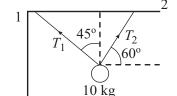
Instructor(s): S. Obukhov

PH	Y 2004		Midterm Exam		February 3, 2017		
Name (print, last first):		):	Signature:				
	On	my honor, I have neith	er given nor received un	authorized aid on this e	examination.		
(2) (3) (4) (5)	Code your test: Code your name answer sheet. Print your name of Do all scratch wontest, this exam pr Blacken the cir make any stray m The answers an believe that no	number on your answer sheet. In this sheet and sign it is anywhere on this example intout is to be turned in the cle of your intended tarks or some answers not be rounded off. Cho	t also.  In that you like. Circle  In No credit will be give  In answer completely,  In any be counted as incorn	e-80 on the answer sh COMPLETELY. Con e your answers on the en without both answer using a #2 pencil or eect. cact. There is no pe	eet for the 5-digit number). de your UFID number on your e test form. At the end of the		
			$g = 9.8 \text{ m/s}^2$				
1.	Jane starts at the starting point?	e town center and drive	· · · · · · · · · · · · · · · · · · ·	then drives 24 km due	east. How far is she from her		
	(1) 26 km	$(2)~34~\mathrm{km}$	$(3)~37~\mathrm{km}$	(4) 48 km	(5) 19 km		
2.	Joe drops a pebble from a bridge. If the pebble hits the water in 1.5 seconds after it is dropped, how far did the pebble travel?						
	(1) 11.0 m	$(2) 22.1 \mathrm{m}$	(3) 14.7 m	(4) 8.3  m	(5) 4.9 m		
3.	A ball is thrown up vertically at 27 m/s. How high will the ball go?						
	(1) 37.2 m	(2) 20.4 m	(3) 51.0 m	(4) 40.8 m	(5) 37.9 m		
4.			d plane. The coefficient st the inclined plane be		en the block and the surface is begins to slide?		
	(1) 22°	(2) $37^{\circ}$	$(3) \ 30^{\circ}$	$(4) 60^{\circ}$	(5) 62°		
5.	A police cruiser is traveling at 17 m/s. A car traveling in the same direction at 27 m/s passes the cruiser. At this moment the car begins to accelerate in the forward direction at a rate of $2 \text{ m/s}^2$ , and the cruiser begins to accelerate in the forward direction at $4 \text{ m/s}^2$ . How far does the cruiser travel until it catches up to the car?						
	(1) 370 m	(2) 400 m	$(3)~270~\mathrm{m}$	(4) 150 m	(5) 475 m		
6.	A horizontal force of 3 m/s <sup>2</sup> if the co	P pushes a 20 kg mass a pefficient of kinetic frict	across a floor. What valuion is 0.4?	ue of P is needed to move	e the block with an acceleration		
	(1) 138 N	(2) 98 N	(3) 237 N	(4) 155 N	(5) 72 N		

7. A 10 kg mass is held in equilibrium by 2 ropes as shown. What is the value of  $T_1$ , the tension in rope 1?



- (1) 50 N (2) 26 N (3) 94 N
- (4) 122 N
- (5) 72 N
- 8. A man and his wife are moving a 200-lb sofa by lifting it at its two ends. If their 80-lb son sits one-fourth of the end carried by father, with what force must father lift?
  - (1) 160 lb
- (2) 120 lb
- (3) 140 lb
- (4) 260 lb
- (5) 60 lb
- 9. An astronaut wants to measure the acceleration of gravity on planet X. On Earth his powerful dart gun will shoot a dart a maximum horizontal distance of 30 m before the dart returns to the same height from which it was shot. He performs the same experiment on planet X, and finds that the dart gun shoots the dart a maximum distance of 600 m. What is the value of the acceleration due to gravity on Planet X?
  - $(1) 0.5 \text{ m/s}^2$
- $(2) 4.9 \text{ m/s}^2$
- $(3) 0.9 \text{ m/s}^2$
- $(4) 14.8 \text{ m/s}^2$
- $(5) 2.5 \text{ m/s}^2$
- 10. In the Atwood's machine shown in the sketch,  $M_2$  is 200 grams and  $M_1$  is 150 grams. What is the magnitude of the acceleration of the masses when allowed to fall?



- $(1) 1.40 \text{ m/s}^2$
- $(2) 3.54 \text{ m/s}^2$
- $(3) 1.1 \text{ m/s}^2$
- $(4) 0 \text{ m/s}^2$
- $(5) 1.93 \text{ m/s}^2$

Instructor(s): N. Sullivan

## DHVCICC DEDARTMENT

Y 2004				February 4, 2015	
me (print, last first):		Signature:		•	
On r	ny honor, I have neithe	r given nor received una	authorized aid on this ex	camination.	
Code your test n Code your name of answer sheet. Print your name of Do all scratch work test, this exam prin Blacken the circ make any stray ma The answers are believe that no l	umber on your answer sheet. It is sheet and sign it anywhere on this example to be turned in the first of your intended arks or some answers may be rounded off. Choosisted answer is correction.	er sheet (use lines 76— ARKEN CIRCLES of also. In that you like. Circle; In No credit will be given answer completely, use you be counted as incorresse the closest to example the counter of the counter	80 on the answer she COMPLETELY. Cod your answers on the without both answer sasing a #2 pencil or ct.  act. There is no per	test form. At the end of the heet and printout.  blue or black ink. Do not	
		$g = 9.80 \text{ m/s}^2$			
	Eac	ch question is worth 5	5 points.		
Jane starts at the t starting point?	cown center and drives	4 km due northeast, and	then drives 5 km due s	outh. How far is she from her	
$(1)~3.6~\mathrm{km}$	$(2)~2.8~\mathrm{km}$	(3) 1.6 km	$(4)~5.4~\mathrm{km}$	(5) 0  km	
Joe drops a pebble travel?	from a bridge. If the p	pebble hits the water in	3 seconds after it is dro	opped, how far did the pebble	
(1) 44.1 m	(2) 22.1 m	(3) 14.7 m	(4) 88.3 m	(5) 34.5 m	
Jack stands on scale the scales read 50 l	les in an elevator. Whe N. What is the accelera	n the elevator is at rest ation of the elevator?	the scales read 99 N. W	When the elevator moves down	
(1) $5.0 \text{ m/s}^2$	(2) $9.8 \text{ m/s}^2$	(3) $2.5 \text{ m/s}^2$	$(4) 7.0 \text{ m/s}^2$	$(5) 6.3 \text{ m/s}^2$	
			e of P is needed to move	the block with an acceleration	
(1) 59 N	(2) 98 N	(3) 37 N	(4) 15 N	(5) 72 N	
				the forward direction with an	
(1) 15 m/s	$(2)~25~\mathrm{m/s}$	(3) 18 m/s	$(4) 7.5 \mathrm{m/s}$	(5) 36 m/s	
			ecceleration of 5 m/s $^2$ . In	f the truck leaves a skid mark	
(1) $17.3 \text{ m/s}$	(2) 30 m/s	(3) 3.45  m/s	(4) 0  m/s	(5) 22 m/s	
	YOUR TE Code your test n Code your name of answer sheet. Print your name of Do all scratch work test, this exam print Blacken the circ make any stray matched answers are believe that no I Hand in the answer starting point?  (1) 3.6 km  Joe drops a pebble travel?  (1) 44.1 m  Jack stands on scatthe scales read 50 I (1) 5.0 m/s²  A horizontal force I of 2 m/s² if the code (1) 59 N  A car is initially m acceleration $a = 5$ m (1) 15 m/s	YOUR TEST NUMBER IS TI Code your test number on your answer Code your name on your answer sheet. Dranswer sheet and sign it Do all scratch work anywhere on this exartest, this exam printout is to be turned in Blacken the circle of your intended make any stray marks or some answers marthe answers are rounded off. Choobelieve that no listed answer is corresponded in the answer sheet separately.  Each Jane starts at the town center and drives a starting point?  (1) 3.6 km  (2) 2.8 km  Joe drops a pebble from a bridge. If the parawel?  (1) 44.1 m  (2) 22.1 m  Jack stands on scales in an elevator. When the scales read 50 N. What is the acceleration of 2 m/s² if the coefficient of kinetic friction (1) 59 N  (2) 98 N  A car is initially moving backwards at a starceleration a = 5m/s². What is the speed (1) 15 m/s  (2) 25 m/s  A truck traveling at an unknown speed starting at an unknown speed	Midderm Exam 1 ne (print, last first):  On my honor, I have neither given nor received und YOUR TEST NUMBER IS THE 5-DIGIT NUMBER Code your test number on your answer sheet (use lines 76-Code your name on your answer sheet. DARKEN CIRCLES of answer sheet.  Print your name on this sheet and sign it also. Do all scratch work anywhere on this exam that you like. Circle stest, this exam printout is to be turned in. No credit will be given Blacken the circle of your intended answer completely, we make any stray marks or some answers may be counted as incorred. The answers are rounded off. Choose the closest to examine that no listed answer is correct, leave the form blacken that no listed answer is correct, leave the form blacken that no listed answer is correct, leave the form blacken is worth.  Generally,  General	ne (print, last first):	

Instructor(s): N. Sullivan

PHY 2004		PHYSICS DEPART Midterm Exam		September 24, 2014		
Name (print, last fi	irst):		Signature:	, ,		
(1	On my honor, I have neith	her given nor received u		examination.		
<ol> <li>Code your to Code your name answer sheet.</li> <li>Print your name (3) Do all scratch test, this exame (4) Blacken the any stray mark (5) The answers that no listed</li> </ol>	me on your answer sheet.  me on this sheet and sign it work anywhere on this exa n printout is to be turned in circle of your intended a ks or some answers may be	ver sheet (use lines 70 DARKEN CIRCLES also. m that you like. Circle. No credit will be given answer completely, us counted as incorrect. the closest to exact	6-80 on the answer slope COMPLETELY. Consequence your answers on the without both answer slope a #2 pencil or be	neet for the 5-digit number). Dede your UFID number on your etest form. At the end of the		
	g = 9.80	$m/s^2$ $G = 6.67$	$\times 10^{-11} \mathrm{N \cdot m^2/kg^2}$			
` - /	ne starts at the center of towng point at the end of the v  (2) 17 km		west, and then walks 5 l	km due south. How far is she (5) 5.0 km		
` - /	00 kg car is traveling at 12 friction exerted by the tires (2) 2.2 N	,		ps in a distance of 30 m. What (5) 120 N		
` - /	(5 points) A small stone is dropped from a bridge. The stone hits the water below the bridge 3 seconds after it is dropped. How high is the bridge above the water?					
(1) 44.1 m	(2) 17 m	(3) 12 m	(4) 29.4 m	(5) 3.0 m		
	net X has the same size as to mass of planet X to that of (2) 2.0		ation due to gravity on $(4) 4.0$	planet X is $4.9 \text{ m/s}^2$ , what is $(5) 1.0$		
	A is traveling with a constact celerates with a constant ac					
(1) 2.0 s	(2) 5.0 s	(3) 0.5 s	(4) 1.0 s	(5) 7.5 s		
	5 kg mass is dragged across hat is the magnitude of the			the friction exerted by the ice		

(3) 17.5 N

(4) 200 N

(5) 35 N

(2) 140 N

(1) 70 N

 $(1) 3.3 \text{ m/s}^2$ 

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Inst	cructor(s): N. Sulli	van				
PHY 2004			PHYSICS DEPARTMENT Midterm Exam 1		September 13, 2013	
Name (print, last first):		):		Signature:		
	On	my honor, I have neith	er given nor received un	authorized aid on this es	xamination.	
(2) (3) (4) (5)	Code your test of Code your name of answer sheet. Print your name of Do all scratch wor test, this exam print Blacken the cirmake any stray make any stray make answers are believe that no	number on your answer sheet. If on this sheet and sign it rk anywhere on this examintout is to be turned in cle of your intended tarks or some answers me	also. In that you like. Circle In No credit will be give In answer completely, It is a be counted as incorrected to expect the closest the closest the closest the closest to expect the closest the c	your answers on the n without both answer susing a #2 pencil or ect. Eact. There is no pe	eet for the 5-digit number). de your UFID number on your test form. At the end of the	
			$g = 9.80 \text{ m/s}^2$			
1. (4 points) Nancy sets out on a drive. She drives 8 km east and then 15 km north. At the end of her drive, how fa she from her starting point?						
	(1) 17 km	(2) 23 km	(3) 16 km	(4) 7 km	(5) 30 km	
2.	(3 points) A stone bridge above the	e is dropped from a brid water?	ge It hits the water 2	seconds after it is drop	ped. What is the height of the	
	(1) 19.6 m	(2) 39.2  m	(3) 27.6 m	(4) 9.8 m	(5) 4.9 m	
3.	(4 points) A block of mass 10 kg sits on an inclined plane. The coefficient of static friction between the block and the surface is 0.60. A what angle (in degrees) must the block be raised before it begins to slide?					
	(1) 31°	(2) 75°	$(3) 42^{\circ}$	$(4) 25^{\circ}$	(5) 62°	
4.	(4 points) An aut in the forward dir	omobile is initially back section at $4 \text{ m/s}^2$ . What	ing up at a speed of 5 is its net displacement	m/s. At time $t = 0$ the after 4 s of acceleration	automobile begins accelerating?	
	(1) 12 m	(2) 0 m	(3) 6 m	$(4) \ 3 \ m$	(5) 9 m	
5.	(5 points) An astr	ronaut wants to measure	e the acceleration of gra	vity on planet X. On Ea	arth his powerful dart gun will	

shoot a dart a maximum horizontal distance of 30 m before the dart returns to the same height from which it was shot. She performs the same experiment on planet X, and finds that the dart gun shoots the dart a maximum distance of

(2)  $7.6 \text{ m/s}^2$  (3)  $9.8 \text{ m/s}^2$  (4)  $4.9 \text{ m/s}^2$  (5)  $27.4 \text{ m/s}^2$ 

90 m. What is the value of the acceleration due to gravity on Planet X?

77777 First Answer is Correct Answer Instructor(s): N. Sullivan PHYSICS DEPARTMENT Midterm Exam 1 PHY 2004 September 19, 2011 Name (print, last first): Signature: On my honor, I have neither given nor received unauthorized aid on this examination. YOUR TEST NUMBER IS THE 5-DIGIT NUMBER AT THE TOP OF EACH PAGE. (1) Code your test number on your answer sheet (use lines 76–80 on the answer sheet for the 5-digit number). Code your name on your answer sheet. DARKEN CIRCLES COMPLETELY. Code your UFID number on your answer sheet. (2) Print your name on this sheet and sign it also. (3) Do all scratch work anywhere on this exam that you like. Circle your answers on the test form. At the end of the test, this exam printout is to be turned in. No credit will be given without both answer sheet and printout. (4) Blacken the circle of your intended answer completely, using a #2 pencil or blue or black ink. Do not make any stray marks or some answers may be counted as incorrect. (5) The answers are rounded off. Choose the closest to exact. There is no penalty for guessing. If you believe that no listed answer is correct, leave the form blank. (6) Hand in the answer sheet separately.  $q = 9.80 \text{ m/s}^2$ 1. (4 points) A ball is thrown up vertically at 20 m/s. How high will the ball go? (4) 40.8 m (1) 20.4 m (2) 2.04 m (3) 5.10 m (5) 7.10 m 2. (4 points) Jane sets out on a walk. She walks 8 km east and then 15 km north. How far is she from her starting point? (1) 17 km(2) 23 km $(3)\ 16\ km$ (4) 7 km(5) 30 km3. (4 points) A stone is dropped from a bridge. It hits the water 2 seconds after it is dropped. What is the height of the bridge above the water? (3) 27.6 m (4) 4.9 m (1) 19.6 m (2) 39.2 m (5) 9.8 m4. (4 points) A block of mass 10 kg sits on an inclined plane. The coefficient of static friction between the block and the surface is 0.60. At what angle (in degrees) must the block be raised before it begins to slide?  $(1) 31^{\circ}$ (2)  $75^{\circ}$  $(3) 42^{\circ}$  $(4)\ 25^{\circ}$  $(5) 62^{\circ}$ 

5. (5 points) An automobile is initially backing up at a speed of 5 m/s. At time t=0 the automobile begins accelerating in the forward direction at 4 m/s<sup>2</sup>. What is its net displacement after 4 s of acceleration?

(1) 12 m

(2) 0 m

(3) 6 m

(4) 3 m

(5) 9 m

6. (5 points) A police cruiser is traveling at 20 m/s. A car traveling in the same direction at 30 m/s passes the cruiser. At this moment the car begins to accelerate in the forward direction at a rate of 2 m/s<sup>2</sup>, and the cruiser begins to accelerate in the forward direction at 4 m/s<sup>2</sup>. How far does the cruiser travel until it catches up to the car?

(1) 400 m

(2) 500 m

(3) 200 m

(4) 100 m

(5) 200 m

7. (4 points) An astronaut wants to measure the acceleration of gravity on planet X. On Earth his powerful dart gun will shoot a dart a maximum horizontal distance of 30 m before the dart returns to the same height from which it was shot. He performs the same experiment on planet X, and finds that the dart gun shoots the dart a maximum distance of 60 m. What is the value of the acceleration due to gravity on Planet X?

 $(1) 4.9 \text{ m/s}^2$ 

 $(2) 7.6 \text{ m/s}^2$ 

 $(3) 9.8 \text{ m/s}^2$ 

 $(4) 14.8 \text{ m/s}^2$ 

 $(5) 2.5 \text{ m/s}^2$ 

Instructor(s): N. Sullivan

(1)  $3.27 \text{ m/s}^2$ 

 $(2) 6.54 \text{ m/s}^2$ 

			PHYSICS DEPARTI				
	Y 2004	`	Midterm Exam		September 19, 2012		
Nar		i): Lhave mait		Signature:			
		,	her given nor received ur				
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, ,	believe that no		rect, leave the form b	olank.			
			$g = 9.80 \text{ m/s}^2$				
1.	(3 points) A cycl	ist travels 8 km east an	d then 15 km north. Ho	w far is she from her sta	arting point?		
	(1) 17 km	(2) 23 km	(3) 15 km	(4) 5 km	(5) 0 km		
2.	(4 points) A pebl the well?	ble is dropped from the	top of a water well. If the	he pebble takes 2 second	ds to hit the water, how deep is		
	(1) 19.6 m	(2) 9.8 m	(3) 39.2 m	(4) 0 m	(5) 4.9 m		
3.		5 points) Car A is traveling with a constant speed of 10 m/s. A drives by car B which is at rest. As soon as A passes, B accelerates with a constant acceleration of 10 m/s <sup>2</sup> . How long does it take B to catch up with A?					
	(1) 2.0 s	(2) 5.0 s	$(3)\ 10.0\ s$	(4) 1.0 s	(5) 7.5 s		
4. (6 points) An arrow is shot horizontally from the top of a 10 m tower. If the horizontal speed of the how far from the foot of the tower does the arrow hit the ground?				l speed of the arrow is $12 \text{ m/s}$ ,			
	(1) 17.1 m	(2) 12.3 m	(3) 10.0 m	(4) 8.5 m	(5) 2.5 m		
5.	(4 points) An astronaut equipped with full gear can jump a horizontal distance of 1 m on the surface of the earth. On the surface of the moon the acceleration due to gravity is 1/6 th of the value on earth. How far can the astronaut jump on the surface of the moon with the same equipment and same energy?						
	(1) 6.0 m	$(2) \ 3.0 \ \mathrm{m}$	(3) 1.0 m	(4) 0.0 m	(5) 12.0 m		
6.	(4 points) A 100 kg car is traveling at 12 m/s. If the driver hits the brakes and the car skids to a stop in 10 m, what is the force of friction exerted by the tires as the car is braking?						
	(1) 720 N	(2) 360 N	(3) 120 N	(4) 1440 N	(5) 550 N		
7.			on in the sketch, $M_2$ is 1 of the acceleration of the		$M_1$ $\square$ $M_2$		

(3)  $13.1 \text{ m/s}^2$ 

 $(4) 0 \text{ m/s}^2$ 

(5)  $1.63 \text{ m/s}^2$ 

77777 Instructor(s): <i>N</i> .	Sullivan						
77777 Histractor(s). 1v.	PHYSICS DEPARTMENT						
PHY 2004		Exam 1		September 22, 2010			
Name (print, last first):		Signatur	e:				
On my honor	r, I have neither g	given nor receive	ed unauthorized o	aid on this examination.			
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				answer sheet for the 5-digit			
number).	ioei on your unsv	ver sneet (use in	ies 70 00 on the t	mswer sheet for the 5 digit			
	n your answer sh	eet. DARKEN C	CIRCLES COMP	LETELY. Code your UFID			
number on your an				•			
(2) Print your name on							
				answers on the test form. At the			
	exam printout is	to be turned in.	No credit will be	e given without both answer sheet			
and printout.  (4) Blacken the circle (	of your intended	answer complete	oly using a #2 ne	ncil or blue or black ink. Do not			
make any stray ma							
(5) The answers are roo							
(6) Hand in the answer							
		g = 9.80					
The first answer given	on this template	are the correct	answers.				
1. A ball is thrown up	vertically at 20 m	/s. How high wi	ll the ball go?				
	(2) 40.8 m			m			
2. Jane sets out on a war point?	alk. She walks 5	km east and then	12 km north. Ho	ow far is she from her starting			
	(2) 17 km (3)	7 km (4)	12 km	(5) 5 km			
3. A stone is dropped from a bridge. It hits the water 3 seconds after it is dropped. What is the height of the bridge above the water?							
(1) 44.1 m	(2) 22 m	(3) 10.5 m	(4) 66 m	(5) 5.5 m			
4. A block of mass 10 kg sits on an inclined plane. The coefficient of static friction between the block and							
the surface is 0.75.	At what angle (in	degrees) must t	he block be raise	d before it begins to slide? (5) 45 °			
(1) 37	(2) 55	(3) 89	(4) 3	(3) 43			
5. An automobile is initially backing up at a speed of 5 m/s. At time $t = 0$ the automobile begins accelerating in the forward direction at 4 m/s <sup>2</sup> . What is its net displacement after 4s of acceleration? (In other words, if $XI = 0$ , what is the value of $XF$ at $t = 4s$ ?)							
(1) 12 m	(2) 9 m	(3) 6 m	(4) 3 m	(5) 0 m			
6. A police cruiser is tr	aveling at 20 m/s	s. A car traveling	g in the same dire	ection at 30 m/s passes the cruiser.			

At this moment the car begins to accelerate in the forward direction at a rate of 2 m/s2, and the cruiser begins to accelerate in the forward direction at 4 m/s2. How far does the cruiser travel until it catches

(4) 100 m

(5) 500 m

(3) 200 m

up to the car? (1) 400 m

(2) 300 m

Instructor(s): N. Sullivan

 $(1) 6.5 \text{ m/s}^2$ 

			PHYSICS DEPARTM			
PHY 2004		Midterm Exam 1			February 1, 2012	
Nar		5):				
	On	n my honor, I have neith	er given nor received un	authorized aid on this $\epsilon$	examination.	
(2) (3) (4) (5)	Code your test Code your name answer sheet. Print your name Do all scratch wo test, this exam p Blacken the ci make any stray n The answers a believe that no	on your answer sheet. I on this sheet and sign it ork anywhere on this exa rintout is to be turned in rcle of your intended marks or some answers m	ver sheet (use lines 76 DARKEN CIRCLES also. In that you like. Circle In. No credit will be give In answer completely, Inay be counted as incorr In ose the closest to exect, leave the form be	-80 on the answer sh COMPLETELY. Co your answers on the m without both answer using a #2 pencil of ect. act. There is no pe- lank.	eet for the 5-digit number). de your UFID number on your e test form. At the end of the sheet and printout. r blue or black ink. Do not enalty for guessing. If you	
			$g = 9.80 \text{ m/s}^2$			
1.	(3 points) A ball	is thrown up vertically	at 25 m/s. How high wi	ll the ball go?		
	(1) 31.9 m	(2) 3.20 m	(3) 0.51 m	(4) 40.8 m	(5) 7.10 m	
2.	(3 points) Jane se	ets out on a walk. She w	valks 8 km east and then	n 3 km north. How far i	s she from her starting point?	
	(1) 8.5  km	(2) 23 km	(3) 17.1  km	(4) 3 km	(5) 30  km	
3. (3 points) A stone is dropped from a bridge. It hits the water 1.5 seconds after it is dropped. What is bridge above the water?					oped. What is the height of the	
	(1) 11.0 m	(2) 39.2 m	(3) 19.6 m	(4) 5.5  m	(5) 1.10 m	
4. (3 points) A block of mass 10 kg sits on an inclined plane. The coefficient of static friction between the block surface is 0.51. At what angle (in degrees) must the block be raised before it begins to slide?						
	(1) 27°	$(2) 75^{\circ}$	(3) 47°	(4) 15°	(5) 67°	
5.	(4 points) An automobile is initially backing up at a speed of 5 m/s. At time $t = 0$ the automobile begins accelerating in the forward direction at 4 m/s <sup>2</sup> . What is its net displacement after 4 s of acceleration?					
	(1) 12 m	(2) 0 m	(3) 6 m	(4) 3 m	(5) 9 m	
6.	(5 points) A police cruiser is traveling at 20 m/s. A car traveling in the same direction at 30 m/s passes the cruiser. At this moment the car begins to accelerate in the forward direction at a rate of $2 \text{ m/s}^2$ , and the cruiser begins to accelerate in the forward direction at $4 \text{ m/s}^2$ . How far does the cruiser travel until it catches up to the car?					
	(1) 400m	(2) 27.9 m	(3) 100 m	(4) 15.7 m	(5) 175 m	
7.	shoot a dart a ma She performs the	aximum horizontal dista	nce of $30$ m before the danet X, and finds that the	lart returns to the same ne dart gun shoots the	earth his powerful dart gun will height from which it was shot. dart a maximum distance of 45	

(2)  $7.6 \text{ m/s}^2$  (3)  $9.8 \text{ m/s}^2$  (4)  $14.8 \text{ m/s}^2$  (5)  $2.5 \text{ m/s}^2$ 

- 8. (5 points) A 5 kg mass is held in equilibrium by 2 ropes as shown. What is the value of  $T_2$ , the tension in rope 2?

  - (1) 36 N (2) 13 N (3) 47 N (4) 61 N (5) 72 N

