Towards Mastery:

**Calculation Checklist**

1. Write the values you’re given.
2. Check the values are in SI units.
3. Write the equation you will use.
4. Substitute in the values you know.
5. If necessary, re-arrange the equation.
6. Calculate your answer.
7. Write your answer – don’t forget the units!

Power Calculations

[Learning]

*This is what you really need to be able to do – use the equation exactly as it is given to you, substitute in the values you are given in the question and calculate the kinetic energy. Show all your working out.*

1. Calculate the power if 50J of energy is used in 10 seconds.
2. What is the power if 72J of energy is used in 6 seconds?
3. 60J of energy is used in 12 seconds, calculate the power?
4. A device uses 16J of energy is used in 8 seconds, what is the power of the device?
5. What is the power if 55J of energy is used in 11 seconds?
6. A device uses 35J of energy is used in 7 seconds, calculate the power of the device?

[Challenge]

*These are the more difficult questions – you will need to substitute and then rearrange these equations – if you can do these then you are really starting to grasp these calculations. Show all your working out.*

1. Calculate the energy transferred if a device delivers 100W of power over 10seconds.
2. How long has a device been left on for if has a power rating of 200W and the total energy transferred is 8000J?
3. What is the total energy transferred by a 200W device if it is on for 20seconds?
4. Calculate the energy transferred if a device delivers 400W of power over 0.5seconds.
5. How long has a device been left on for if has a power rating of 600W and the total energy transferred is 3600J?
6. What is the total energy transferred by a 3000W device if it is on for 15seconds?

[Extreme]

*These are the most difficult questions – you will need to convert the units, substitute your values and then rearrange the equations – if you can do this you are well on your way on the journey to mastery of these calculations. Show all your working out.*

1. Calculate the power of a device that transfers 40000J of energy in 2 hours.
2. What is the power rating of a light bulb that uses 5kJ of energy in 30minutes?
3. Calculate how long a 0.5kW light bulb has been on for if 40kJ of energy is used.
4. Calculate the power rating of a light bulb that uses 10kJ of energy in 10minutes?
5. How much energy is used by a 2kW tumble trier that has been on for 1hour?