## Forces Practice Questions



	Use your graph to find the extension for a force of 8.0 N.	b
	(1)	
(c)	Explain why the extension for a force of 800 N is unlikely to be one hundred times the value in (b).	
(d)	The teacher tells her pupils that the object is one of three things:	
	• a helical spring	
	• a metal wire	
	• an elastic band.	
	(i) Which one could it be?	
	(1)	
	(ii) Give two reasons for your choice.	
	1	
	2	
	(2)	Q
	(Total 8 marks)	

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$\begin{aligned}                                    $	(Octo) 9. (a)	ber 2005) A cart becomes stuck in a river bed. A group of people gets it moving again. Some of them push and some of them pull.	Leave blank
The diagram shows the horizontal forces which act on the cart. $force X \longrightarrow cart force Z$ (i) Complete the sentences. The frictional force is force and the pulling force is force (1) (ii) Forces are vectors. How does the diagram show this? (1) (iii) Forces are vectors. How does the diagram show this? (1) (iii) Force U is the unbalanced force which acts on the cart. Complete the equation for force U in terms of X, Y and Z. U =			
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<ul> <li>(i) Complete the sentences.</li> <li>The frictional force is force</li></ul>		force $X \longrightarrow$ cart force $Z$ force $Y$	
The frictional force is force		(i) Complete the sentences.	
The pushing force is force		The frictional force is force	
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(1) (iii) Force U is the unbalanced force which acts on the cart. Complete the equation for force U in terms of X, Y and Z. $U = \dots \qquad (1)$ (b) A cart has a mass of 1500 kg. An unbalanced force of 1125 N acts on the cart in an easterly direction. Calculate the acceleration of the cart and state its unit and direction. $\square \qquad \square \qquad$		(ii) Forces are vectors. How does the diagram show this?	
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(b) A cart has a mass of 1500 kg. An unbalanced force of 1125 N acts on the cart in an easterly direction. Calculate the acceleration of the cart and state its unit and direction.          Acceleration =       (4)         Q9		U =(1)	
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$Acceleration = \dots \qquad (4) \qquad Q9$			
Acceleration =			
(Total 7 marks)		Acceleration =(4)	09
		(Total 7 meanler)	

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	<b>↑</b>
Speed downwar	rds
	0 0 Time
(a) Show on the	graph how you can find the object's terminal velocity. (1)
(b) Explain the s answer.	hape of the graph. Use the concepts of force and acceleration in your
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llong a road. The driver brakes suddenly. A passenger in the car is at belt as shown.
seat belt
ssenger is 60 kg. The force exerted by the seat belt on the passenger
Deceleration =(3)
on the diagram to show the direction and line of action of the 1440 N the passenger.
tion as well as size. (2) entence.
mple of a quantity. (1)
(Total 6 marks)
mple of a quantity. (1) (Total 6 marks)

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(b) The diag	ram shows anoth	ner beam with fo	rces acting on	it. It is balan	ced.	
Complete	e the sentence.					
The sum	of the		. moments is e	equal to the su	m of	
the		moments.			(	1)
				(1	Fotal 5 mark	s)
• •						

	ctor quantities in	the table.		
acceleratio	on			
distance				
kinetic en	nergy			
power				
speed				
velocity				
				(2)
	-			
	-		210	
he movement of	• This team.		210	
he movement of	T this team.		210	0 N (1)
he movement of has a mass of 30	This team.	the acceleration	210	0 N (1) cam and give
he movement of has a mass of 30	This team.	the acceleration	210	0 N (1) eam and give
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<b>4</b> -	accelerati distance kinetic er power speed velocity a vector quantity	acceleration distance kinetic energy power speed velocity a vector quantity. Two tug-of The horizontal forces on one to	acceleration         distance         kinetic energy         power         speed         velocity	acceleration       .         distance       .         kinetic energy       .         power       .         speed       .         velocity       .         a vector quantity. Two tug-of-war teams are pulling         The horizontal forces on one team are shown.

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## (November 2006)

1. (a) The diagram shows a beam with three hooks. It is supported by two walls. A heavy sack hangs from hook A.

Leave

blank



(c)	(i)	A supporter of the winning team throws his hat high in the air.	Leave blank
		The diagram shows the forces acting on the hat as it falls back. Label these forces.	
	(ii)	(2) Explain why the hat reaches a terminal velocity.	
		(2)	Q10
		(Total 10 marks)	
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ay 2007 A mode motion.	) I train travels between two stations. The velocity-time graph shows the train's	
	velocity	
	0 A B C time	
(a) (i)	State in which part of the journey A, B or C the train is decelerating.	
·	(1)	
(ii)	Explain your answer.	
	(1)	
(iii)	What does the graph show about the deceleration?	
(b) (i)	What feature of the graph represents the distance travelled between the two stations?	
	(1)	
	(1)	
(11)	A second train travels between the two stations at a constant velocity. It takes the same time as the first train. On the axes above, draw a line showing the motion of the second train.	
	(3)	
	(Total 7 marks)	

(May 2 8. (a)	State the principle of moments.	bla
J. (u)	state the principle of monitorio.	
	(2)	
(b)	The diagram shows a weighing device called a steelyard.	
	- pivot	
	shoulder	
	arm	
	x + y - y rider	
	$\langle \rangle$	
	A	
	load	
	A LEA	
	The weight of the shoulder balances the weight of the arm. The weight of the rider is 8.0 N and this balances the weight of the load when $r = 0.12$ m and $y = 0.60$ m	
	b. Tv and this balances the weight of the fold when x 0.12 in and y 0.00 m.	
	Calculate the weight of the load in newtons.	
	Weight of load - N	
	(2)	Q8
	(Total 4 marks)	
		-+ /
		1

(i) Explain which is larger, force <i>F</i> or force <i>B</i> .	() Explain which is larger, force <i>F</i> or force <i>B</i> . (1) (ii) State an equation which relates acceleration, mass and unbalanced force. (1) (iii) An unbalanced force of 15 000 N acts on the lorry. The mass of the lorry is 12 500 kg. Calculate the lorry's acceleration and give the unit. (1) (iii) An unbalanced force of 15 000 N acts on the lorry. The mass of the lorry is 12 500 kg. Calculate the lorry's acceleration and give the unit. (1) (iii) An unbalanced force of 15 000 N acts on the lorry. The mass of the lorry is 12 500 kg. Calculate the lorry's acceleration and give the unit. (3)	() Explain which is larger, force <i>F</i> or force <i>B</i> .		diagram shows a lorry. It is travelling in a straight line and it is accelerating. The I forward force on the lorry is $F$ and the total backward force is $B$ .
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$Acceleration = \dots $ (3)	$Acceleration = \dots $ (3)	Acceleration =(3		
				A cooleration -
				Acceleration =
				Acceleration =
				Acceleration =(3)
				Acceleration =(3)

07)	Leave
Another lorry is travelling at a steady speed. Explain how this lorry can be accelerating even though its speed stays the same.	
(3)	
The <b>thinking distance</b> is the distance which a vehicle travels in the driver's reaction time. The <b>braking distance</b> is the distance which a vehicle travels when the brakes are on.	
(i) State one factor which increases the thinking distance.	
(1)	
(ii) State one factor which increases the braking distance.	
(1)	Q12
(Total 10 marks)	
	07)         Another lorry is travelling at a steady speed. Explain how this lorry can be accelerating even though its speed stays the same.

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