Esercizio 1

1584 ± 22 = 1584 ± 22

1786 ± 254 = 1790 ± 250

462 ± 89 = 460 ± 90

225,3376 ± 0,0146 = 225,338 ± 0.015

33969 ± 143 = 33970 ± 140

52,844280 ± 0,08540 = 52,84 ± 0.08

72,5997± 0,061 = 72,60 ± 0.06

146,59 ± 0,067 = 146,59 ± 0.07

Esercizio 2

[B = (375 ± 2) m; b = (125 ± 2) m; h = (40 ± 1) m]

C = (B+b) / 2; $C = 250m$; $\overline{A} = C \cdot h$; $\overline{A} = 10000\ m$;

$$\Delta C = \frac{1}{2}\sqrt{(\Delta B)^2 + (\Delta b)^2} \qquad \frac{\Delta A}{A} = \sqrt{\left(\frac{\Delta C}{C}\right)^2 + \left(\frac{\Delta h}{h}\right)^2} \qquad \Delta A = \sqrt{(h \cdot \Delta C)^2 + (C \cdot \Delta h)^2}$$

$\Delta C = 1.41m$; $\Delta h = 1m$; $\overline{A} = 10^4\ m^2$; $\Delta A = 256.28\ m^2$

In definitiva: $A = 10^4 \pm 2.6\ 10^2\ m^2$; $10000 \pm 250\ m^2$

Esercizio 3

$\overline{x} = \sum x_i / N = 90.28\ s$

$$\sigma = \sqrt{\frac{\sum (x_i - \overline{x})^2}{N-1}} = 1.56s \; ; \qquad \sigma/\sqrt{N} = 0.697 \; ; \quad \Delta T = 0.7s$$

T = (90.3 ± 0.7) *s*

Esercizio 4

$[\Delta T/T]_{sist}$ =0.01 ; $[\Delta T]_{sist}$ = 0.9 ;

$[\Delta T]_{tot} = \sqrt{\Delta T_{cas}^2 + \Delta T_{sist}^2} = \sqrt{0.7^2 + 0.9^2} = 1.1s$

Esercizio 5

$\int g(x)dx = 1$ [condizione di normalizzazione]. Integrando fra 0 e 1 la g(x) si ottiene **b = 2/3**

$\int g(x)xdx = \bar{x}$; Integrando fra 0 e 1 si ottiene $\bar{x}$ **=5/8** ;

$\sigma^2 = E[x^2] - \bar{x}^2$; Integrando fra 0 e 1 si ottiene σ^2 **= 7/15 – 25/64**