(a) $a = 2$ $d = 1.5m$ $l = 32m$

A.S.

i. $S_n = \frac{n}{2}(a + l)$ $T_n = a + (n-1)d$

$T_n = 2 + (n-1)1.5$

$32 = \frac{n}{2}(2 + 32)$ $= 2 + 1.5n - 1.5$

$32 = \frac{n}{2}(34)$ $T_n = \frac{1}{2} + 1.5n$

$\frac{64}{34} = n$ $n = 21$

$\therefore n = 1.88$

$\therefore$ Catrine threw the stick approx. ~~twice~~ 21 times.

·~~size test~~

~~Ma.~~

ii. $2(S_{21}) = \frac{21}{2}(2 + 32)$

$2(S_{21}) = 352$

$S_{21} = 714$

The dog ran 714m.

(b) $\quad l = r\theta \qquad A = \frac{1}{2}r^2\theta \qquad A = \frac{1}{2}r^2(\theta - \sin\theta).$

$l = 38 \qquad r = 20$

$38 = 20\theta$

$\theta = 2^\circ$

(c) $y = x^2 - 8x + 4$

i. $\qquad x = \frac{-b}{2a}$

$\qquad x = \frac{8}{2} = 4 \qquad y = -12$

$\therefore$ co-ords of vertex : $(4, -12)$

ii focus $(0, a)$

$\qquad$ focus : $\quad (0, a) \qquad \to \quad (4, 1)$