

$$\begin{aligned}12 \cdot b &= 12 \cdot 10 \\ &= 120\end{aligned}$$

$$\begin{aligned}\Delta(12 \cdot b) &= \left| 12 \cdot b \cdot \frac{\Delta(b)}{b} \right| \\ &= |120 \cdot 0.12| \\ &= 14.4\end{aligned}$$

$$\therefore 12 \cdot b = 120 \pm 14.4$$


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$$\begin{aligned}12 \cdot b \cdot h &= 120 \cdot 14 \\ &= 1680\end{aligned}$$

$$\begin{aligned}\Delta(12 \cdot b \cdot h) &= |12 \cdot b \cdot h| \sqrt{\left(\frac{\Delta(12 \cdot b)}{12 \cdot b}\right)^2 + \left(\frac{\Delta(h)}{h}\right)^2} \\ &= |1680| \sqrt{0.12^2 + 0.05357^2} \\ &= 220.77717\end{aligned}$$

$$\therefore 12 \cdot b \cdot h = 1680 \pm 220.77717$$


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$$\begin{aligned}10^4 &= 10^4 \\ &= 10000\end{aligned}$$

$$\begin{aligned}\Delta(10^4) &= \left| 10^4 \cdot 4 \cdot \frac{\Delta(10)}{10} \right| \\ &= |10000 \cdot 4 \cdot 0| \\ &= 0\end{aligned}$$

$$\therefore 10^4 = 10000 \pm 0$$


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$$\begin{aligned}\frac{12 \cdot b \cdot h}{10^4} &= \frac{1680}{10000} \\ &= 0.168\end{aligned}$$

$$\begin{aligned}\Delta\left(\frac{12 \cdot b \cdot h}{10^4}\right) &= \left|\frac{12 \cdot b \cdot h}{10^4} \cdot \frac{\Delta(12 \cdot b \cdot h)}{12 \cdot b \cdot h}\right| \\ &= |0.168 \cdot 0.13141| \\ &= 0.02208\end{aligned}$$

$$\therefore \frac{12 \cdot b \cdot h}{10^4} = 0.168 \pm 0.02208$$


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$$\begin{aligned}4 \cdot E &= 4 \cdot 5 \\ &= 20\end{aligned}$$

$$\begin{aligned}\Delta(4 \cdot E) &= \left|4 \cdot E \cdot \frac{\Delta(E)}{E}\right| \\ &= |20 \cdot 0.05| \\ &= 1\end{aligned}$$

$$\therefore 4 \cdot E = 20 \pm 1$$


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$$\begin{aligned}4 \cdot E \cdot I &= 20 \cdot 0.168 \\ &= 3.36\end{aligned}$$

$$\begin{aligned}\Delta(4 \cdot E \cdot I) &= |4 \cdot E \cdot I| \sqrt{\left(\frac{\Delta(4 \cdot E)}{4 \cdot E}\right)^2 + \left(\frac{\Delta(I)}{I}\right)^2} \\ &= |3.36| \sqrt{0.05^2 + 0.13141^2} \\ &= 0.47243\end{aligned}$$

$$\therefore 4 \cdot E \cdot I = 3.36 \pm 0.47243$$


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$$\begin{aligned} p^2 &= 6^2 \\ &= 36 \end{aligned}$$

$$\begin{aligned} \Delta(p^2) &= \left| p^2 \cdot 2 \cdot \frac{\Delta(p)}{p} \right| \\ &= |36 \cdot 2 \cdot 0.06667| \\ &= 4.8 \end{aligned}$$

$$\therefore p^2 = 36 \pm 4.8$$


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$$\begin{aligned} \frac{4 \cdot E \cdot I}{p^2} &= \frac{3.36}{36} \\ &= 0.09333 \end{aligned}$$

$$\begin{aligned} \Delta\left(\frac{4 \cdot E \cdot I}{p^2}\right) &= \left| \frac{4 \cdot E \cdot I}{p^2} \right| \sqrt{\left(\frac{\Delta(4 \cdot E \cdot I)}{4 \cdot E \cdot I}\right)^2 + \left(\frac{\Delta(p^2)}{p^2}\right)^2} \\ &= |0.09333| \sqrt{0.14061^2 + 0.13333^2} \\ &= 0.01809 \end{aligned}$$

$$\therefore \frac{4 \cdot E \cdot I}{p^2} = 0.09333 \pm 0.01809$$


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$$\begin{aligned}\sqrt{\frac{4 \cdot E \cdot I}{p^2}} &= \sqrt{0.09333} \\ &= 0.30551\end{aligned}$$

$$\begin{aligned}\Delta\left(\sqrt{\frac{4 \cdot E \cdot I}{p^2}}\right) &= \left|\sqrt{\frac{4 \cdot E \cdot I}{p^2}} \cdot 0.5 \cdot \frac{\Delta\left(\frac{4 \cdot E \cdot I}{p^2}\right)}{\frac{4 \cdot E \cdot I}{p^2}}\right| \\ &= |0.30551 \cdot 0.5 \cdot 0.19377| \\ &= 0.0296\end{aligned}$$

$$\therefore \sqrt{\frac{4 \cdot E \cdot I}{p^2}} = 0.30551 \pm 0.0296$$


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