

It further follows, since $\text{var}(Y) = \sum_{i=1}^n (p(y_i)y_i^2) - \{E(Y)\}^2$, that $\text{var}(Y) \approx 100$, i.e. the standard deviation is about 10.

In summary, the expected one-dart average is 13.233. So the expected three-dart average, assuming that all three darts score and are considered to hit any parts of the board with equal chance, is 39.70 (2 d.p.). So, if you are having any trouble beating 40 then, perhaps, you should try closing your eyes while throwing! In the above calculation we assumed that each dart was a 'scoring' dart. We may instead consider the case when each dart lands anywhere in the board, i.e. perhaps scoring zero by landing in the $2\frac{3}{8}$ " band on the outside of the scoring section. In this case, the expected one-dart average falls, substantially, to 7.17 (2 d.p.). Finally, it is not clear how best to allow for darts that bounce off the wires that mark the sectors of the board.

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86.25 Hymne to Hymen*

[Explanation: in 1938 Hector Pétard [1] wrote a paper about various mathematical methods of big game hunting. In a lecture Prof. W. R. Dean revealed that 'Love said, "My dream has come true." He had found a solution to the biharmonic equation.']

The wind was blowing soft, the sun was sending
along their space-time geodesics wending
millions of photons, orange, green and yellow,
making the scene enchanting warm and mellow,
as by reflection and refraction they're diverted
into the eye, and so to sight converted.

Hector Pétard that noted big game hunter
feared that his intellect was growing blunter.
A variation problem had him nettled,
he could not see how it could well be settled.
Who was it maximised charm, wit and grace,
and was the fairest of the human race,
yet minimised, under those same conditions,
all horrible and spiteful dispositions?

Cupid, from his pedestal in Piccadilly,
was duly energised, and willy-nilly

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a million arrows sent with high velocity
 (for he's a chap of great precocity)
 a million?—more in the vicinity
 of unenumerable infinity.

The photons, $h\nu = E$ obeying,
 send many orbital electrons swaying.
 The arrows, which ignore Dirac's equations,
 cause sinusoidal cardiac palpitations
 in every youthful bachelor and spinster
 within a neighbourhood of old Westminster.

An arrow, flying straight without deflection,
 with Hector Pétard's heart made intersection,
 as well it might, with probability p ,
 there's arrows almost everywhere you see.

Feeling a sudden break in his dejection,
 he gave a look in a north east direction,
 direction cosines $(\theta, \theta, 0)$
 where $\theta^2 = \frac{1}{2}$, our hero
 saw there a lovely maiden, smiling gaily,
 reading the *Telegraph*, or some such daily.
 Sensing his glance, she too felt quite elated,
 and so his greetings were reciprocated.

Their conversation gave great satisfaction,
 they had a strong Newtonian attraction.
 Her dazzling figure, when it was in focus,
 beat hollow any algebraic locus.
 Her limbs, enveloped gracefully in nylon,
 she solved his problem to within ε ,
 and when his feelings he had truly sounded,
 he found his love for her was quite unbounded.

'You are my true reciprocal', quoth she,
 'and you my contragredient', said he.
 'My image, inverse in the sphere of life,
 for future time, why not become my wife?'
 'Your company is very sweet communion,
 I think our meet ought to include our union'.

'The union is included in the meet
only of equal sets. The proof is neat.
Come, charming one, let's be identified,
I'll be the bridegroom, you the blushing bride.'

Our couple at this moment hail a carriage,
'Hey, driver, speed to church, we want a marriage.'
The vicar, seeing Hector, questioned whether,
they're sure that he and she could live together
connectedly, as long as they drew breath,
and never separated but by death.
'Oh, yes, we're positive, oh absolutely,
and swear by Harold Jeffreys resolutely,
this is no deviation due to chance,
it has statistical significance.'

And as he handed him the golden torus,
the vicar, quickly marrying them before us,
explained, as he performed the operation,
'this is an irreversible transformation.
You, Hector, owe to her in calm or storm,
convergence absolute and uniform.
By involution you're uniquely mated,
in fact, harmonically conjugated.'

Then Hector turned to her after the mating,
and ceased to oscillate, but osculating,
declared, 'beloved one, now you are mine,
and I am ever yours, this ring's a sign
of an implicit perfect right ideal.
Of us two conjugates, the sum is real,
the difference is pure imaginary,
and ever negligible it shall be,
we two are definitely integrated,
and never shall be differentiated.'

The moral of this episode is sweet,
their hearts in unison together beat.
In harmony, and equal in persuasion,
they solve the biharmonic equation.

And, step by step, proceeding by induction,
a happy family is in construction.
Best wishes from their friends in Trinity
mount steadily towards infinity.

P.S. Je regrette infiniment que je dois ajouter
que cette famille heureuse n'est jamais arrivée.
Blanche Descartes.

Acknowledgment

Ce poème, dédié à Hector Pétard à l'occasion de son mariage, est actuellement réimprimé avec l'aimable autorisation de ce dernier.

Reference

1. H. Pétard. A contribution to the mathematical theory of big game hunting. *Amer. Math. Month.* **45** (1938) pp. 446-449.

BLANCHE DESCARTES

communicated by C. A. B. SMITH

Editor's Note: Readers will be saddened, as we were, that Cedric Smith passed away on 10th January, 2002. A life-long pacifist, he had been Weldon Professor of Biometry at the Galton Laboratory, University College, London, and a fellow of the International Statistical Institute. He had been a member of the Mathematical Association for over 60 years and contributed to the *Gazette* on several occasions, the first being a note entitled 'Gamma Function', *Math. Gaz.* **32** (December 1939) p. 479. In a forthcoming article, he reveals the truth about the mysterious Blanche Descartes. The flavour of his life and activities was well captured in 'A mastermind for a number of reasons', by Professor Steve Jones, which appeared in *The Daily Telegraph*, 23rd January, 2002, p. 20 (or on-line at

<http://www.telegraph.co.uk/connected/main.jhtml?xml=%2Fconnected%2F2002%2F01%2F23%2Fecrlab23.xml>).