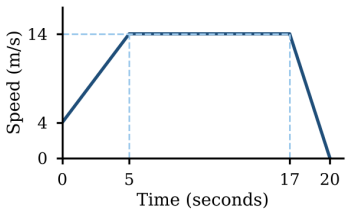
Day 122	S Tier 10-a-day

1 A flight leaves London at 10:55 (London time).
It takes 5 hours 10 minutes.
When it is 12:00 in London it is 19:00 in Singapore.
At what time, in Singapore time, does the flight land? Say if it is on a different day.

2 FitLife has a joining fee of £1 plus £6 per month.
GymNow has a joining fee of £19 plus £1.50 per month.
(a) Work out the number of months for which the two costs are the same.
(b) Which is cheaper for 10 months, and by how much?

3 The graph shows the speed of a cyclist during 20 seconds.
(a) Work out the acceleration during the first 5 seconds.
(b) Work out the average speed over the whole 20 seconds.



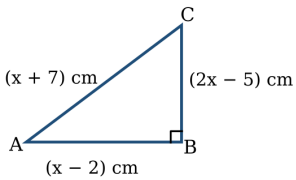
4 Given that $\frac{25^5 \times 5^3}{25^3} = 5^n$,
find the value of n.

5 The mean of 11 numbers is 5.
One number is removed and the mean of the remaining 10 numbers is 1.8.
Work out the number that was removed.

Day 122	S Tier 10-a-day

6 Simplify fully $\frac{x^2 - 9}{x^2 - 2x - 15}$

7 ABC is a right-angled triangle with sides $(x - 2)$ cm, $(2x - 5)$ cm and $(x + 7)$ cm. The longest side is $(x + 7)$ cm.
(a) Find the value of x.
(b) Work out the area of the triangle.
The diagram is not drawn accurately.



8 A sector of a circle has radius 12 cm and angle 180°.
The sector is made into a cone by joining the two straight edges together.
(a) Work out the radius of the base of the cone.
(b) Work out the exact volume of the cone.
Give your answer in terms of π, as a surd if necessary.

9 Convert the recurring decimal $0.2\dot{4}\dot{0}$ to a fraction.
Give your fraction in its simplest form.

10 Prove that $n(n + 1)(n + 2)(n + 3) + 1$ is a square number for all positive integer values of n.