

(e) Intercept

- (i) Values of intercept correct from graph (1)
 Mean intercept expressed to 2-3 significant figures correct (1) [2]

N.B. 1. Zero marks if both candidate's lines drawn through origin.
 2. If lines have identical intercept 1 mark max.

- (ii) This arises from background radiation [sources] (1)
 When distance = ∞ / very large $\left[\frac{1}{d} = 0 \text{ or } \frac{1}{d^2} = 0 \right]$ there is a non-zero
 count rate (1)

[NB for the second mark, the link of background radiation to the intercept
 must be clear] [2]

(f) Discussion of agreement with inverse-square law:

- No agreement [accept: No!] (1)
 Straight line (1)
 not through origin i.e. reason (1)
 If background count rate subtracted then yes! (1)
 [NB The 4th marking point implies the 1st marking point] [4]

- (g) $C = \frac{m}{d^2}$ with correct value for m [e.c.f.] inserted \rightarrow 1 mark
 $C = \frac{m}{d^2} + c$ with correct values of m and c [e.c.f.] inserted \rightarrow 2 marks [2]

NB. Accept numerical equation, i.e. units need not be used in the equation.

Illustrative graphs

Specimen graphs illustrating some of the marking points in (c)-(e) will be placed on the secure website on Friday 18 March, p.m.