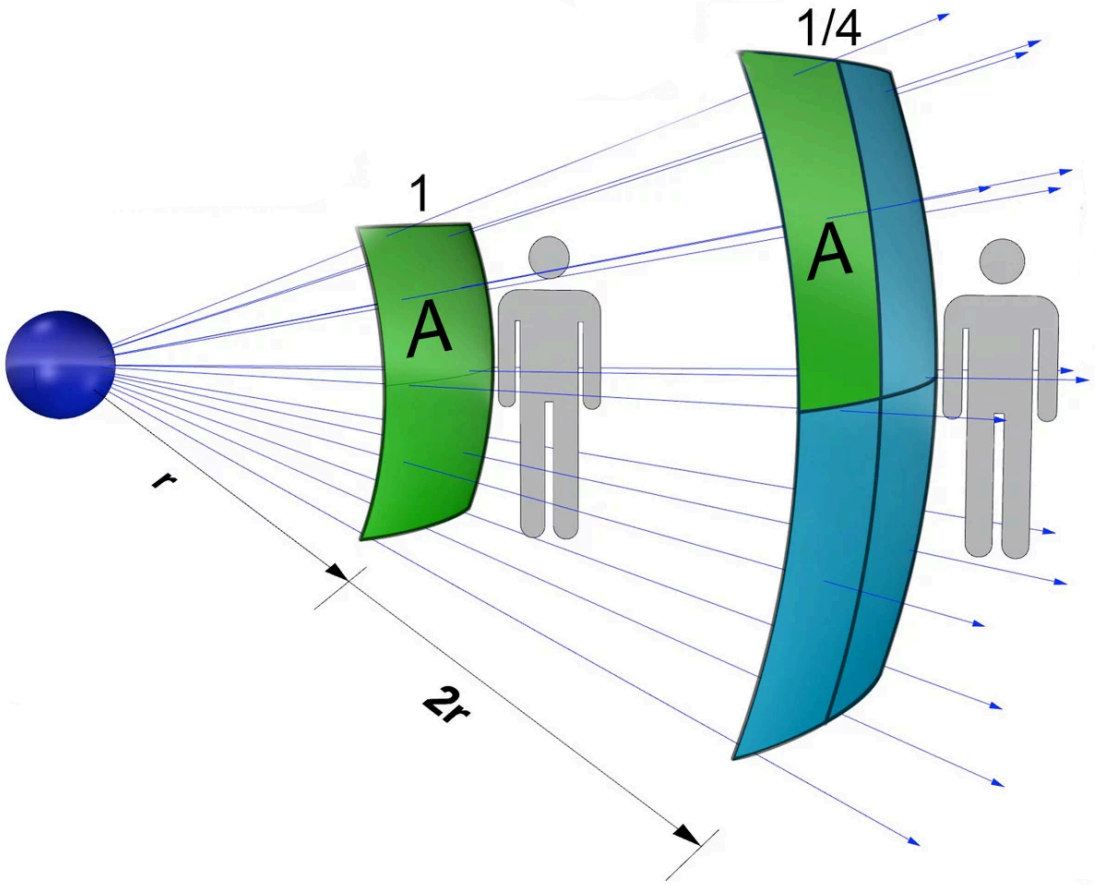
RADIATION SOLUTIONS

Inverse Square Law



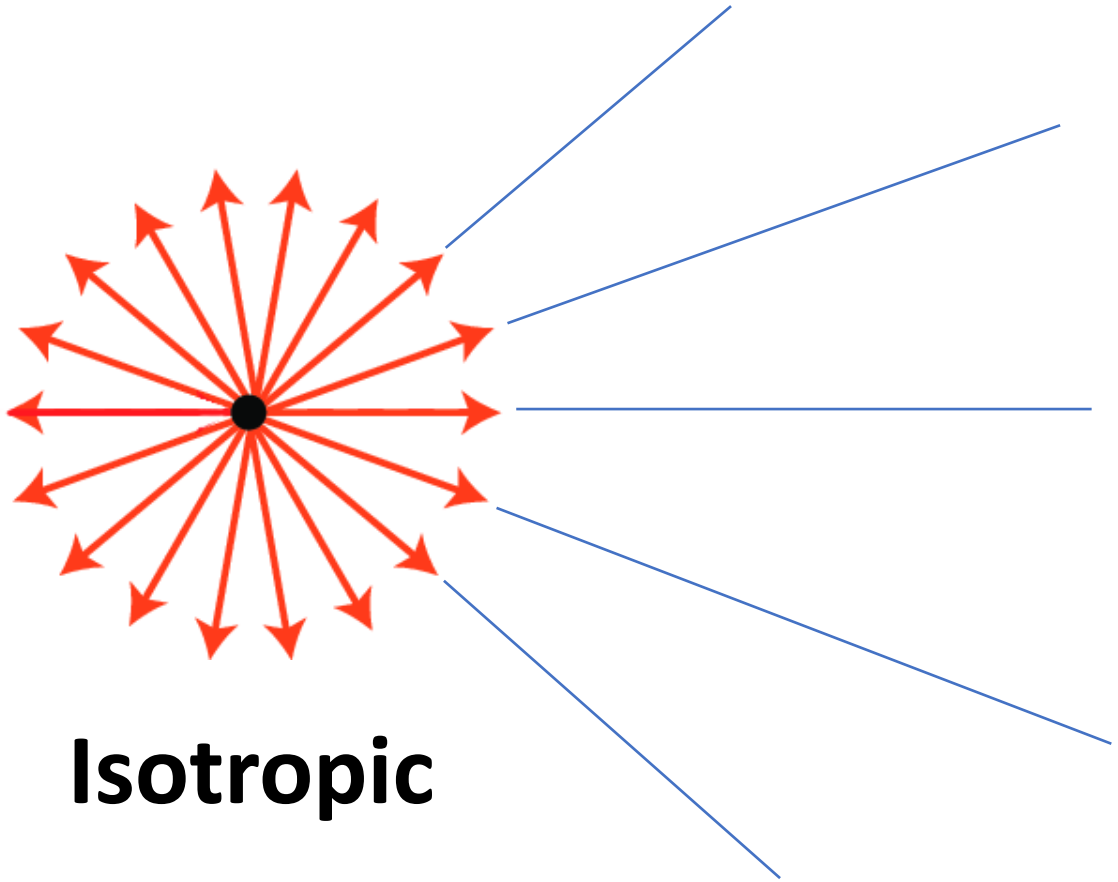
RADIATION SOLUTIONS

Inverse Square Law

In science, an inverse-square law states that a specified physical quantity is inversely proportional to the square of the distance from the source of that physical quantity.

RADIATION SOLUTIONS

Inverse Square Law

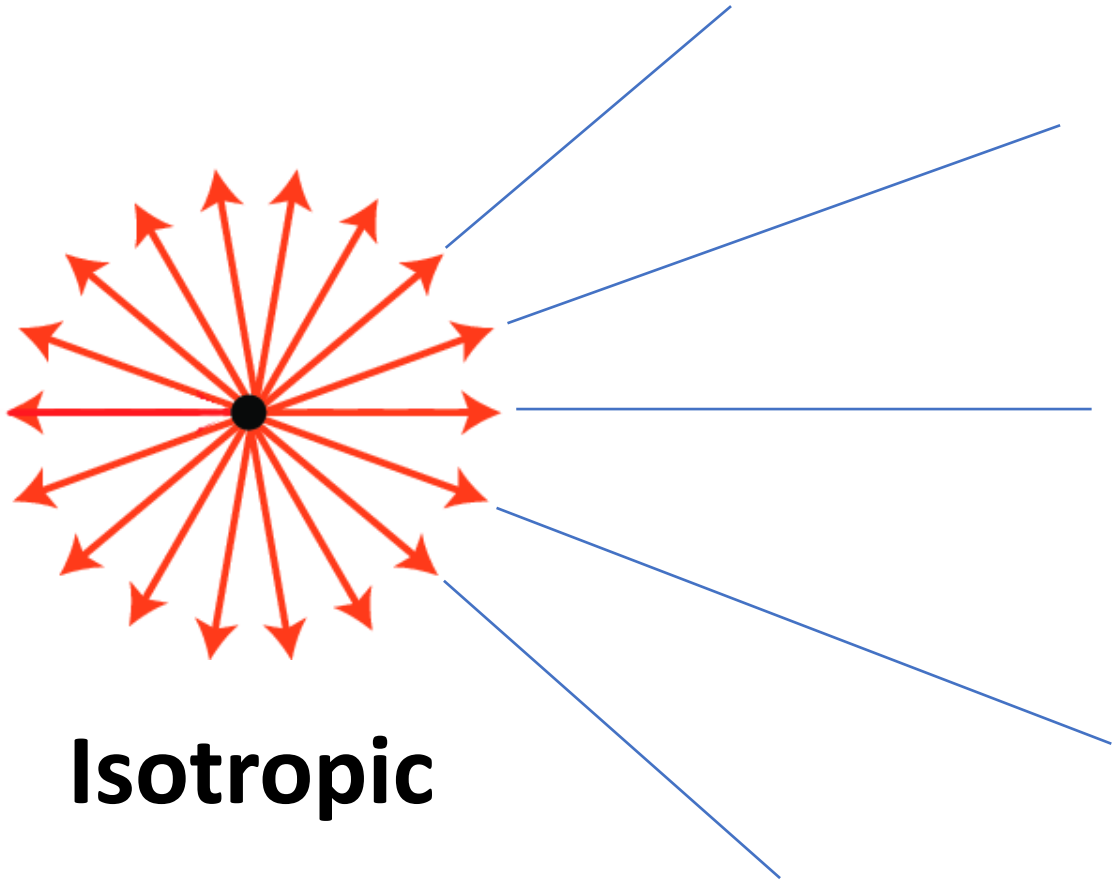


Isotropic

Divergent

RADIATION SOLUTIONS

Inverse Square Law

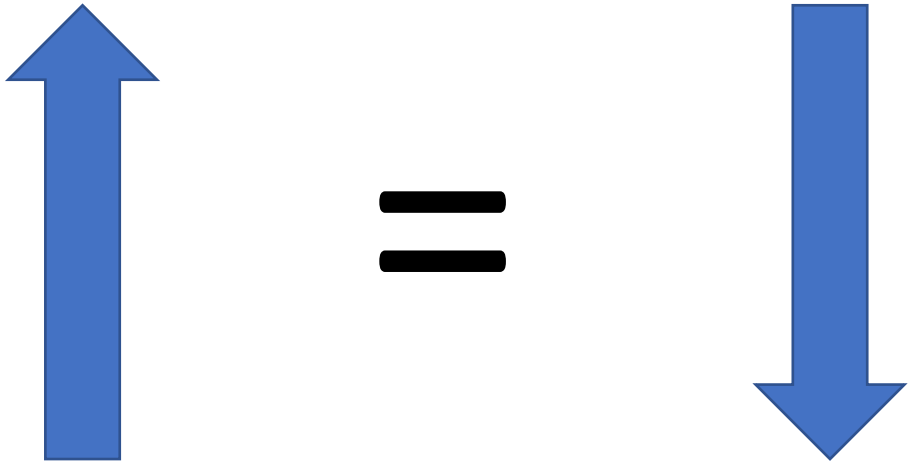


Isotropic

Divergent

RADIATION SOLUTIONS

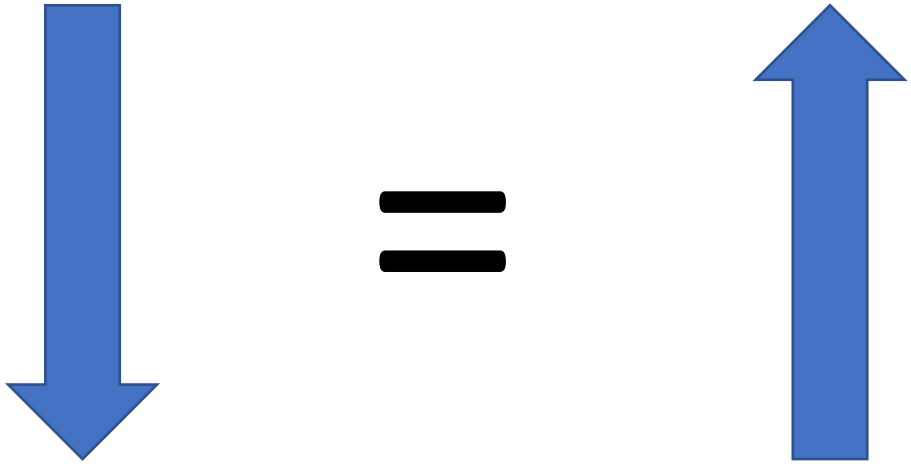
Inverse Square Law



Distance **Intensity**

RADIATION SOLUTIONS

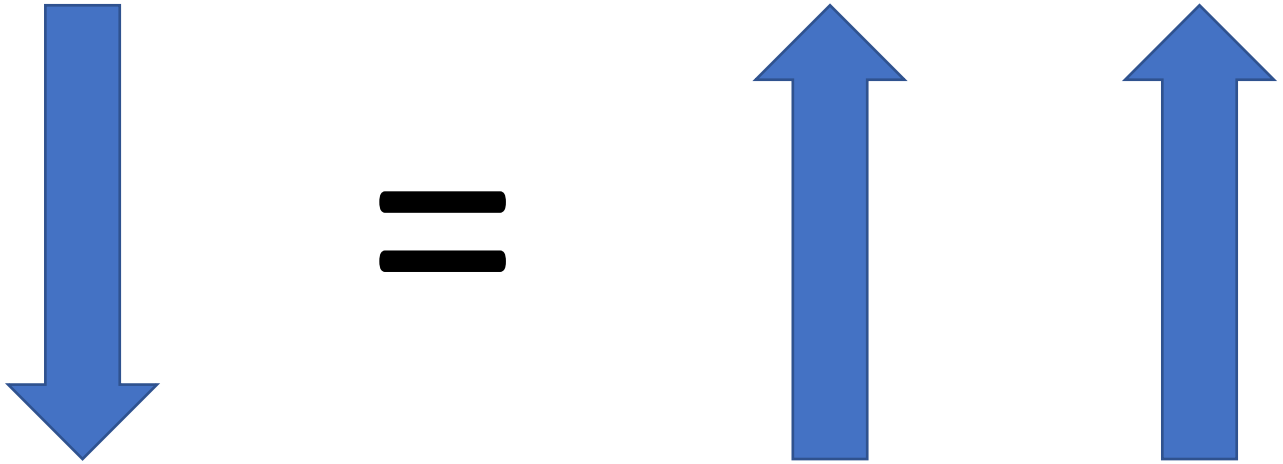
Inverse Square Law



Distance **Intensity**

RADIATION SOLUTIONS

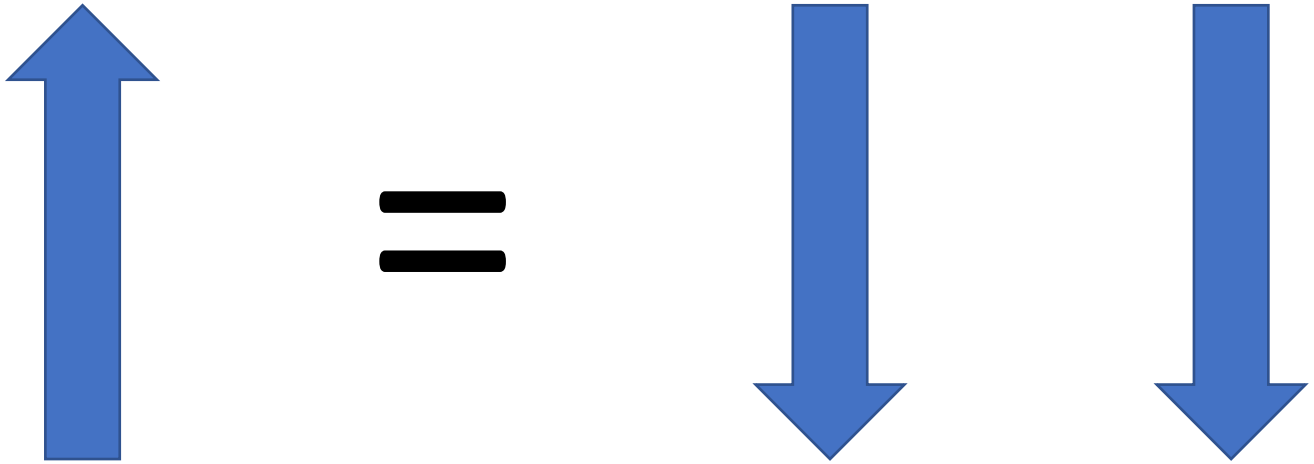
Inverse Square Law



Distance **Intensity** **Dose**

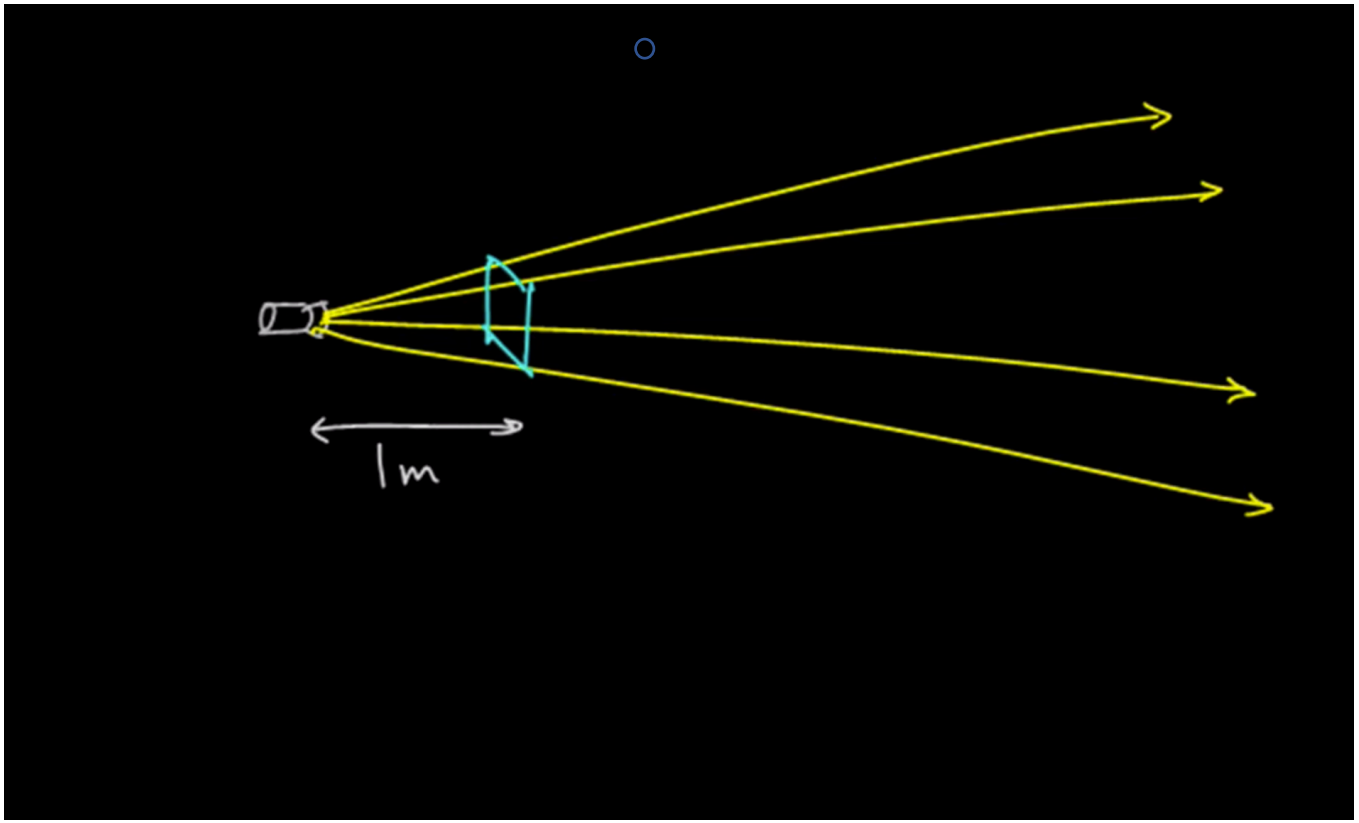
RADIATION SOLUTIONS

Inverse Square Law



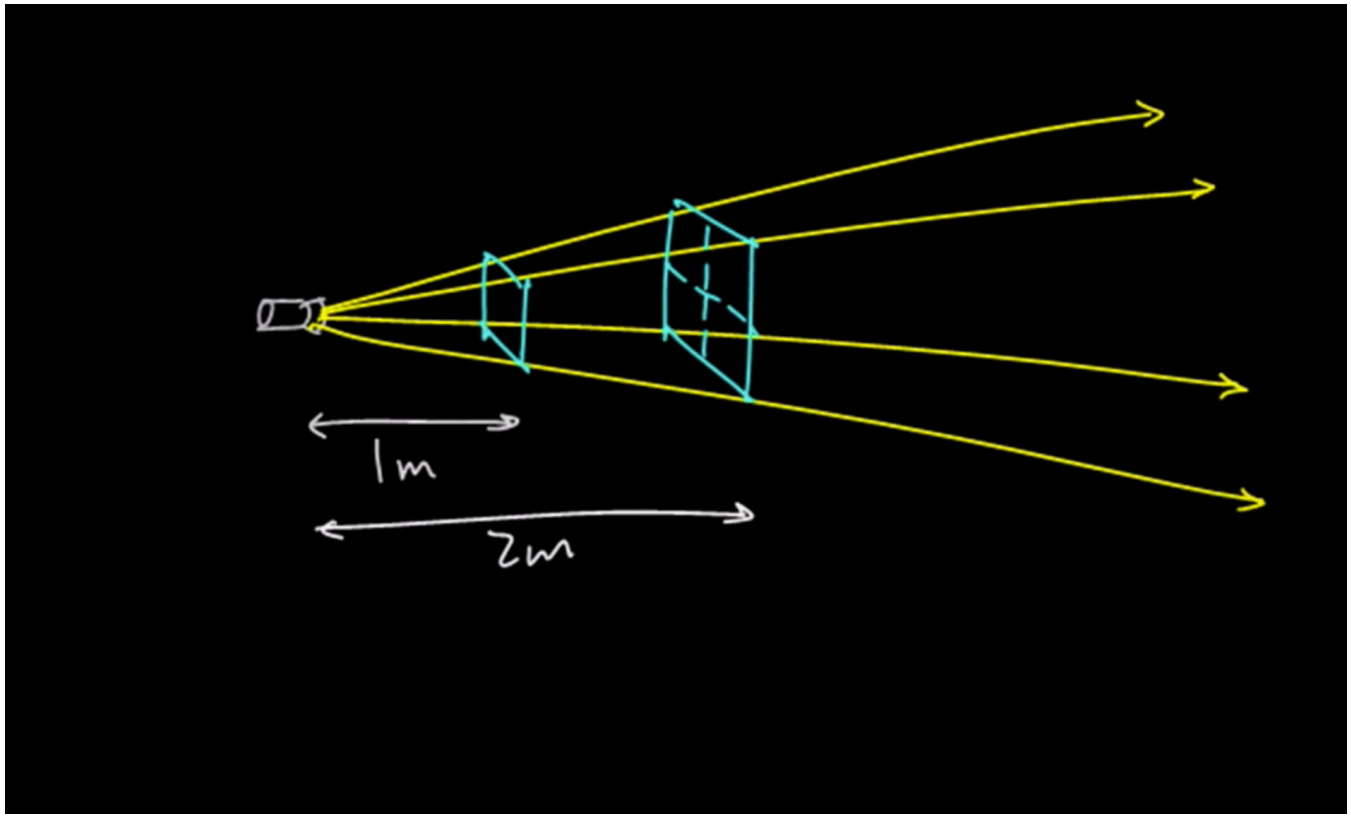
Distance **Intensity** **Dose**

Inverse Square Law - Divergence



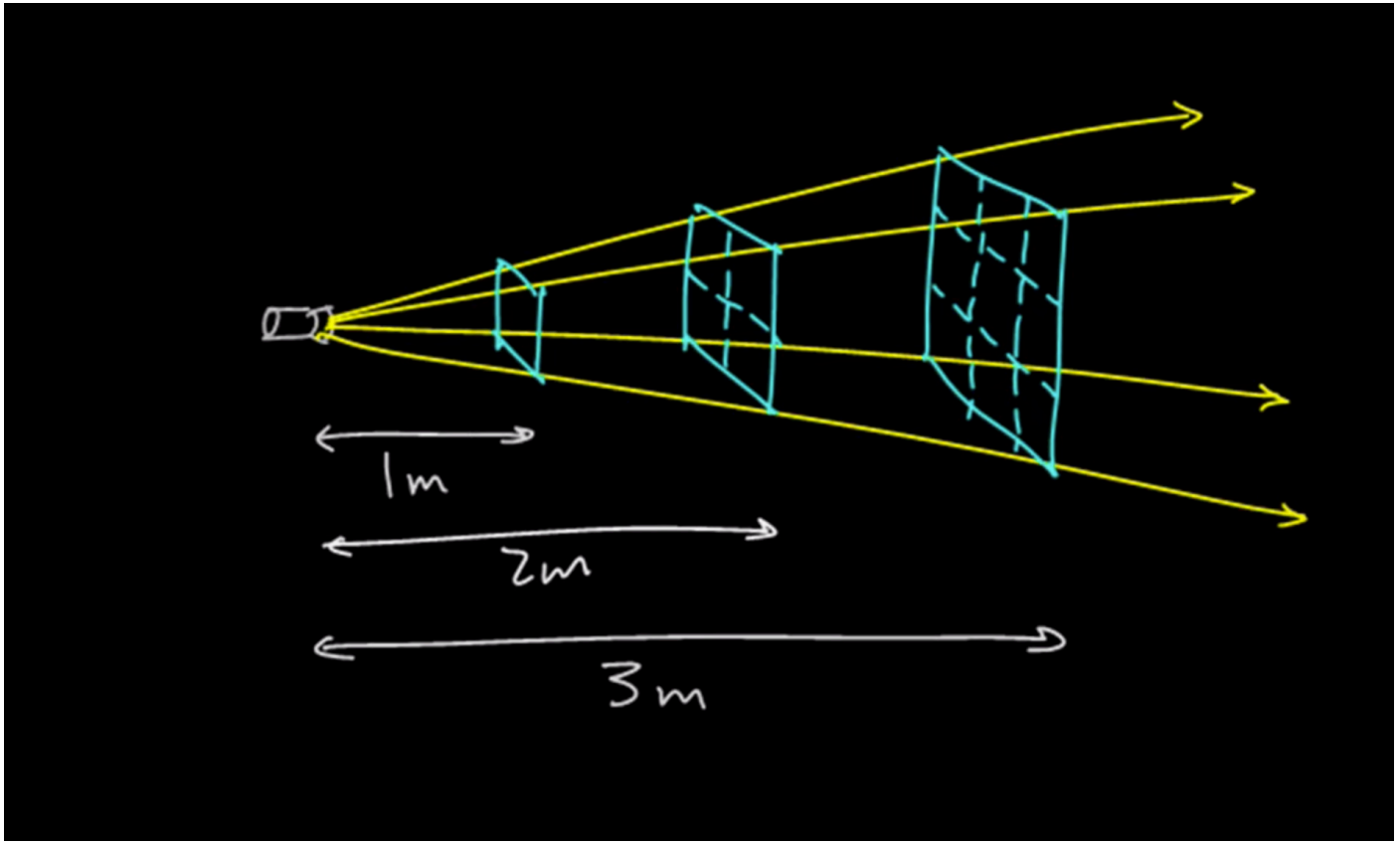
RADIATION SOLUTIONS

Inverse Square Law - Divergence



RADIATION SOLUTIONS

Inverse Square Law - Divergence



RADIATION SOLUTIONS

Inverse Square Law Formula

$$I_2 = I_1 \times \frac{(D_1^2)}{(D_2^2)}$$

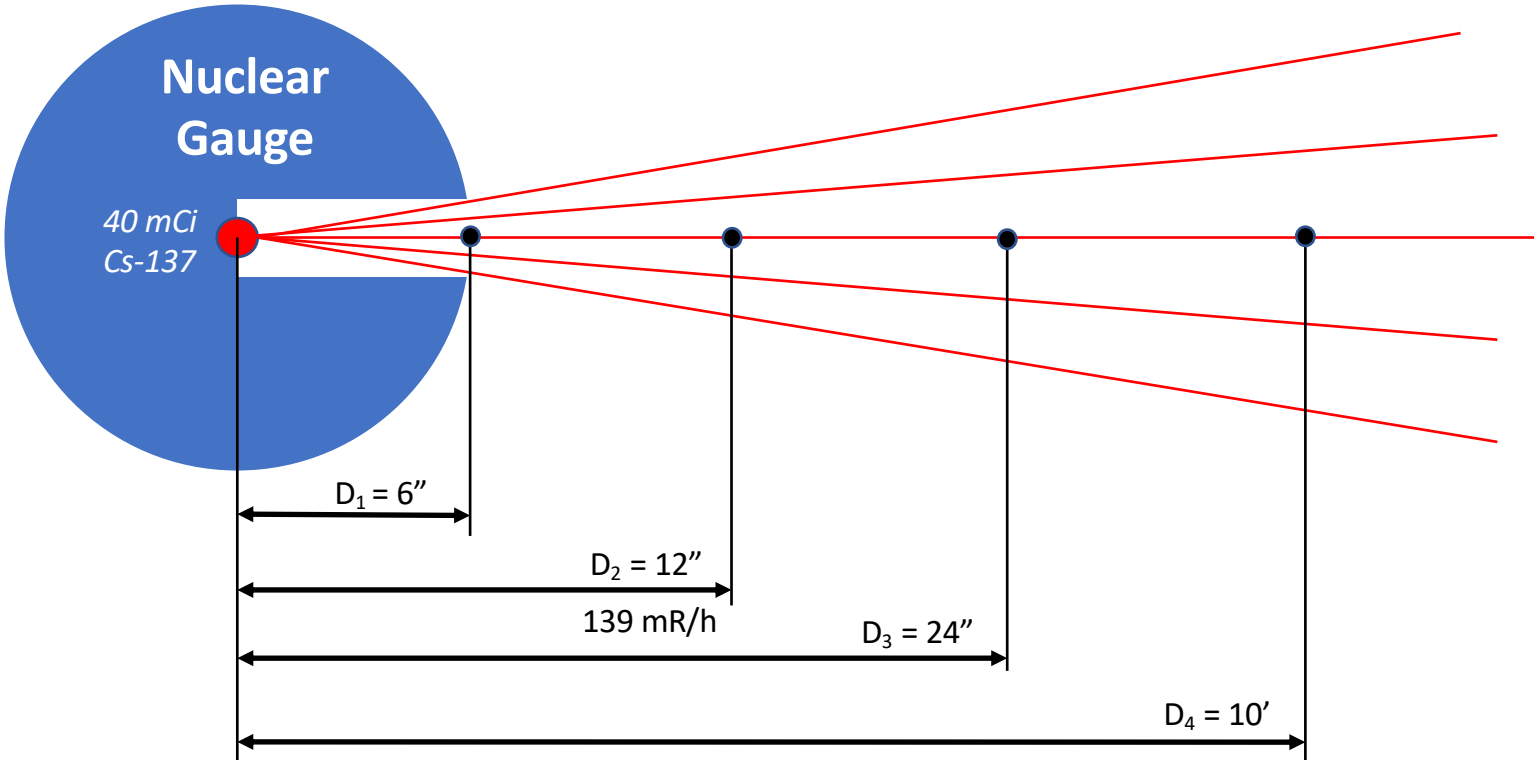
I_1 = Known Intensity

I_2 = Unknown Intensity

D_1 = Known Distance

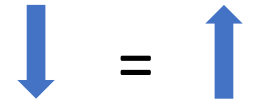
D_2 = Unknown Intensity

Inverse Square Law – Sample Problems



If the exposure rate is 139 mR/h at D_2 then what are they at D_1, D_3, and D_4 ?

Inverse Square Law Formula



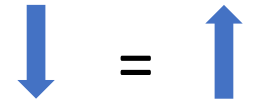
Distance Intensity

$$I_2 = 139\ mR/h \times \frac{(12^2)}{(6^2)}$$

Dividend

Divisor

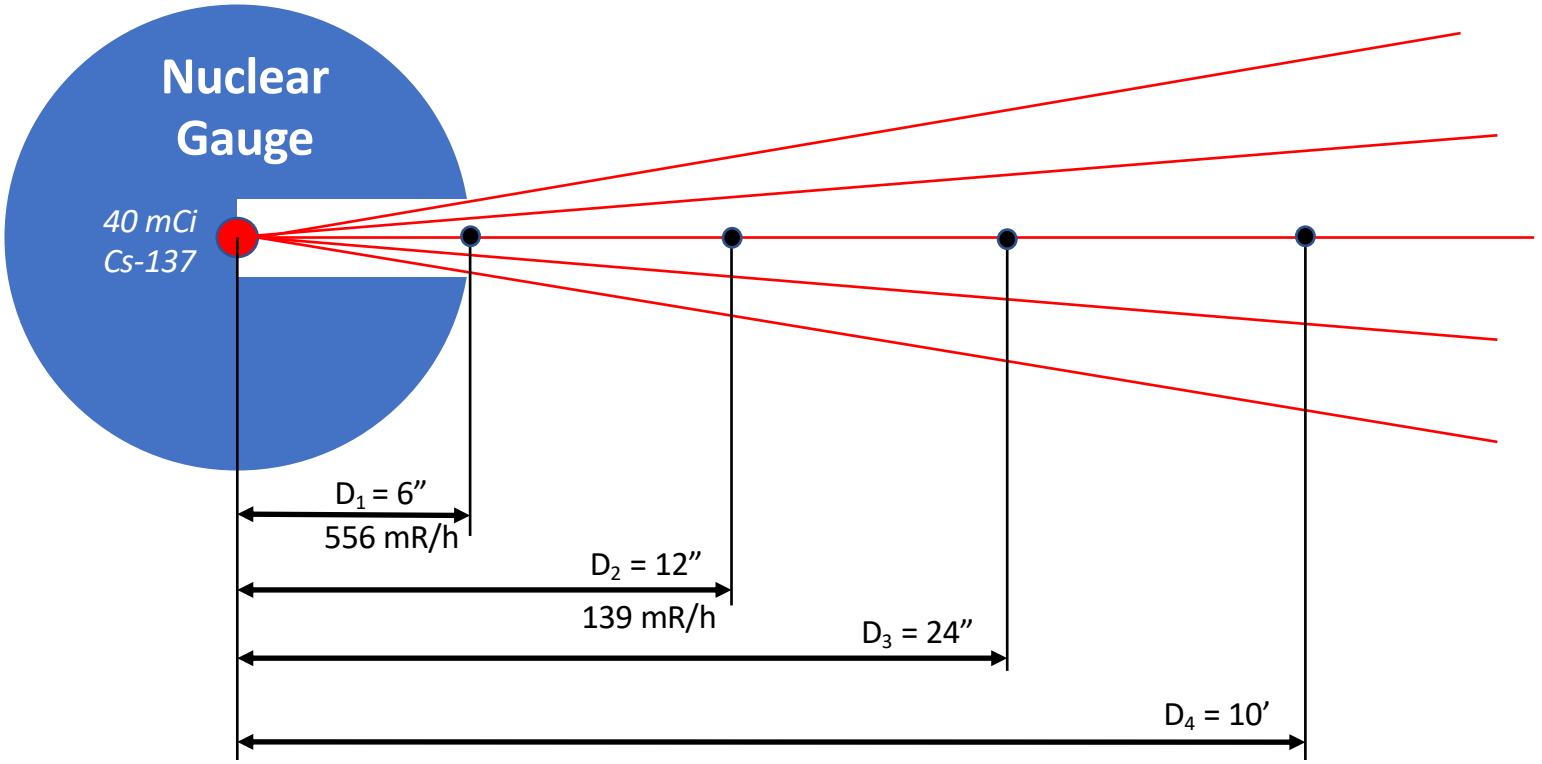
Inverse Square Law Formula



$$I_2 = 139 \text{ mR/h} \times \frac{144}{36}$$

$$I_2 = 556 \text{ mR/h}$$

Inverse Square Law – Sample Problems



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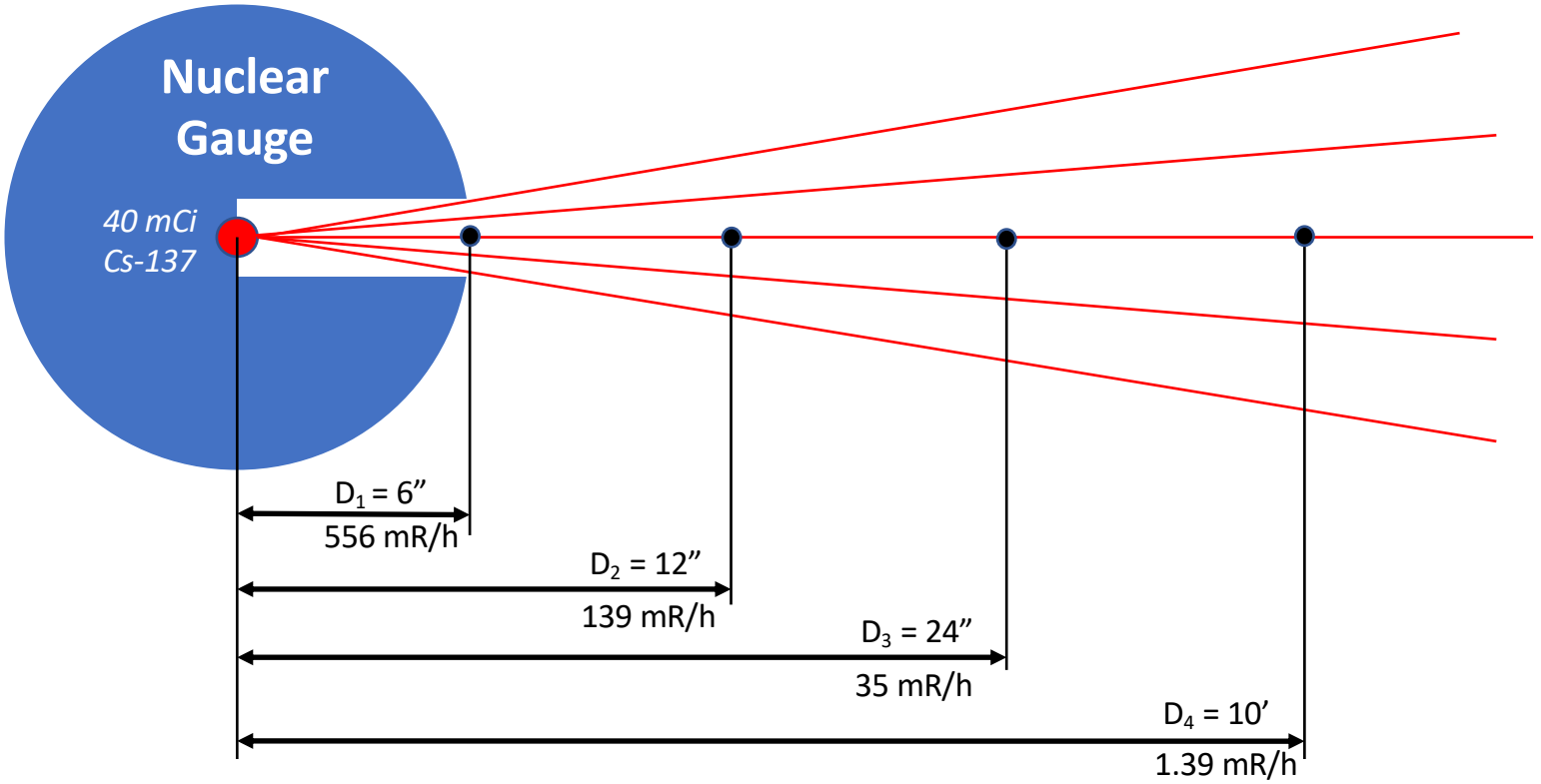
Inverse Square Law – Sample Problems



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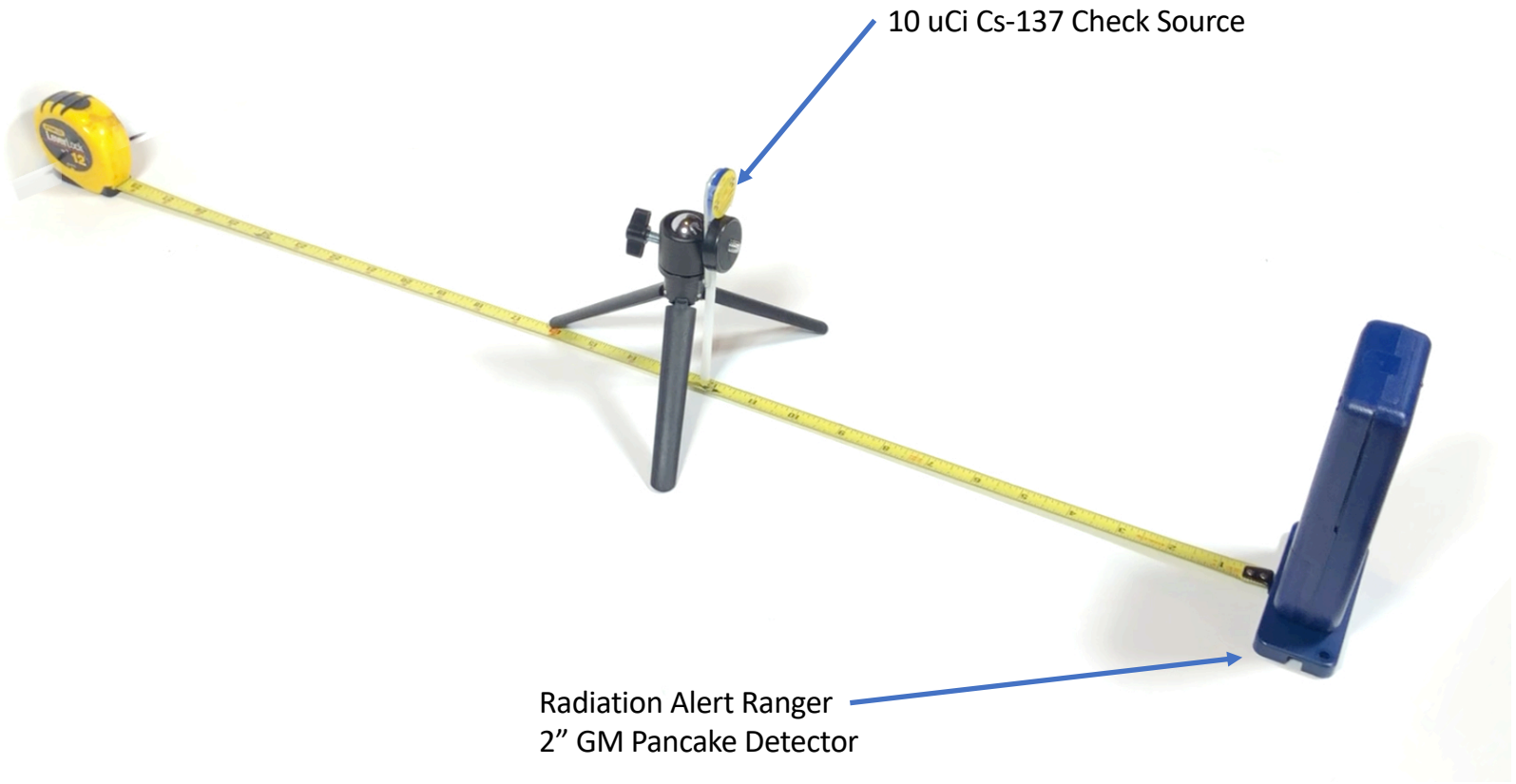
Inverse Square Law



Inverse Square Law

Inverse Square Law

	Check Source: 10 mCi Cs-137		
	Distance (in)	**Measured Counts**	**Calculated**
	3	4357	
	6	1140	
Reference	9	474	
	12	258	
	15	187	
	18	157	
	21	118	
	24	83	
	Background	42	

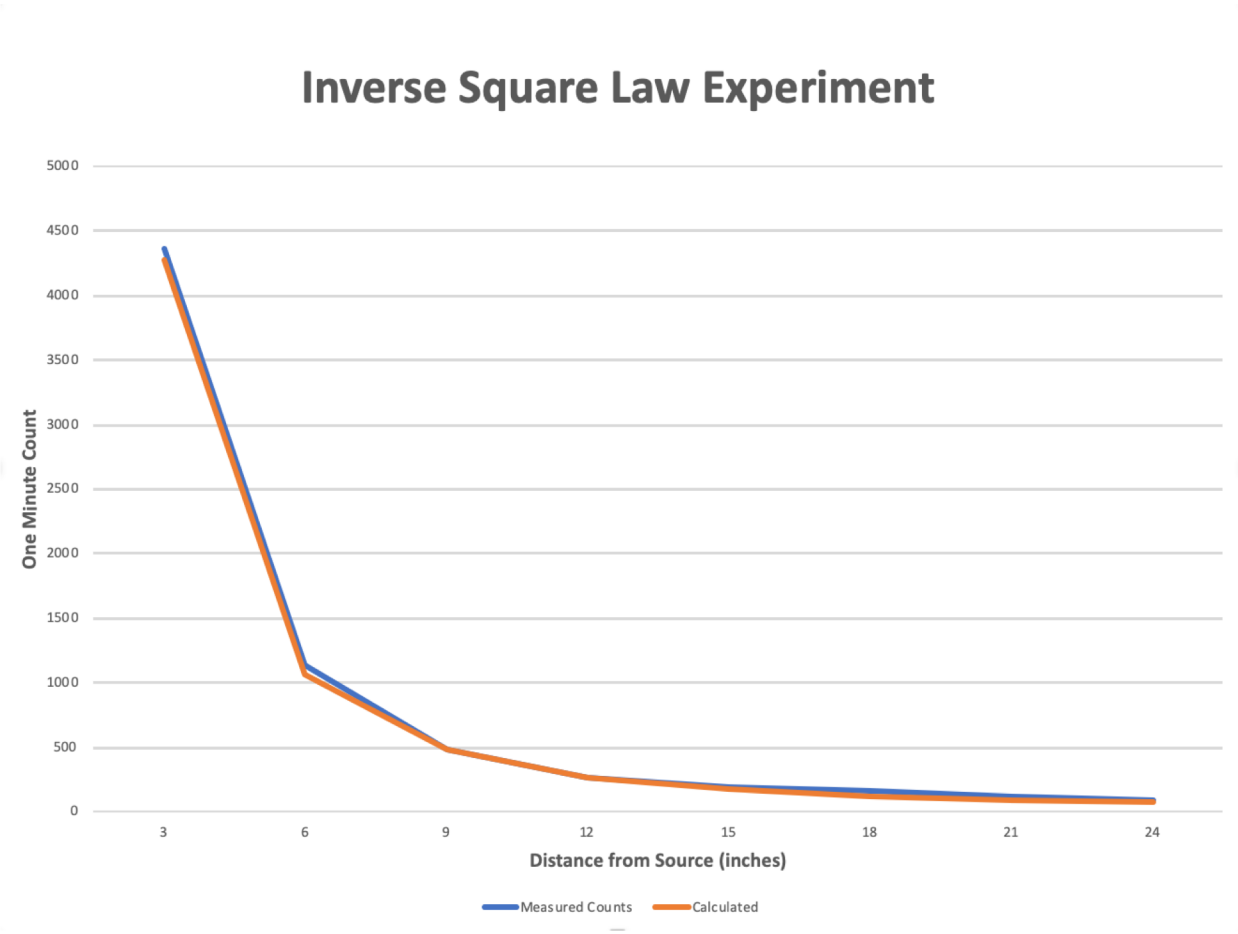
RADIATION SOLUTIONS

Inverse Square Law

	Check Source: 10 mCi Cs-137		
	Distance (in)	**Measured Counts**	**Calculated**
	3	4357	4266
	6	1140	1067
Reference	9	474	474
	12	258	267
	15	187	171
	18	157	119
	21	118	87
	24	83	67
	Background	42	

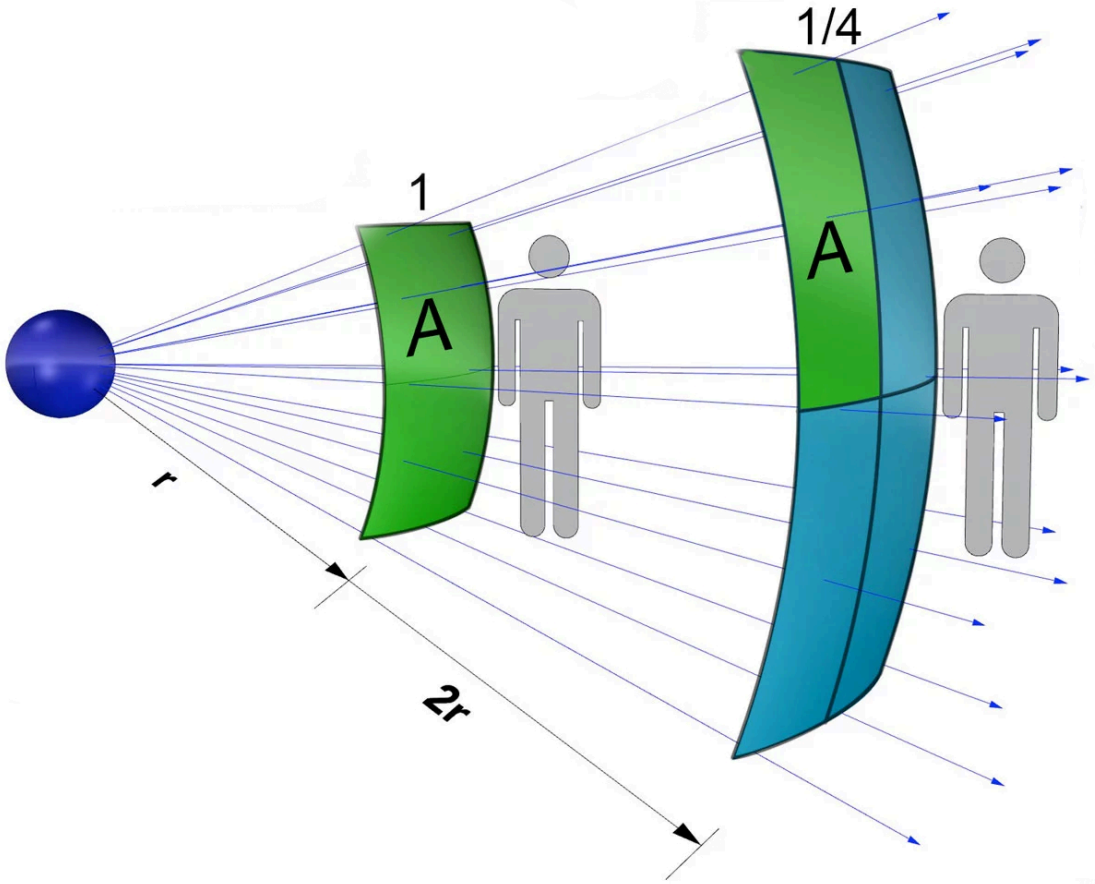
RADIATION SOLUTIONS

Inverse Square Law



RADIATION SOLUTIONS

Inverse Square Law



This completes this section.
Proceed to the next one when you are ready.

RADIATION
SOLUTIONS