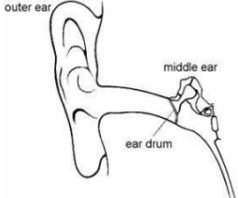


%	I can ...	Prove it!									
	<ul style="list-style-type: none"> Link pressure to product design. (MM10) Evaluate the ethics involved in using sound for specific purposes and research methods. (MM5) Compare a transverse and longitudinal wave. (MM4+6) Manipulate formula to calculate wavelength, frequency and speed. (MM5) Manipulate formula to calculate pressure, force and area. (MM10) 	<ol style="list-style-type: none"> Apply understanding of pressure to highlight considerations you would need to make when designing: <ol style="list-style-type: none"> An airplane designed to fly at high altitudes A submarine designed to explore the depths of the ocean. Sonar used by shipping vessels has been found to interfere with echolocation used by marine animals such as whales and dolphins and to affect feeding and mating behaviours. Evaluate the use of sonar within the fishing industry. Which type of wave is being demonstrated in this diagram? Justify your decision. <div style="text-align: center;"> </div> A wave has a frequency of 100Hz and a wavelength of 2m. How fast is it travelling? Give the unit. Some students fill an empty plastic bottle with water. The weight of the water in the bottle is 24N and the cross-sectional area of the bottom of the bottle is 0.008 m². Calculate the pressure of the water on the bottom of the bottle and give the unit. 									
	<ul style="list-style-type: none"> Demonstrate understanding of relationship between amplitude, volume, pitch and frequency. (MM2+4) Measure and accurately draw ray diagrams with angle of reflection and incidence. (MM9) Explain how refraction relates to real life phenomena. (MM9) Calculate pressure when given force and area. (MM5) Link water and gas pressure to real life examples. (MM10) 	<ol style="list-style-type: none"> Sylvia and Nasah both heard an explosion. The sound Nasah heard had the same pitch but a larger amplitude. Draw the trace to show what Nasah heard: <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;"> Sylvia </div> <div style="text-align: center;"> Nasah </div> </div> Complete the diagram below to show how the mirrors reflect the ray. Use a ruler and a protractor. <div style="text-align: right;"> </div> Explain, using the words <u>refraction</u>, <u>wavelength</u> and <u>frequency</u> how rainbows occur. When Jenny writes, the pencil exerts a force of 5N on the paper. The area of the pencil in contact with the paper is 0.5 mm². Calculate the pressure of the pencil on the paper. How does an artesian diver work? 									
	<ul style="list-style-type: none"> Describe amplitude and pitch from an oscilloscope reading. (MM1) Explain how ultrasound and sonar can be used. (MM2) Draw accurate ray diagrams to show reflection and refraction. (MM3) Explain the role of different parts of the eye in seeing. (MM4) Describe how the appearance of coloured objects is affected by the colour of light. (MM4) Give the equation used to calculate pressure. (MM5) Explain the effect of depth on water pressure. (MM5) Explain how gas pressure can be increased or decreased. (MM5) 	<ol style="list-style-type: none"> Which of these is the loudest, highest sound? <div style="display: flex; justify-content: space-around; align-items: center;"> </div> Explain what a bat uses sonar for. Finish the ray diagrams below. The light is being reflected in a) and refracted in b): <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>a)</p> </div> <div style="text-align: center;"> <p>b)</p> </div> </div> Explain the role that the following parts of the eye are involved in: <ol style="list-style-type: none"> Retina Lens Optic nerve Naomi uses different colours of light and different balls. Complete the table to show the colours the appear to Naomi: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>colour of ball</th> <th>colour of the light</th> <th>the colour the ball appears to Naomi</th> </tr> </thead> <tbody> <tr> <td>white</td> <td>red</td> <td></td> </tr> <tr> <td>green</td> <td>white</td> <td></td> </tr> </tbody> </table> <div style="text-align: right; margin-top: -20px;">coloured balls</div> The equation used to calculate pressure is $\text{Pressure} = \frac{\text{Force}}{\text{Area}}$ Scuba Divers can suffer from decompression sickness due to a rapid change in pressure when surfacing. Why is there more pressure at the bottom of the ocean? Would the pressure inside a container <u>increase</u> or <u>decrease</u> if you heated it? Why? 	colour of ball	colour of the light	the colour the ball appears to Naomi	white	red		green	white	
colour of ball	colour of the light	the colour the ball appears to Naomi									
white	red										
green	white										



%	I can ...	Prove it!																
	<ul style="list-style-type: none"> Describe how sound is transferred through waves of vibrating particles. (MM2) Describe changes in amplitude and pitch. (MM2) Identify objects that absorb, transmit and reflect light. (MM6) Draw a simple ray diagram to demonstrate how we see non-luminous objects. (MM6) Describe what happens in each part of the ear. (MM3) Explain how pressure, force and area are linked. (MM10) Describe how water exerts pressure on an object. (MM10) Describe why gases exert a pressure on a container. (MM10) 	<ol style="list-style-type: none"> Why do astronauts need radios to hear each other in Space? Aftal is playing the dotar which is a stringed instrument. What happens to the sound when the amplitude increases? Which of these objects transmit, absorb and reflect light. Put a tick in the appropriate columns: <table border="1" data-bbox="1207 617 1963 765"> <thead> <tr> <th></th> <th>Transmit</th> <th>Reflect</th> <th>Absorb</th> </tr> </thead> <tbody> <tr> <td>Window</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Wood</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Mirror</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> Here is a diagram of an ear. Label the ear with A, B or C to show: <ol style="list-style-type: none"> The part of the ear which transmits sound information to the brain. The part of the ear that collects and channels sound. The part of the ear that receives sound and matches vibrations.  Draw a ray diagram to show how the eye is able to see the tree:  Why does a camel's wide feet help it walk better on the sand than if it had small feet?  Why does a submarine need to have thicker, stronger walls than an ordinary boat? 		Transmit	Reflect	Absorb	Window				Wood				Mirror			
	Transmit	Reflect	Absorb															
Window																		
Wood																		
Mirror																		
	<ul style="list-style-type: none"> Identify vibrations as sources of sound. (MM1) Describe the difference between luminous and non-luminous objects. (MM2) Describe how the ear can be damaged by loud noises. (MM3) Draw simple ray diagrams to show how we see luminous objects. (MM6) Identify differences in pressure exerted by different objects. (MM10) 	<ol style="list-style-type: none"> Katie is playing her guitar. What is vibrating to create the sound we can hear? Katie plays in a rock band but is worried about her hearing. What advice would you give her on protecting her ears? <u>Circle</u> the objects below which are luminous. <u>Underline</u> the objects which are non-luminous: Sun Tree Moon TV Cat Mirror Draw a simple ray diagram to show how it is possible for the eye to see this candle:  Which would be the most appropriate shoes to wear in the snow: high heels or wellies. Explain your answer. Draw a Sankey diagram for the following: a toaster uses 100J of electrical energy. It produces 75J of thermal energy and 25J of light energy. 																

Key Terms

Luminous	Ray	Vibration	Energy	Absorb	Transmit	Reflection
Refraction	Spectrum	Electromagnetic	Retina	Lens	Pupil	Opaque
Translucent	Transparent	Amplitude	Pitch	Volume	Frequency	Pinna Eardrum
Auditory	Wavelength	Pressure	Force	Area	Incidence	Compression
Ultrasound	Sonar	*Transverse	*Longitudinal			

