Mathematics Problems for week forty-eight www.u3a.org.uk posed by Gordon Burgin, Andrew Holt, Rod Marshall, Ian Stewart and David Martin

Week Forty-eight

Question 1.

Josh and Ravinder both collect slide rules. Josh has three times as many slide rules in his collection as Ravinder. If Josh gave three of his collection to Ravinder then his collection would be twice the size of Ravinder's. How many slide rules does each have?

Question 2.

Two large and 1 small pump can fill a swimming pool in 4 hours. One large and 3 small pumps can also fill the same swimming pool in 4 hours. How many hours will it take 4 large and 4 small pumps to fill the swimming pool?

Question 3.

Find all sides of a right-angled triangle whose perimeter is 60 cm and whose area is 150 cm^2.

Question 4.

You had three identical crystals that will shatter if dropped from a certain height or above onto a pavement. The crystals will be undamaged if dropped from a lower height.

One crystal has already been dropped from the 11^{th} floor of a building and it shattered on hitting the pavement below. You now want to establish the lowest floor from which a crystal will shatter if it is dropped. How do you keep the maximum number of drops you may have to make to a minimum?