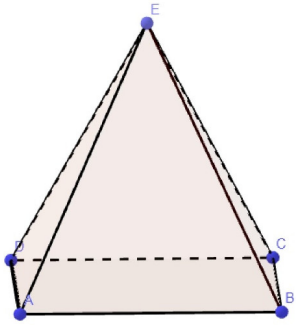


The formula for the volume of a pyramid is:

$$\frac{1}{3} \times \text{area of base} \times \text{height}$$

1. **Calculate** the volume of the space enclosed in the pyramid. — 1.5 marks

H is the midpoint of [AB].



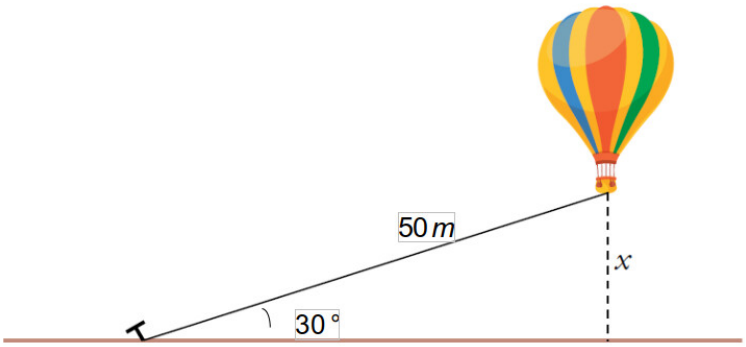
2. In the diagram opposite, **represent** [EH], the height of the triangle ABE from E (by coding the figure), then **show** that EH = 27.8 m, rounded to tenths of a meter. — 1 mark

3. **Calculate** the area of the glass. — 1.5 marks

4. The Louvre pyramid is a reduction of the Cheops pyramid in 1,5 point Egypt. The base of the Cheops pyramid has a side that measures approximately 230.5 m. **Show** that the height of the Cheops pyramid is approximately 142.3 m. — 1.5 marks

Exercise 4 Calc. : ✓

The balloon in the image is tied to the ground with a 50 meter rope.



Calculate the distance between the ground and the bottom of the balloon basket. — 3.5 marks