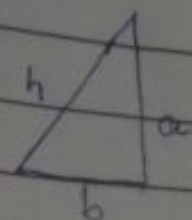

There exists a possible error of 1.5% for a and b, $\therefore \frac{1.5}{100} \times a = 0.015a$, $\frac{1.5}{100} \times b = 0.015b$

$$A = \frac{1}{2}ab = \frac{ab}{2}$$

$$\frac{\partial A}{\partial a} = \frac{b}{2}$$

$$\frac{\partial A}{\partial b} = \frac{a}{2}$$

For positive

$$\delta A = \frac{\partial A}{\partial a} \cdot \delta a + \frac{\partial A}{\partial b} \cdot \delta b$$

$$\delta A = \frac{b}{2} \cdot 0.015a + \frac{a}{2} \cdot 0.015b$$

$$\delta A = \frac{0.015ab}{2} + \frac{0.015ab}{2} = \frac{0.03ab}{2}$$

Recall $\frac{ab}{2} = A$

$\therefore \delta A = 0.03A$

For negative

$$\delta A = \frac{b}{2} \cdot -0.015a + \frac{a}{2} \cdot -0.015b$$

$$\delta A = \frac{-0.015ab}{2} - \frac{0.015ab}{2}$$

$$= \frac{-0.03ab}{2}$$

Recall $\frac{ab}{2} = A$

$\therefore \delta A = -0.03A$

$\therefore$ The percentage increment / decrement in Area $= \pm 0.03A$

b Change in Length of h

by pythagoras theorem

$h^2 = a^2 + b^2$

$h = \sqrt{a^2+b^2} = (a^2+b^2)^{1/2}$

Let $u = a^2 + b^2$

$h = u^{1/2}$ $\quad \frac{dh}{du} = \frac{1}{2}u^{-\frac{1}{2}}$

$\frac{du}{da} = 2a$, $\quad \frac{du}{db} = 2b$

$\frac{\partial h}{\partial a} = \frac{dh}{du} \times \frac{du}{da}$

$= (2a) \cdot \frac{1}{2}(a^2+b^2)^{-\frac{1}{2}}$

$= \frac{2a}{\frac{1}{2}(a^2+b^2)^{\frac{1}{2}}}$

$\frac{\partial h}{\partial h} = \frac{\partial h}{\partial u} \times \frac{du}{\partial h}$

$= (2b) \cdot \frac{1}{2}(a^2+b^2)^{-\frac{1}{2}}$

$= \frac{2b}{\frac{1}{2}(a^2+b^2)^{\frac{1}{2}}}$

$\therefore \delta h = \frac{\partial h}{\partial a} \cdot \delta a + \frac{\partial h}{\partial b} \cdot \delta b$

for positive $= \left[\frac{2a}{\frac{1}{2}(a^2+b^2)^{\frac{1}{2}}}\right](0.015a) + \left[\frac{2b}{\frac{1}{2}(a^2+b^2)^{\frac{1}{2}}}\right](0.015b)$

$= \frac{0.03a^2 + 0.03b^2}{\frac{1}{2}(a^2+b^2)^{\frac{1}{2}}} = \frac{0.03(a^2+b^2)}{\frac{1}{2}(a^2+b^2)^{\frac{1}{2}}} = \frac{0.03h^2}{\frac{1}{2}(h^2)^{\frac{1}{2}}} = \frac{0.03h^2}{0.5h}$

$\delta h = 0.06h$

for negative $= \left[\frac{2a}{\frac{1}{2}(a^2+b^2)^{\frac{1}{2}}}\right](-0.015a) + \left[\frac{2b}{\frac{1}{2}(a^2+b^2)^{\frac{1}{2}}}\right](-0.015b)$

$\frac{-(-0.03)(a^2+b^2)}{\frac{1}{2}(a^2+b^2)^{\frac{1}{2}}} = \frac{-0.03h^2}{0.5h} = -0.06h$

$\therefore \delta h = \pm 0.06h$