Horiz. Practice d, v, t

1. $v_i = 5\frac{m}{s}$, $a = 2\frac{m}{s^2}$, $d = ?$, $t = 6s$

$d = v_i t + \frac{1}{2}at^2$

$= 5(6) + \frac{1}{2}(2)6^2$

$d = 66m$

2. $v_i = 0$, $v_f = 30\frac{m}{s}$, $d = 45m$, $a = ?$

$v_f^2 = v_i^2 + 2ad$ — write givens, unknown, select formula

$\frac{v_f^2 - 0}{2d} = a$ — rearrange formula

$a = \frac{30^2}{2(45)} = 10\frac{m}{s^2}$ — substitute, calculate

3. $v_i = 60\frac{m}{s}$, $a = -7.5\frac{m}{s^2}$, $v_f = 0$, $d = ?$

$v_f^2 = v_i^2 + 2ad$

$\frac{v_f^2 - v_i^2}{2a} = d$ ✱ 10 pts

$\frac{-60^2}{2(-7.5)} = d$

$240m = \frac{3600}{15} = d$

4. $v_i = 0$, $d = 28m$, $t = 11s$, $v_f = ?$

$d = (v_i + v_f)0.5t$

$\frac{d}{0.5t} = v_i + v_f$

$\frac{d}{0.5t} - v_i = v_f$

$5.1\frac{m}{s} = \frac{28}{0.5(11)} = v_f$

5. $v_i = 0$, $d = 28m$, $t = 11s$, $a = ?$

$d = v_i t + 0.5at^2$

$\frac{d}{0.5t^2} = a$

$0.46\frac{m}{s^2} = \frac{28}{0.5(11)^2} = a$

6. $v_i = 0$

$100\frac{km}{h} \left|\frac{1000m}{1km}\right| \frac{1h}{3600s} =$

$27.7\frac{m}{s}$

$t = 8s$

$v_f = ?$

$a = ?$ #6 $3.48\frac{m}{s^2}$

$d = ?$ #7

$v_f = v_i + at$

11. $v_f = \frac{120\ km}{h} \left|\frac{1000m}{1km}\right| \frac{1h}{3600s} = 33.3\frac{m}{s}$

$a = ?$

$d = 240m$

$v_i = 0$

$v_f^2 = v_i^2 + 2ad$

$\frac{v_f^2}{2d} = a$

$2.3\frac{m}{s^2} = \frac{33.3^2}{2(240)} = a$