

Transition work for Further Maths Students

Please try the question yourself first before clicking the link for the full worked solution

Q1 challenge level 1

Tummy Ache

Timmy, Tammy and Tommy all set off separately to visit their doctor, leaving their homes at exactly the same time.

Timmy cycles the 8 km at an average speed of 20 km/hr.

Tammy walks the 1.2 km at an average speed of 4 km/hr.

Tommy drives the 16.5 km at an average speed of 45 km/hr.

In what order do they arrive at the doctor's surgery?

<https://nrich.maths.org/2408/solution>

Q2 challenge level 2

Crude Calculation

When Louise had her first car, 50 litres of petrol cost £40. When she filled up the other day, she noticed that 40 litres of petrol cost £50.

By what percentage has the cost of petrol increased over this time?

<https://nrich.maths.org/12536/solution>

Q3 challenge level 2

The Power of x

Find the value of x , where

$$2^{x+1} - 2^{x-1} = 12$$

<https://nrich.maths.org/13228/solution>

Q4 challenge level 2

Diagonal Area

A square has area 72 cm². Find the length of its diagonal.

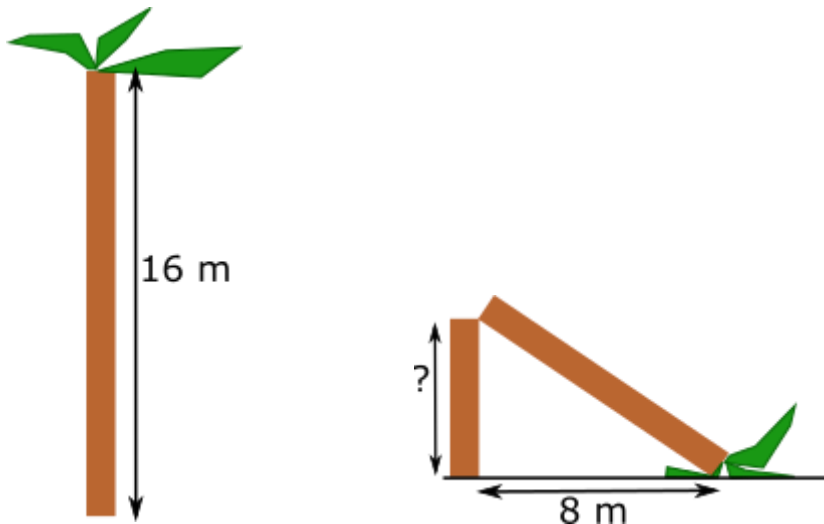
<https://nrich.maths.org/13224/solution>

Q5 challenge level 2

Snapped Palm Tree

A palm tree that was 16 metres tall has snapped in a storm, so that the top of the palm tree has landed 8 metres from the base.

What is the height of the piece of the trunk that is still standing (vertically)?



<https://nrich.maths.org/12784/solution>

Q6 challenge level 2

Turnips

Baldrick can afford to buy either 6 parsnips and 7 turnips, or 8 parsnips and 4 turnips.

Both options leave him with no change.

If he only bought turnips, how many could he afford?

<https://nrich.maths.org/2051/solution>

Q7 challenge level 2

Acceptance Rate

The mean number of students accepted by a school in the four years 2007 to 2010 was 325.

The mean number of students accepted by the school in the five years 2007 to 2011 was 4% higher.

How many students did this school accept in 2011?

<https://nrich.maths.org/12588/solution>

Q8 challenge level 2

Odd Dice

Three fair, six-sided dice are numbered as follows:

A: 1, 1, 1, 2, 2, 2

B: 3, 3, 4, 4, 5, 5

C: 6, 7, 7, 8, 8, 8

The three dice are rolled once. What is the probability that the sum obtained is an odd number?

<https://nrich.maths.org/13666/solution>

Q9 challenge level 2

One or Both

A maths exam contained only two questions. Every pupil correctly answered at least one of the questions.

Question one was correctly answered by 70% of the pupils. Question two was correctly answered by 60% of them.

Nine pupils correctly answered both questions.

How many pupils took the exam?

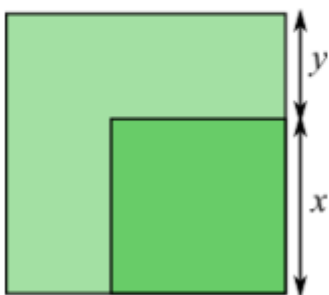
<https://nrich.maths.org/794/solution>

Q10 challenge level 3

A Third of the Area

In this diagram, the area of the small square is $\frac{1}{3}$ of the area of the large square.

Find $\frac{x}{y}$.



<https://nrich.maths.org/13546/solution>