

Weekly Quiz

Questions:

Week 13– Solutions to the maths office by Thursday 25th November

1. In California, a bottle of orange juice costs \$3, but when you return the bottle you get \$2 back. What is the largest number of bottles of juice you can buy if you start with \$10?
2. Roland, Spike and Percival, three well known hedgehogs, are having a collecting leaves race. Roland collects twice as many as Percival who collects one and a half times as many as Spike (she is moulting so has fewer prickles to stick the leaves onto). Between them they collect 198 leaves. How many did Spike manage to collect?
3. $11 \times 11 = 121$, $111 \times 111 = 12321$, $1111 \times 1111 = 1234321$ etc. etc. What is the value of $1111111111 \times 1111111111$?
4. Does 3 divide exactly into 3^{2004} ? Does 6 divide exactly into 3^{2004} ? Which of 3, 6 and 12 divide exactly into 6^{2004} ?
5. Starting at point A on a circle with centre O, I first move anticlockwise one quarter of the way round the circle to a point W, hop across to X – the opposite end of the diameter through W, then travel one fifth of the way round to circle clockwise to the point Y before hopping across to Z, the point at the opposite end of the diameter through Y. How big is the angle AOZ?

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Solutions:

Week 13 – 25/11/04

1. After one bottle \$9 left, after 7 bottles \$3 left after 8 bottles \$2 left.
So 8 bottles maximum.
2. $R = 2P$ and $P = 1.5S$ therefore $198 = S + 1.5S + 3S$. $S = 36$ leaves
3. $1, 111, 111, 111 \times 1, 111, 111, 111 = 1, 234, 567, 900, 987, 654, 321$
4. 3^{2004} is divisible by 3 but not by 6
 6^{2004} is divisible by 3 and 6 and 12 (36^{1002})
5. Angle $AOZ = 18^\circ$

