

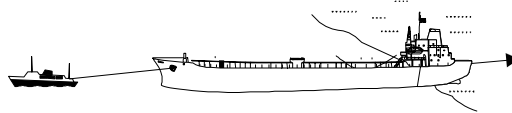
9K Speeding up...mark scheme

Assessment for learning...year 9 (level 3-6)

Question 1:

- (a) (i) 25 000 N ✓ 1
if more than one box is ticked, award no mark

- (ii) an arrow pointing in the opposite direction to pull of the tow-rope as shown below 1



the arrow parallel to the tugboat may be drawn anywhere on the diagram

*do **not** accept a horizontal arrow*

- (b) (i) more than zero but less than 25 000 N 1
if more than one box is ticked award no mark

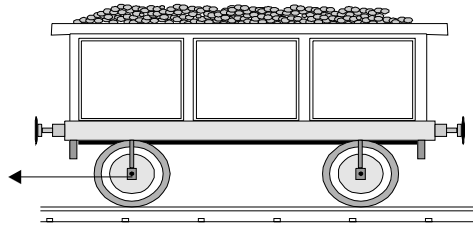
- (ii) 25 000N ✓ 1
if more than one box is ticked, award no mark

- (iii) any **one** from 1
- south **or** southwards
 - in the opposite direction to the movement **or** pull
 - away from tugboat
- accept 'opposing motion' **or** 'backwards'*

[5]

Question 2:

- (a) (i) 1



*the mark is for an arrow pointing to the left as shown
the arrow may be anywhere on the diagram
accept an arrow pointing to the left, drawn in the space beneath the question*

- (ii) equal to 1
accept 'equal'
- (b) (i) backwards 1
*accept 'in the opposite direction to the movement'
or 'in the opposite direction' or 'to the left'
accept an arrow drawn pointing to the left either on the diagram, if labelled clearly, or in the space beneath the question*
- (ii) between 0 and 5000 N \checkmark 1
if more than one box is ticked, award no mark
- (c) 5000 N \checkmark 1
if more than one box is ticked award no mark

[5]

Question 3:

- (a) friction 1
- (b) (i) any **one** from 1
- energy stored in the rubber band gets less
accept 'the rubber band unwound'
 - the tension in the rubber band decreased
 - the force exerted by the rubber band gets less
accept 'friction'
- (ii) any **one** from 1
- give the band more turns
accept 'wind up the rubber band more'
 - twist the rubber band more
accept 'put it on a slope'

[3]

Question 4:

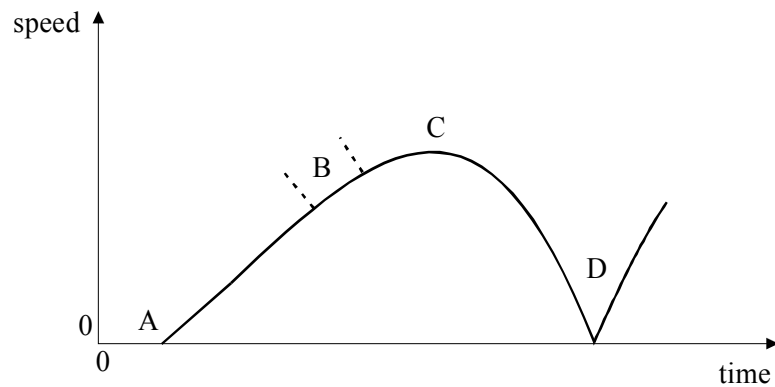
- (a) (i) 1.44 *accept '1.4' or '1.44444'* 1
(ii) 0.024 *consequential marking applies*
accept 1
the answer to (a) (i) \div 60
- (b) (i) 240.7 s **or** 241 s *unit is required* 1
accept '4 minutes'
- (ii) any **one** from 1
 - it takes time to reach the maximum speed
 - it slows down before the end
 - it is not the average speed

[4]

Question 5:

- (a) (i) D 1
(ii) C 1

- (b) 3



one mark each for correctly labelling B, C and D
accept B anywhere on the curve between 3.3 and 4.3 cm from A
C is at the highest point on the curve
D is at the point where the speed is zero

- (c) zero from A to B 1
increases from B to D 1
accept 'increases after B'
*do **not** accept 'it increases'*
accept 'it is zero from A to B and then increases' for both marks

[7]