1. Make g the subject of the formula $T = \sqrt{\frac{g+6}{2}}$

← having g in a $\sqrt{}$ will make it difficult to isolate, so we need to eliminate the square root by squaring both sides of the expression

$(\sqrt{a})^2 = a$

$T^2 = \frac{g+6}{2}$ (1)

×2 ↓ ↓ ×2

$2T^2 = g+6$ (1)

−6 ↓ ↓ −6

$2T^2 - 6 = g$

$g = 2T^2 - 6$ (1)

(Total for Question is 3 marks)

2. $v^2 = u^2 + 2as$

$u = 12 \quad a = -3 \quad s = 18$

(a) Work out a value of v.

$v^2 = (12)^2 + 2(-3)(18)$

$v^2 = 144 + 2(-54)$

$v^2 = 144 - 108$

$v^2 = 36$

$v = \pm 6$

± 6

(2)

(b) Make s the subject of $v^2 = u^2 + 2as$

$v^2 = u^2 + 2as$

$(-u^2) \quad (-u^2)$

$v^2 - u^2 = 2as$

$(\div 2a) \quad (\div 2a)$

$\frac{v^2 - u^2}{2a} = s$

$s = \frac{v^2 - u^2}{2a}$

(2)

(Total for Question is 4 marks)

3. $T = 3x + 4y$

(a) Work out the value of T when $x = 5$ and $y = -7$

$T = 3(5) + 4(-7)$ ✓1

$= 15 - 28$

$= -13$

-13 ✓2

(2)

(b) Work out the value of y when $T = 38$ and $x = 6$

$T = 3x + 4y$

$38 = 3(6) + 4y$

$38 = 18 + 4y$ ✓1 ↓ -18

$20 = 4y$ ↓ $\div 4$

$y = \frac{20}{4} = 5$

5 ✓2

(2)

(Total for Question is 4 marks)