

M1. (a) D 1

(b) C 1

(c) $W = 300 \times 45$ 1

$W = 13\,500$ 1

allow 13 500 with no working shown for 2 marks

(d) straight line drawn from 13 m / s to 0 m / s 1

finishing on x-axis at 65 s 1

[6]

- M2.** (a) distance travelled under the braking force
accept braking (distance) 1
- (b) (directly) proportional
accept a correct description using figures
or
increase in the same ratio
eg if speed doubles then
thinking distance doubles
accept for 1 mark positive correlation
accept for 1 mark as speed
increases so does thinking distance
accept as one increases the other increases
accept as thinking distance increases speed increases 2
- (c) (i) control variable 1
- (ii) experiment done, student listens to music / ipod (etc) 1
- experiment (repeated), student not listening to music
for both marks to be awarded there must be a comparison 1
- (d) increase it
accept an answer which implies reactions are slower
*do **not** accept answers in terms of thinking distance only* 1
- (e) Y 1

[8]

- M3.** (a) MN
accept 5.8, 8 seconds must include unit 1
- (b) LM
accept 0.8, 5.8 seconds must include unit 1
- (c) (i) 0.8 1
- (ii) drinking alcohol 1
- (d) straight (by eye) line starting at 0.8 seconds 1
- line drawn steeper than LM starting before L
*ignore lines going beyond 2 seconds but line must exceed
 2.5 metres per second before terminating* 1

[6]

M4. (a) terminal 1

(b) 5.4 (kg) 2
correct substitution of $54 = m \times 10$ gains 1 mark

(c) (i) $0 < a < 10$ 1

some upward force 1
accept some drag / air resistance

reduced resultant force 1

(ii) 0 1

upward force = weight (gravity) 1

resultant force zero 1

[9]

M5. (a) (i) 12

1

(ii) 0.2

allow 1 mark for their (a)(i) ÷ 60 and correctly calculated

1

m/s²

accept correct unit circled in list

accept ms⁻²

*do **not** accept mps²*

1

(b) B

1

[4]