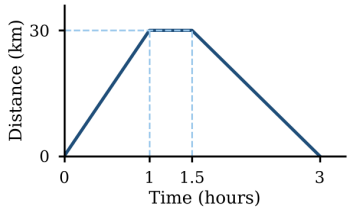
Day 47 **S Tier 10-a-day**

1 The graph shows Sofia's cycle ride to a café and back.
(a) Work out Sofia's speed on the way back.
(b) Work out Sofia's average speed for the whole ride, including the stop.



2 Work out the value of $x^2 - 3yz$
when $x = 1$, $y = -3$ and $z = 4$.

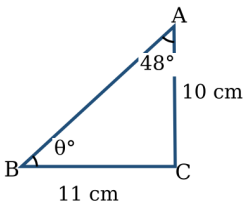
3 The mean of 5 numbers is 13.
One number is removed and the mean of the remaining 4 numbers is 5.25.
Work out the number that was removed.

4 Here are six numbers.

$\sqrt{3} \times \sqrt{5}$, $\sqrt{\frac{9}{16}}$, $(1 + \sqrt{2})^2$, $3 + \sqrt{12}$, $\frac{\sqrt{18}}{\sqrt{2}}$, $(2 + \sqrt{5})(2 - \sqrt{5})$

Write down the irrational numbers.

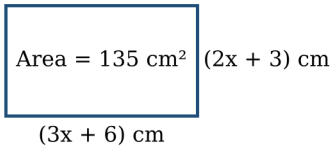
5 The diagram shows triangle ABC. (Calculator)
Angle BAC = 48° and angle ABC is acute.
Work out the size of angle ABC, marked θ.
Give your answer correct to 1 decimal place.
The diagram is not drawn accurately.



Day 47 **S Tier 10-a-day**

6 The line L has equation $8x + 15y = 120$.
L crosses the x-axis at the point A and the y-axis at the point B.
(a) Find the coordinates of A and B.
(b) Work out the length of AB.

7 The diagram shows a rectangle of length $(3x + 6)$ cm, width $(2x + 3)$ cm and area 135 cm^2.
(a) Show that $6x^2 + 21x - 117 = 0$.
(b) Work out the length of the diagonal of the rectangle. Give your answer correct to 3 significant figures.



8 Simplify $\frac{1}{3+\sqrt{5}} + \frac{2}{3-\sqrt{5}}$
Give your answer with a rational denominator.

9 The table gives information about the ages of some people.
Work out an estimate for the mean age.
Give your answer correct to 1 decimal place.
(Calculator)

Age, a (years)	Frequency density
$0 < a \leq 10$	0.7
$10 < a \leq 20$	1.7
$20 < a \leq 40$	1.4
$40 < a \leq 60$	0.8

10 $f(x) = 4x + 3$ and $g(x) = x^2 + 2$
Solve $fg(x) = gf(x)$