9K Speeding up...Balanced and unbalanced forces

level 5
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plenary one

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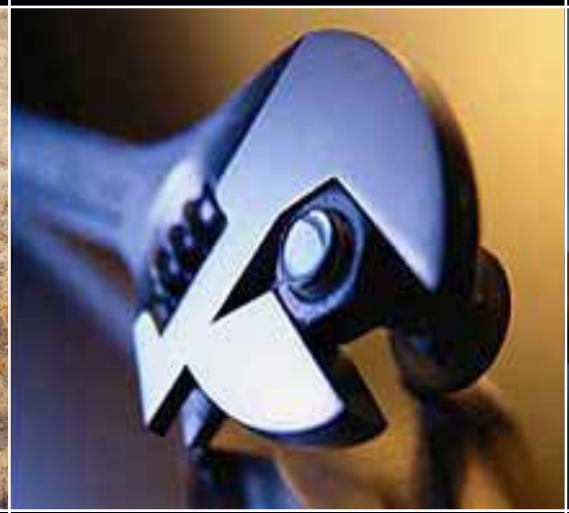
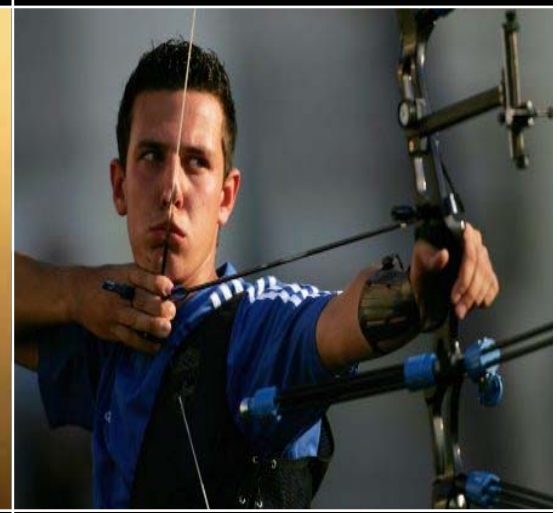
Look at the three pictures below. Energy is required to do work. In science, work is done if a force pushes, pulls, stretches or lifts an object with a mass. Decide for each picture, what kind of force this is an example of:

Click mouse to reveal answer

	Bump start	Spanner	Archery
Diagram			
	Pushing	Pushing	Pushing
	Pulling	Pulling	Pulling
	Stretching	Stretching	Stretching
	Turning	Turning	Turning

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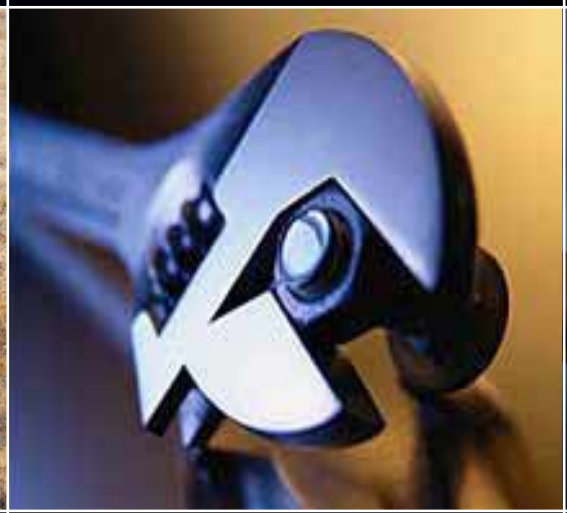
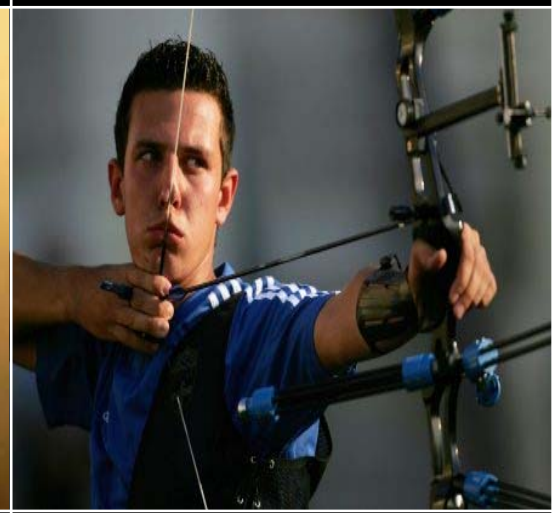
Answer:

	Bump start	Spanner	Archery
Diagram			
	Pushing		
			Stretching
		Turning	

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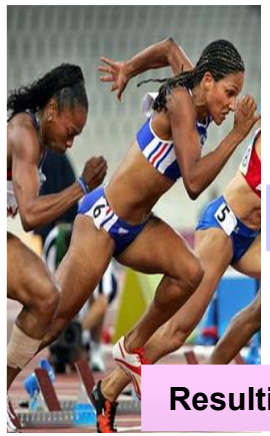
If an unbalanced force acts on a object, it will either speed up, slow down, change direction or change shape. Look at the three examples and work out the value of the total resulting force in Newtons acting on the object. Show its direction of movement:

Click mouse to reveal answer

	Problem one	Problem two	Problem three
Diagram			
	Work out the resulting force:	Work out the resulting force:	Work out the resulting force:

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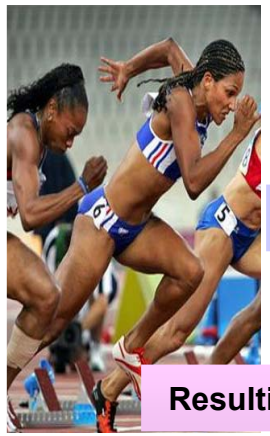
Answer:

	Problem one	Problem two	Problem three
Diagram			
	Answer: In this example, two forces exist; Gravity and friction. The resulting force is 5,000N – 750N giving a value of 4250N.	Answer: In this example, two forces exist; work done by the muscles and friction. The resulting force is 400N – 50N giving a value of 350N.	Answer: In this example, two forces exist; Gravity and air resistance. The resulting force is 750N – 250N giving a value of 500N.

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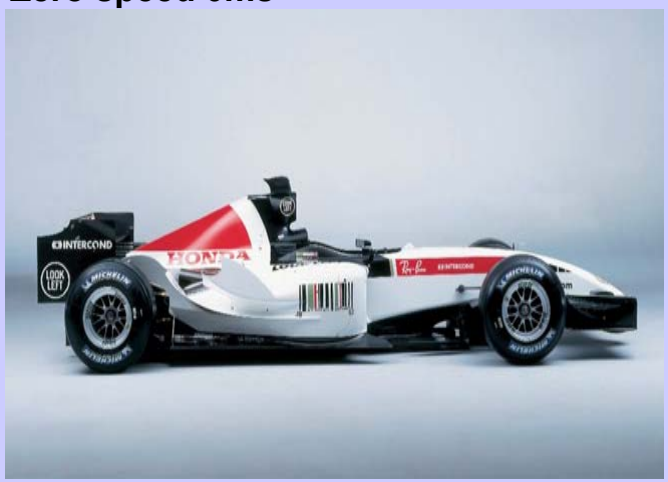
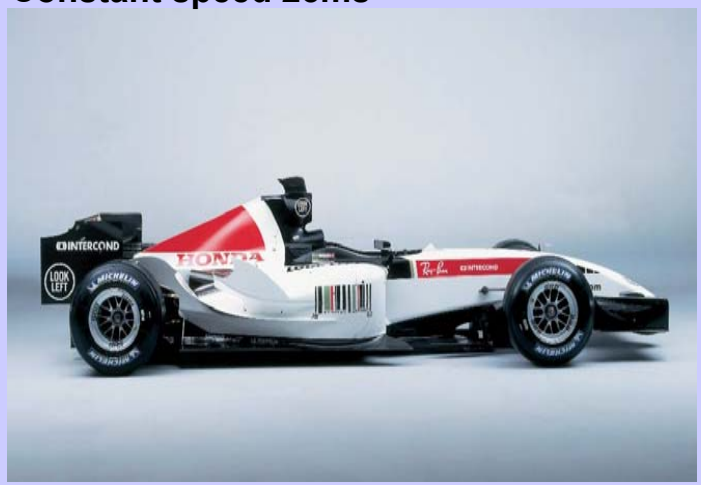
Look at the two pictures below: In picture one, the racing car is at rest with zero speed or 0ms^{-1}. In picture two the racing car is moving at a constant speed of 25ms^{-1}. Complete the missing information for the force values for both examples:

Click mouse to reveal answer

	Picture one	Picture two
Diagram	Gravity 4000N Up thrust __ ? Zero speed 0ms^{-1}  Force 0N Air drag __ ?	Gravity 4000N Up thrust __ ? Constant speed 25ms^{-1}  Force 70,000N Air drag __ ?

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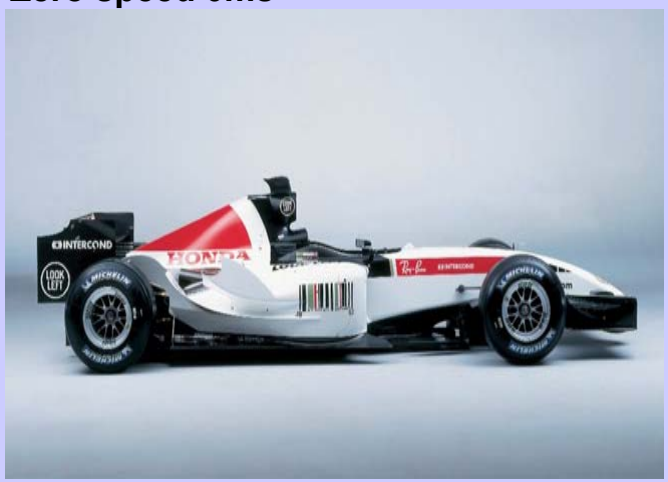
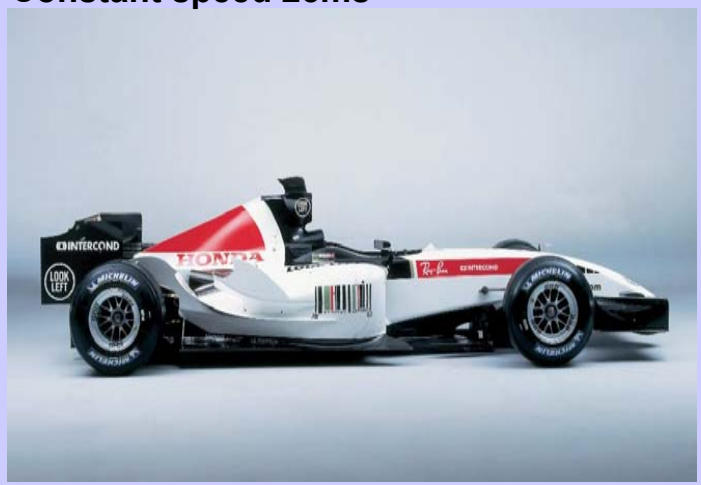
Answer:

	Picture one	Picture two
Diagram	Gravity 4000N Up thrust 4000N Zero speed 0ms^{-1}  Force 0N Air drag 0N	Gravity 4000N Up thrust 4000N Constant speed 25ms^{-1}  Force 70,000N Air drag 70,000N