1 $v = 4 + t$, $a = 1$

2 **(a)** **(i)** 112 cm

(ii) 68 cm

(b) $4t$, 16

(c) $2t^2$, $16t - 32$

(d) $111\frac{1}{9}$ cm, $\frac{8}{9}$ cm less

3 (a) 40

(b) $s = 0$ when $t = 0$ and 10

(c) $25 - 5t$

(d) 62.5 m

(e) In Michelle's model the velocity starts at 25 m s^{-1} and then decreases. The teacher's model is better because the velocity starts at zero and ends at zero.

4 **(a)** $0.01t^3 + 1.25$

(b) 3 m s^{-1}

5 (a) 20 s

(b) 80 s

(c) $4\ \text{m s}^{-1}$

(d) 1170 m (to 3 s.f.)

6 **(a)** $6\ \text{m s}^{-1}$, 0.6

(b) 13.9

(c) 50 m

7 **(a)** $A = 4$

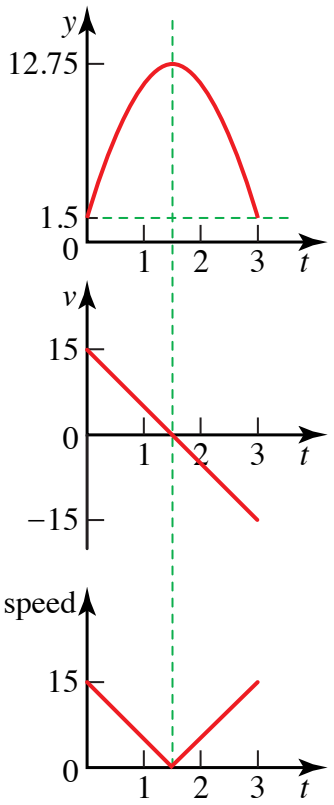
(b) $450 - \frac{3375}{t}$

(c) 5.4 m s^{-1}

8 (a) $15 - 10t$

(b) 11.5 m, $+5\ \text{m s}^{-1}$, $5\ \text{m s}^{-1}$;
11.5 m, $-5\ \text{m s}^{-1}$, $5\ \text{m s}^{-1}$

(c)



(d) 3 s

(e) The expression does not equal the distance travelled because of changes in direction. The expression gives the displacement from the origin which equals 0.