

MARK SCHEMES

KINETIC AND POTENTIAL ENERGY PART 1

questions	answers	Extra information	marks
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Q:1a)		1 mark
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Q:1b)	each passenger has a different mass	accept weight for mass ignore other irrelevant factors about the person e.g. mass and height do not accept a list with incorrect factors e.g. mass and position accept passengers started with different (gravitational) potential energy	1 mark
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Q:2a	47250	answers of 1350/ 33750/ 48600 gain 1 mark allow 1 mark for correct substitution using both 18 and 3	1
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Q:2b	transformed into heat/ thermal energy	sound on its own is insufficient accept transferred/ lost/ for transformed do not accept any other form of energy included as a list	1
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Q:3	1 080 000	allow 1 mark for correct substitution ie $\frac{1}{2} \times 15\,000 \times 12 \times 12$	2
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Q:4a)	mass speed	do not accept weight accept velocity answers can be in either order	2
b)	zero	accept nothing	1

Q:5a	arrow drawn parallel (to) and down (the) slope	accept arrow drawn anywhere on the diagram	1
b)	increases GPE transformed to KE or speed increasing	however 'speed increasing' only scores if correctly linked to increasing kinetic energy	1 1

Q:6a	13 500 (J)	allow 1 mark for correct substitution, ie $90 \times 10 \times 15$ provided no subsequent step shown	2
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b)	17 or correctly calculated and answer given to 2 or 3 significant figures	accept 17.3 allow 2 marks for an answer with 4 or more significant figures, ie 17.32 or allow 2 marks for correct substitution, ie $13\ 500 / \text{their (a)} = \frac{1}{2} \times 90 \times v^2$ or allow 1 mark for a statement or figures showing $KE = GPE$	2
c)	work is done (against) friction (between the miner and slide) (due to the) slide not (being perfectly) smooth or causing (kinetic) energy to be transferred as heat/internal energy of surroundings	accept 'air resistance' or 'drag' for friction accept miners clothing is rough accept lost/transformed for transferred accept air for internal energy of surroundings	1 1 1