

Physics 8 Learning Outcomes

<u>WAVES/ELECTROMAGNETIC SPECTRUM</u>	
Level 2	
	I can describe waves using the terms wavelength, frequency, and amplitude.
	I can identify types of waves in the electromagnetic spectrum, as well as their uses/properties.
Level 3	
	I can explain wavelength & frequency trends in the electromagnetic spectrum, and relate those to the properties of each type of wave.

<u>LIGHT</u>	
Level 2	
	I know how the visible light spectrum fits within the electromagnetic spectrum.
	I can explain how light and objects interact to create different colours. (absorption/reflection).
	I know that light travels in straight lines.
Level 3	
	I can use this knowledge to predict and explain the formation of shadows and images through a pinhole camera. I can explain this using words and diagrams.

<u>REFLECTION</u>	
Level 2	
	I can measure angles of incidence and reflected light.
	I know how a plane (flat) mirror creates an image. I can draw a mirror image.
	I can predict how a reflected beam of light will leave a flat mirror.

	I can tell the difference between a convex and concave mirrors.
Level 3	
	I can identify the tangent and the normal in a ray diagram.
	I can predict how a reflected beam of light will leave a curved mirror.
	I can explain how convex and concave mirrors are useful in everyday situations.

<u>REFLECTION</u>	
Level 2	
	I know how the visible light spectrum fits within the electromagnetic spectrum.
	I can explain how light and objects interact to create different colours. (absorption/reflection).
	I know that light travels in straight lines.
Level 3	
	I can use this knowledge to predict and explain the formation of shadows and images through a pinhole camera. I can explain this using words and diagrams.

<u>REFRACTION</u>	
Level 2	
	I can predict how a beam of light will refract when moving from one medium to another across a flat surface. (this is qualitative – know which direction it will go, but don't worry about how far)
Level 3	
	I can explain why refraction happens

	I can predict how a beam of light will refract when moving from one medium to another across a curved surface (convex or concave lens).
	I can tell the difference between convex and concave lenses, and I know the uses of each

<u>EYES</u>	
Level 2	
	I know the name, shape, location, and function of each of the parts of the human eye.
	I can explain how rods and cones detect different types of light.
Level 3	
	I can explain how an image is made in the eye, using words and ray diagrams.
	I can apply my knowledge of the eye to explain occurrences like: - blind spot, depth perception, nearsightedness and farsightedness.
	I can tell the difference between convex and concave lenses, and I know the uses of each.

Physics 9 Learning Outcomes

<u>STATIC ELECTRICITY</u>	
Level 2	
	I can describe the proton/electron balance inside charged and neutral objects.
	I can use the (piezoelectric series) to predict which charges are formed when 2 materials rub together.
	I know how static charges interact with one another, and with neutral objects.
	I can use the laws of static charge to experimentally determine if an object is positive, negative, or neutral.
Level 3	
	I can explain "induced charges": why charged objects attract neutral ones.
	I can identify common conductors and insulators, and I know the impact those have on static charge formation.
	I can give examples of how static electricity affects everyday systems.

<u>CURRENT ELECTRICITY</u>	
Level 2	
	I can use circuit symbols to draw circuit diagrams
	I can define current, voltage, and resistance. I know the symbols, units, and abbreviations for each term.
	I can use voltmeters/ammeters to correctly measure what's happening in a circuit. (resistor colour codes?)
	I can identify whether a circuit is set up in series or in parallel.
Level 3	

	I can explain, conceptually, the meaning of current, voltage, and resistance (analogies help!)
	I can explain how changing one of these 3 factors will affect others.
	I can use Ohm's Law calculations to solve the parts of a circuit (including metric conversions, like mA àA)
CHALLENGE	
	I can mathematically analyze more complex circuits, involving some series and some parallel, where the resistors are not all identical.

Physics 10 Learning Outcomes

Level 2	
	I can associate each of the eleven energy forms with either potential or kinetic energy.
	I can provide explanations how energy is transformed between potential and kinetic energy forms.
Level 3	
	I can relate each energy form to every other energy form and explain the transformation.
	I can predict the behaviour of objects in idealized mechanical systems.

Mechanical Energy

Level 2	
	I can describe a system and then define the boundaries of a system.
	I can use Conservation of Energy to construct an equation for idealized systems.
	I can calculate kinetic or potential mechanical energy of an object.
Level 3	
	I can solve for mass, height, or velocity using conservation of energy in a mechanical system.
	I can predict the behaviour of objects in idealized mechanical systems.