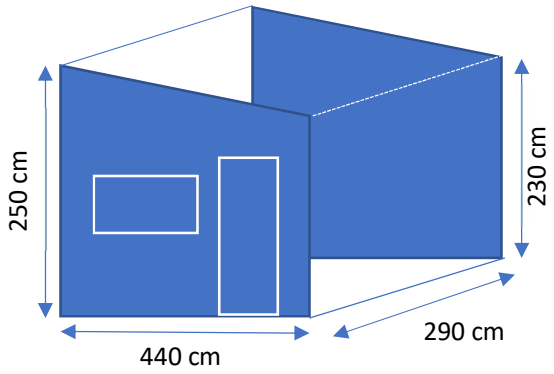
Mathematics in Action – The Garden Shed

Over the Summer I decided to replace my garden shed. I thought that it might be interesting to show some of the mathematics that I used in doing so.

The shed was a trapezoidal prism, not a phrase you hear every day.

The dimensions are given below:



Year 7 Mathematics

When costing my shed I had to work out the amount of green paint that I would need. What would you **estimate** the cost of the paint to be ?

I needed three coats and the tin said that 1 litre covered 6 m^2.

The cost for 5 litres was £ 14.39.

Year 8 Mathematics

To give a replaceable floor I used square interlocking floor mats.

They cost £20 for a pack of 6 maths and the sides were of length 60 cm.

How much would it cost for the whole floor to be covered ? Remember that the mats interlock and cutting them would lose this property.

Year 9 Mathematics

Probably the most quoted use of Pythagoras is to gain a right-angle, ancient Egyptians are recorded as using this for the pyramids, for example. How far did my corners need to be apart to ensure a beautiful right-angled base ?

Year 10 Mathematics

One of the problems with my old shed was the lack of light so in the new one I wanted bigger windows. It also meant that I could reuse some glass that was left after a house windows upgrade. The two new windows were 140 cm by 80 cm and 75 cm by 45 cm. What is the unitary ratio between the area of the wooden sides and the area of glass used ?

Year 11 Mathematics

I decided to use EPDM rubber sheeting for the roof as it meant that I could have a flatter roof which would have no joins, important when trying to keep the water out. This is because if I had used roof felt (shown on the right) it would have to have a minimum angle of 20^{o}. How big was the slant for my roof ?

Year 12 Mathematics

Just to show that everything did not go perfectly, when screwing down the roof I fell off. I did not have any injuries, apart from my pride, but what was the speed that I would have hit the ground ?

I fell off the highest part of the shed and luckily bounced. The rumour spread by Dr Stoker, of the maths department, that I fell on my head and hence this was the reason that I escaped injury is not true.

Year 13 Mathematics

The reason that I fell off was that I had misjudged how far over the edge of the wall a board that I was sitting on was. The board was about 50 cm over the edge at the time. Using moments, calculate the minimum distance over the edge I would have to have been seating to cause the board to tip ?

The board was of length 244 cm, weighed 12kg and I weighed 84 kg.

I would like to say that I worked out none of the above two answers when I was falling. What would have been the assumption that I would make in the above calculation ?

Solutions

Keep checking back…some solutions will appear after Christmas