Coct	ion: Moscurina Motic	n 154
	ion: Measuring Motion	
I. Na	ame something in motion that	you cannot see moving.
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OBSE	RVING MOTION BY USING A	REFERENCE POINT
	_ 2. An object in motion is m	oving in relation to an object that appears
	a. stay in place.	c. maintain constant velocity.
	b. keep moving.	d. maintain constant accelerati
		position over time relative to a reference $% \left(1\right) =\left(1\right) \left($
	point, the object is a. speeding.	c. decelerating.
	b. accelerating.	d. moving.
4. Fo	or determining motion, the su	· ·
	of the contraction of the contra	
	mmon	
		ountains all useful reference points?
		ountains all useful reference points?
		ountains all useful reference points?
5. W	hy are buildings, trees, and m	
5. W		a reference point? Explain.
5. W	hy are buildings, trees, and m	
5. W	hy are buildings, trees, and m	a reference point? Explain.
5. W	hy are buildings, trees, and m	a reference point? Explain.
5. W	hy are buildings, trees, and m	a reference point? Explain.
5. W	hy are buildings, trees, and mean a moving object be used as	a reference point? Explain.
5. W	hy are buildings, trees, and mean a moving object be used as the description of the dependence of an object dependence of an object dependence of the depend	a reference point? Explain. IND TIME s on the distance traveled and the
5. W. 6. Ca SPEE 7. Th	n a moving object be used as the speed of an object dependent take	a reference point? Explain. IND TIME s on the distance traveled and the in to travel that distance.
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Di	rected Reading A continued
10.	Explain how to calculate average speed.
	When a person drives for several hours, how does the distance traveled in or hour usually compare with the distance traveled in other hours? Explain.
	Suppose that, on a graph showing speed, there are two lines. One line represents speed per hour, and the other line represents average speed. Will both lines be exactly alike and in the same place on the graph? Explain.
VEI	LOCITY: DIRECTION MATTERS
13.	Why wouldn't birds end up at the same destination if they are flying exactly the same speed at all times?
14.	What is the difference between velocity and speed?

Dir	ected Reading A continued
	low would you calculate the resultant velocity of two velocities in the same irrection?
6. F	How would you calculate the resultant velocity of two velocities in opposite lirections? What direction is the larger velocity?
-	s it goes nown the file will not griph have on dramming expersions. Other constant travellest down the bill? Explain pour suismer
17.]	ELERATION If your speed is not changing but your direction is changing, are you accelerating? Explain your answer.
18.	Another name for acceleration in which velocity increases is
19.	acceleration. What are the two common terms for decrease in velocity?
20.	Write the mathematical formula for calculating average acceleration.
21	A speedometer shows that a cyclist is going 1 m/s the 1 st second, 2 m/s the 2 nd second, and 3 m/s the 3 rd second, as the cyclist continues straight south. How do you know the cyclist is accelerating?

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Pirected Rea	ading A continued			baunitus A c	mibseS betw
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	goes down the hill.				esent-
ing a roller	coaster traveling	down the hill?	'Explain you	r answer.	
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Skills Worksheet	
Directed Reading A	en de grande al la companie de la c
right pulls with a force of	
Section: What Is a Force?	
1. In science, a push or a pull is a(n)	•
2. Any change in motion is caused by a(n)	•
3. Force is expressed by a unit called the	•
FORCES ACTING ON OBJECTS	
4. Force always acts on a(n)	· · · · · · · · · · · · · · · · · · ·
5. Give two examples of objects on which your schoolwork.	n you exert forces when you are doing
6. Give one example of a force that does	not cause an object to move.
7. What is one example of an unseen sou	arce exerting a force?
8. What is one example of an unseen rec	eeiver of a force?
DETERMINING NET FORCE	a. Tesser or egula na evesso of been now of tails
9. The combination of all forces acting of	on an object is
•	cudents moving a piano exert force in the

Class

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pulls with a force of 10 N, while the dog on the right pulls with a force of 12 N. Which dog will win the tug-of-war? What is the net force? LANCED AND UNBALANCED FORCES What will knowing the net force on an object tell you about the forces on the object? When are the forces on an object balanced? When are the forces on an object balanced? Forces are unbalanced when the net force is not equal to a certain number on newtons. What is that number? What do you need to cause an object to start moving?
LANCED AND UNBALANCED FORCES What will knowing the net force on an object tell you about the forces on the object? When are the forces on an object balanced? Forces are unbalanced when the net force is not equal to a certain number on newtons. What is that number? What do you need to cause an object to start moving?
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	tion: A Force		
Wilde differen			type of kinematrianum er i.
. The force tha	at opposes motion	between two surf	aces that are in contact
is			
HE SOURCE OF	FINICION		lia le esujonal e elquazze ano s
. What are two	factors that affec	t the amount of fr	iction between two surfaces?
			or bulless of to about 49 and e
What hanner	as to friction if the	force pushing sur	faces together increases?
. What happer	is to inchoit if the	10100 pasama	
5. Why is more	force needed to s	lide a large book	across a table than to slide a
small book a	across the same ta	ble?	
6 . Is the amou	nt of friction great	er between rough	surfaces or smooth surfaces?
Why?			
A			et acital it vew eture (cina)
TYPES OF FRIC	CTION		
7. What is kin	etic friction?		
		en and the second secon	

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irected	Reading A continued		(199)	lls Work <u>sh</u>
What a	are two types of kinetic fri	iction?		sindri
	, 11000	14 2420 CCC	riction: A Force that	i noit
	type of kinetic friction is kinetic friction?	usually greater	, sliding kinetic friction or	
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What i	is one example of the use		ic friction?	SOUNCE
What	is one example of the use			ONE HERV
What	is static friction?	esculare ruture o	ri scubi edi hilioni di on sang	god and W
	se diffe or conit octobre	éanas status nem	ore force needed to slide a lix	and the second
As so			ces static friction?	
	N: HARMFUL AND HELPI is one helpful way friction			
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What	is one harmful way friction	on affects a car	? Violitale	
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Directed	Reading A c	ontinued				Si ills Workshee
		applied to a	surface to re	educe fricti	ion called?	
 17. What ar	re three way	s friction can	be reduced	}		ection: Gravit t. Why do sarokur
	21.892	esen viad to s				
18. What a	re two ways	friction can	be increased	?		
		-		- 20		and the second field the second

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Directed R	eading A		
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ection: Gravit	v. A Force	of Attraction	1
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. Wity do astronau	as on the moon	bounce when a	icy wait.
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The ferres of attraction	action botzzoon	two objects the	t is due to their masses is
Ine force of attra	action between	two objects tha	t is due to their masses is
	· ·		
IE EFFECTS OF GR	RAVITY ON MA	TTER	
. How can the force	ee of gravity cha	ange the motion	of an object?
1			
	# 10		*
. 337	00 1 11		
. Why is all matter	affected by gra	avity?	
. The force that p	ılls you toward	your pencil is the	he force
of			
		oward each othe	er because of gravity, why can't
you see the obje	cts moving tow	ard each other?	
			(D 419
7. How are objects	amarrad rear off	is stad brotha me	acc of Wowth?

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Directed Reading	g A continued			ennico A phibs	SI E
	E STUDY OF GR			i the law of a syc	
. What were the parts of the sar		at Sir Isaac Ne	ewton realized	were actually two)
	COM A PORT MAN TO THE PART OF			and the control of the state of	-
M. Marian					
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falling apple?	on does legend s			e moon and a	
0 11				The state of the s	-
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		1		llod	
). Newton summ	narized his ideas	about gravity i	n a law now ca	ined	
			amer then		
HE LAW OF UN	IVERSAL GRAVIT	TATION			
1. What is stated	by the law of ur	niversal gravita	tion?		
	The stage of the s				
·	gal nacib ma. asrii				201
2. How does the	law of universal	gravitation ex	plain why grav	rity between an	U1
elephant and	Earth is greater t	than gravity be	etween a cat an	d Earth?	
				e into má de a de andese.	11 1 107 - 10
A TOTAL CONTRACTOR CONTRACTOR					
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		7. SERVICE CONT TOMAS -		7	

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Directed Reading A	continued	ected Reading A.contineed
3. How does the law moon bounce whe		
		aris of the same question?
4. How does the grave compare to the grave.	vitational force between objects avitational force between large	s that have small masses objects?
	folio wen valuar ing	
5. Why doesn't the sugravitational force		
	- Várobovanova k	What is sensed by the law of senses.
	vitational force between two ob avitational force between two	
	drug i en een a at and Earth	elephani and Efeth is greater that g

WEIGHT AS A MEASURE OF GRAVITATIONAL FORCE 17. The measure of the gravitational force on an object in the gravity. 18. A measure of the amount of matter in an object in the gravity.	Neasuring Motion OCABULARY n your own words, write a definition 1. motion
a. mass.b. force.c. weight.d. gravity.	ect is its ACASULARY A YOUR OWN WORDS, WRITE & definition 1. motion
a. mass.b. force.c. weight.d. gravity.	Acasuring Motion OCABULARY 1 your own words, write a definition 1. motion
a. mass.b. force.c. weight.d. gravity.	Neasuring Motion OCABULARY n your own words, write a definition 1. motion
c. weight. d. gravity.	
u. gravity.	
18. A measure of the amount of matter in an object in	
a. mass.	
b. force.	
c. weight.d. gravity.	
19. If an object is moved from Earth to a place with force,	greater gravitational
a. its mass will stay the same.	
b. its weight will stay the same.	
c. its mass will increase.	
d. its weight will decrease.	
thing?	4. acceleration
	SECTION SUMMARY
21. What is the SI unit of force?	tead the following section summa
es position over time in relation to a	
22. Why is weight measured in newtons?	reference point.
22. Wity is weight inteasured in newtons:	
	to iravel that distance
	Velocity is speed in a given direc
23. What is the main of this of mass.	
24. Besides the kilogram, what are two units often used to	measure mass?
	¥