

# Edexcel GCSE Combined Science – Paper 1: Foundation Tier

Advance Information of Assessed Content 2022

Link to specification:

[https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/GCSE\\_CombinedScience\\_Spec.pdf](https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/GCSE_CombinedScience_Spec.pdf)

Link to advance information document:

[https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/teaching-and-learning-materials/W73065\\_GCSE\\_Combined\\_Science\\_1SC0\\_AN\\_Accessible\\_version.pdf](https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/teaching-and-learning-materials/W73065_GCSE_Combined_Science_1SC0_AN_Accessible_version.pdf)

Link to revised Physics equation sheet:

[https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/GCSE\\_CombinedScience\\_Spec.pdf](https://qualifications.pearson.com/content/dam/pdf/GCSE/Science/2016/Specification/GCSE_CombinedScience_Spec.pdf)

# Biology Paper 1 -F

These specification points and core practical will be the **major focus** of this paper

**Exam date: 17<sup>th</sup> May**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
2 – Cells and control – Cell cycle	2.1 Describe mitosis as part of the cell cycle, including the stages interphase, prophase, metaphase, anaphase and telophase and Cytokinesis	13-15	<a href="https://www.bbc.co.uk/bitesize/guides/zpkx8mn">https://www.bbc.co.uk/bitesize/guides/zpkx8mn</a>	<a href="https://www.youtube.com/watch?v=IOVdEiPWkHs">https://www.youtube.com/watch?v=IOVdEiPWkHs</a>
	2.2 Describe the importance of mitosis in growth, repair and asexual reproduction			
	2.3 Describe the division of a cell by mitosis as the production of two daughter cells, each with identical sets of chromosomes in the nucleus to the parent cell, and that this results in the formation of two genetically identical diploid body cells			
	2.4 Describe cancer as the result of changes in cells that lead to uncontrolled cell division			
	2.5 Describe growth in organisms, including: a cell division and differentiation in animals b cell division, elongation and differentiation in plants			
	2.6 Explain the importance of cell differentiation in the development of specialised cells			
	2.7 Demonstrate an understanding of the use of percentiles charts to monitor growth		<a href="https://www.bbc.co.uk/bitesize/guides/zpkx8mn">https://www.bbc.co.uk/bitesize/guides/zpkx8mn</a> page 6	
	2.8 Describe the function of embryonic stem cells, stem cells in animals and meristems in plants	16	<a href="https://www.bbc.co.uk/bitesize/guides/zpkx8mn">https://www.bbc.co.uk/bitesize/guides/zpkx8mn</a> page 7 and 8	<a href="https://www.youtube.com/watch?v=Kh27eyjxvYM">https://www.youtube.com/watch?v=Kh27eyjxvYM</a>
3 – Genetics – Reproduction and DNA	3.3 Explain the role of meiotic cell division, including the production of four daughter cells, each with half the number of chromosomes, and that this results in the formation of genetically different haploid gametes. The stages of meiosis are not required	20/21	<a href="https://www.bbc.co.uk/bitesize/guides/zghgpbk">https://www.bbc.co.uk/bitesize/guides/zghgpbk</a>	<a href="https://www.youtube.com/watch?v=w5SRMZlYR4w">https://www.youtube.com/watch?v=w5SRMZlYR4w</a>
	3.4 Describe DNA as a polymer made up of: a two strands coiled to form a double helix b strands linked by a series of complementary base pairs joined together by weak hydrogen bonds c nucleotides that consist of a sugar and phosphate group with one of the four different bases attached to the sugar			<a href="https://www.youtube.com/watch?v=TQ_iCf8mzMA">https://www.youtube.com/watch?v=TQ_iCf8mzMA</a>
	3.5 Describe the genome as the entire DNA of an organism and a gene as a section of a DNA molecule that codes for a specific protein			<a href="https://www.youtube.com/watch?v=o4LHU79fB3s">https://www.youtube.com/watch?v=o4LHU79fB3s</a>
	3.6 Explain how DNA can be extracted from fruit			

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**Exam date: 17<sup>th</sup> May**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 4 – Natural selection and genetic modification - Inheritance	4.2 Explain Darwin's theory of evolution by natural selection	29/30	Pages 1-5 ONLY <a href="https://www.bbc.co.uk/bitesize/guide/s/zyv83k7">https://www.bbc.co.uk/bitesize/guide/s/zyv83k7</a>	<a href="https://www.youtube.com/watch?v=7RraYCKvTXc">https://www.youtube.com/watch?v=7RraYCKvTXc</a>  <a href="https://www.youtube.com/watch?v=P5a3dAUod38">https://www.youtube.com/watch?v=P5a3dAUod38</a>
	4.3 Explain how the emergence of resistant organisms supports Darwin's theory of evolution including antibiotic resistance in bacteria			
	4.4 Describe the evidence for human evolution, based on fossils, including: a Ardi from 4.4 million years ago b Lucy from 3.2 million years ago c Leakey's discovery of fossils from 1.6 million years ago			
	4.5 Describe the evidence for human evolution based on stone tools, including: a the development of stone tools over time b how these can be dated from their environment			
Topic 5 – Health, disease and the development of medicines - Diseases	5.1 Describe health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, as defined by the World Health Organization (WHO)	35/36/37/38	<a href="https://www.bbc.co.uk/bitesize/guide/s/zts9y4j">https://www.bbc.co.uk/bitesize/guide/s/zts9y4j</a>	<a href="https://www.youtube.com/watch?v=QYWNXP36O48&amp;t=30s">https://www.youtube.com/watch?v=QYWNXP36O48&amp;t=30s</a>  <a href="https://www.youtube.com/watch?v=wUm71FPuVCQ">https://www.youtube.com/watch?v=wUm71FPuVCQ</a>  <a href="https://www.youtube.com/watch?v=K5zFxfbmC1M">https://www.youtube.com/watch?v=K5zFxfbmC1M</a> – just watch HIV bit not measles  <a href="https://www.youtube.com/watch?v=5rsdXadNj-E">https://www.youtube.com/watch?v=5rsdXadNj-E</a>
	5.2 Describe the difference between communicable and non-communicable diseases			
	5.3 Explain why the presence of one disease can lead to a higher susceptibility to other diseases			
	5.4 Describe a pathogen as a disease-causing organism, including viruses, bacteria, fungi and protists			
	5.5 Describe some common infections, including: a cholera (bacteria) causes diarrhoea b tuberculosis (bacteria) causes lung damage c Chalara ash dieback (fungi) causes leaf loss and bark lesions d malaria (protists) causes damage to blood and liver e HIV (virus) destroys white blood cells, leading to the onset of AIDS			
	5.6 Explain how pathogens are spread and how this spread can be reduced or prevented, including: a cholera (bacteria) – water b tuberculosis (bacteria) – airborne c Chalara ash dieback (fungi) – airborne d malaria (protists) – animal vectors			
	5.8 Explain how sexually transmitted infections (STIs) are spread and how this spread can be reduced or prevented, including: a <i>Chlamydia</i> (bacteria) b HIV (virus)			
Topic 5 Health, disease, and the development of medicines – immune system	5.13 Explain the role of the specific immune system of the human body in defence against disease, including: a exposure to pathogen b the antigens trigger an immune response which causes the production of antibodies c the antigens also trigger production of memory lymphocytes d the role of memory lymphocytes in the secondary response to the antigen	40/41	<a href="https://www.bbc.co.uk/bitesize/guide/s/zwtpgbk">https://www.bbc.co.uk/bitesize/guide/s/zwtpgbk</a> pages 2-4	<a href="https://www.youtube.com/watch?v=HSrrPdJDqxM">https://www.youtube.com/watch?v=HSrrPdJDqxM</a>
	5.14 Explain the body's response to immunisation using an inactive form of a pathogen			<a href="https://www.youtube.com/watch?v=uPeZBhJYlnU">https://www.youtube.com/watch?v=uPeZBhJYlnU</a>
	5.16 Explain that antibiotics can only be used to treat bacterial infections because they inhibit cell processes in the bacterium but not the host organism.			<a href="https://www.youtube.com/watch?v=uQt5bRIkD4g">https://www.youtube.com/watch?v=uQt5bRIkD4g</a>

# Biology Paper 1 - F

**Exam date: 17<sup>th</sup> May**

These specification points will **not be assessed** on this paper.

Spec point	Edexcel Revision Guide
Topic 1 Key concepts in biology – microscopy (1.4–1.6)	
Topic 1 Key concepts in biology – osmosis (1.16–1.17)	
Topic 3 Genetics – inheritance (3.19–3.23)	
Topic 4 Natural selection and genetic modification – genetic engineering (4.10–4.14)	
Topic 5 Health, disease, and the development of medicines – new medicines (5.20)	

# Chemistry Paper 1 - F

These specification points and core practical will be the **major focus** of this paper

**Exam date: 27<sup>th</sup> May**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 1 Key concepts in chemistry – Types of substance	1.32 Explain why elements and compounds can be classified as: a ionic b simple molecular (covalent) c giant covalent d metallic and how the structure and bonding of these types of substances results in different physical properties, including relative melting point and boiling point, relative solubility in water and ability to conduct electricity (as solids and in solution)	91-99	Page 2 ONLY - <a href="https://www.bbc.co.uk/bitesize/guides/zcrtvtv4">https://www.bbc.co.uk/bitesize/guides/zcrtvtv4</a>	
	1.33 Explain the properties of ionic compounds limited to: a high melting points and boiling points, in terms of forces between ions b whether or not they conduct electricity as solids, when molten and in aqueous solution	93	Page 4 ONLY <a href="https://www.bbc.co.uk/bitesize/guides/z9fwrwx">https://www.bbc.co.uk/bitesize/guides/z9fwrwx</a>	<a href="https://www.youtube.com/watch?v=leVxy7cjZMU">https://www.youtube.com/watch?v=leVxy7cjZMU</a>
	1.34 Explain the properties of typical covalent, simple molecular compounds limited to: a low melting points and boiling points, in terms of forces between molecules (intermolecular forces) b poor conduction of electricity	94/95	Page 4 only - <a href="https://www.bbc.co.uk/bitesize/guides/zgrxdxs">https://www.bbc.co.uk/bitesize/guides/zgrxdxs</a>	<a href="https://www.youtube.com/watch?v=DECGNyC-x_s">https://www.youtube.com/watch?v=DECGNyC-x_s</a>
	1.35 Recall that graphite and diamond are different forms of carbon and that they are examples of giant covalent substances	96/97	Page 2 and 3 ONLY - <a href="https://www.bbc.co.uk/bitesize/guides/zspxdxs">https://www.bbc.co.uk/bitesize/guides/zspxdxs</a>	<a href="https://www.youtube.com/watch?v=ge7PB9aP-Wc">https://www.youtube.com/watch?v=ge7PB9aP-Wc</a> - ignore silicon dioxide bit
	1.36 Describe the structures of graphite and diamond			<a href="https://www.youtube.com/watch?v=dEZltwgZeFU">https://www.youtube.com/watch?v=dEZltwgZeFU</a>
	1.37 Explain, in terms of structure and bonding, why graphite is used to make electrodes and as a lubricant, whereas diamond is used in cutting tools			<a href="https://www.youtube.com/watch?v=6jCJXhusl2M&amp;t=23s">https://www.youtube.com/watch?v=6jCJXhusl2M&amp;t=23s</a>
	1.38 Explain the properties of fullerenes including C60 and graphene in terms of their structures and bonding			
	1.39 Describe, using poly(ethene) as the example, that simple polymers consist of large molecules containing chains of carbon atoms	97		
	1.40 Explain the properties of metals, including malleability and the ability to conduct electricity	98	Page 1 only - <a href="https://www.bbc.co.uk/bitesize/guides/zcrtvtv4">https://www.bbc.co.uk/bitesize/guides/zcrtvtv4</a>	<a href="https://www.youtube.com/watch?v=-qlnXrhrhY">https://www.youtube.com/watch?v=-qlnXrhrhY</a>
	1.41 Describe the limitations of particular representations and models to, include dot and cross, ball and stick models and two- and three-dimensional representations	99		<a href="https://www.youtube.com/watch?v=0khrZnI9CIQ">https://www.youtube.com/watch?v=0khrZnI9CIQ</a>
	1.42 Describe most metals as shiny solids which have high melting points, high density and are good conductors of electricity whereas most non-metals have low boiling points and are poor conductors of electricity	98		

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**Exam date: 27<sup>th</sup> May**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 1 Key concepts in chemistry – Calculations involving masses	1.43 Calculate: a relative formula mass given relative atomic masses a percentage by mass of an element in a compound given relative atomic masses	100	<a href="https://www.bbc.co.uk/bitesize/guide/s/ztdsmg">https://www.bbc.co.uk/bitesize/guide/s/ztdsmg</a>	<a href="https://www.youtube.com/watch?v=q49NwlrjaFw">https://www.youtube.com/watch?v=q49NwlrjaFw</a>  <a href="https://www.youtube.com/watch?v=02lgP9u_bcE&amp;t=3s">https://www.youtube.com/watch?v=02lgP9u_bcE&amp;t=3s</a>
	1.44 Calculate the formulae of simple compounds from reacting masses or percentage composition and understand that these are empirical formulae	101		
	1.45 Deduce: a the empirical formula of a compound from the formula of its molecule b the molecular formula of a compound from its empirical formula and its relative molecular mass	101		<a href="https://www.youtube.com/watch?v=k_GTEtK01Wg">https://www.youtube.com/watch?v=k_GTEtK01Wg</a>  <a href="https://www.youtube.com/watch?v=VgIotPASd9U">https://www.youtube.com/watch?v=VgIotPASd9U</a>
	1.46 Describe an experiment to determine the empirical formula of a simple compound such as magnesium oxide	101		
	1.47 Explain the law of conservation of mass applied to: a a closed system including a precipitation reaction in a closed flask b a non-enclosed system including a reaction in an open flask that takes in or gives out a gas	102		<a href="https://www.youtube.com/watch?v=K4pw_-U6Xpc">https://www.youtube.com/watch?v=K4pw_-U6Xpc</a>
	1.48 Calculate masses of reactants and products from balanced equations, given the mass of one substance	101		<a href="https://www.youtube.com/watch?v=5zOpoeN0dV0&amp;t=182s">https://www.youtube.com/watch?v=5zOpoeN0dV0&amp;t=182s</a>  <a href="https://www.youtube.com/watch?v=5zOpoeN0dV0">https://www.youtube.com/watch?v=5zOpoeN0dV0</a>
	1.49 Calculate the concentration of solutions in g dm <sup>-3</sup>	103		<a href="https://www.youtube.com/watch?v=3G3KQIyoZDI">https://www.youtube.com/watch?v=3G3KQIyoZDI</a>

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**Exam date: 27<sup>th</sup> May**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 2 States of matter and mixtures – States of matter	2.1 Describe the arrangement, movement and the relative energy of particles in each of the three states of matter: solid, liquid and gas	105	<a href="https://www.bbc.co.uk/bitesize/guides/z88jy4j">https://www.bbc.co.uk/bitesize/guides/z88jy4j</a>	<a href="https://www.youtube.com/watch?v=Ku0oTu8ZWqk">https://www.youtube.com/watch?v=Ku0oTu8ZWqk</a>
	2.2 Recall the names used for the interconversions between the three states of matter, recognising that these are physical changes: contrasted with chemical reactions that result in chemical changes			
	2.3 Explain the changes in arrangement, movement and energy of particles during these interconversions			
	2.4 Predict the physical state of a substance under specified conditions, given suitable data			
Topic 2 States of matter and mixtures – Methods of separating and purifying	2.5 Explain the difference between the use of ‘pure’ in chemistry compared with its everyday use and the differences in chemistry between a pure substance and a mixture	106	<a href="https://www.bbc.co.uk/bitesize/guides/zwhfw6f">https://www.bbc.co.uk/bitesize/guides/zwhfw6f</a>	<a href="https://www.youtube.com/watch?v=3oJxWwcnfJY">https://www.youtube.com/watch?v=3oJxWwcnfJY</a>
	2.6 Interpret melting point data to distinguish between pure substances which have a sharp melting point and mixtures which melt over a range of temperatures			<a href="https://www.youtube.com/watch?v=vJgBlvuLvgY&amp;t=111s">https://www.youtube.com/watch?v=vJgBlvuLvgY&amp;t=111s</a>
	2.7 Explain the types of mixtures that can be separated by using the following experimental techniques: a simple distillation b fractional distillation c filtration d crystallisation e paper chromatography	107-111		<a href="https://www.youtube.com/watch?v=ka6o5VCPRF8">https://www.youtube.com/watch?v=ka6o5VCPRF8</a>
				<a href="https://www.youtube.com/watch?v=gIMtFj2gPs8">https://www.youtube.com/watch?v=gIMtFj2gPs8</a>
				<a href="https://www.youtube.com/watch?v=hndJf_5aB9I">https://www.youtube.com/watch?v=hndJf_5aB9I</a>
				<a href="https://www.youtube.com/watch?v=86WY2mV9jiU">https://www.youtube.com/watch?v=86WY2mV9jiU</a>
2.8 Describe an appropriate experimental technique to separate a mixture, knowing the properties of the components of the mixture				
2.9 Describe paper chromatography as the separation of mixtures of soluble substances by running a solvent (mobile phase) through the mixture on the paper (the paper contains the stationary phase), which causes the substances to move at different rates over the paper				
2.10 Interpret a paper chromatogram: a to distinguish between pure and impure substances b to identify substances by comparison with known substances c to identify substances by calculation and use of R <sub>f</sub> values				
2.11 Core Practical: Investigate the composition of inks using simple distillation and paper chromatography			<a href="https://www.youtube.com/watch?v=P8i4QYncQxl">https://www.youtube.com/watch?v=P8i4QYncQxl</a>	
2.12 Describe how: a waste and ground water can be made potable, including the need for sedimentation, filtration and chlorination b sea water can be made potable by using distillation c water used in analysis must not contain any dissolved salts			<a href="https://www.youtube.com/watch?v=-XczTGavTZU">https://www.youtube.com/watch?v=-XczTGavTZU</a>	

# Chemistry Paper 1 - F

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**Exam date: 27<sup>th</sup> May**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 3 Chemical changes – Acids and bases	3.1 Recall that acids in solution are sources of hydrogen ions and alkalis in solution are sources of hydroxide ions	113	<a href="https://www.bbc.co.uk/bitesize/guides/zpqvtv4">https://www.bbc.co.uk/bitesize/guides/zpqvtv4</a>	<a href="https://www.youtube.com/watch?v=wmhOttrolrw">https://www.youtube.com/watch?v=wmhOttrolrw</a>
	3.2 Recall that a neutral solution has a pH of 7 and that acidic solutions have lower pH values and alkaline solutions higher pH Values			<a href="https://www.youtube.com/watch?v=ZWZTDiwOWil">https://www.youtube.com/watch?v=ZWZTDiwOWil</a>
	3.3 Recall the effect of acids and alkalis on indicators, including litmus, methyl orange and phenolphthalein			<a href="https://www.youtube.com/watch?v=4pIHhXfGZIE">https://www.youtube.com/watch?v=4pIHhXfGZIE</a>
	3.6 Core Practical: Investigate the change in pH on adding powdered calcium hydroxide or calcium oxide to a fixed volume of dilute hydrochloric acid	115		<a href="https://www.youtube.com/watch?v=plk6lpeADq4">https://www.youtube.com/watch?v=plk6lpeADq4</a>
	3.9 Recall that a base is any substance that reacts with an acid to form a salt and water only	114	Pages 1-3 ONLY - <a href="https://www.bbc.co.uk/bitesize/guides/z97gfcw">https://www.bbc.co.uk/bitesize/guides/z97gfcw</a>	
	3.10 Recall that alkalis are soluble bases	114		
	3.11 Explain the general reactions of aqueous solutions of acids with: a metals b metal oxides c metal hydroxides d metal carbonates to produce salts	114		<a href="https://www.youtube.com/watch?v=ofw6oHSYGFI">https://www.youtube.com/watch?v=ofw6oHSYGFI</a>
	3.12 Describe the chemical test for: a hydrogen b carbon dioxide (using limewater)			<a href="https://www.youtube.com/watch?v=iA4mk3CTkml">https://www.youtube.com/watch?v=iA4mk3CTkml</a>
3.13 Describe a neutralisation reaction as a reaction between an acid and a base	113/115	<a href="https://www.youtube.com/watch?v=saRBT5oZfh8">https://www.youtube.com/watch?v=saRBT5oZfh8</a>		
3.14 Explain an acid-alkali neutralisation as a reaction in which hydrogen ions (H <sup>+</sup> ) from the acid react with hydroxide ions (OH <sup>-</sup> ) from the alkali to form water				



# Chemistry Paper 1 - F

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**Exam date: 27<sup>th</sup> May**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 3 Chemical changes – Acids and making salts	3.15 Explain why, if soluble salts are prepared from an acid and an insoluble reactant: a excess of the reactant is added b the excess reactant is removed c the solution remaining is only salt and water	117	<a href="https://www.bbc.co.uk/bitesize/guide/s/z97gfcw">https://www.bbc.co.uk/bitesize/guide/s/z97gfcw</a>	
	3.16 Explain why, if soluble salts are prepared from an acid and a soluble reactant: a titration must be used b the acid and the soluble reactant are then mixed in the correct proportions c the solution remaining, after reaction, is only salt and water	117		
	<i>3.17 Core Practical: Investigate the preparation of pure, dry hydrated copper sulfate crystals starting from copper oxide including the use of a water bath</i>	116		<a href="https://www.youtube.com/watch?v=9GH95172Js8">https://www.youtube.com/watch?v=9GH95172Js8</a>
	3.18 Describe how to carry out an acid-alkali titration, using burette, pipette and a suitable indicator, to prepare a pure, dry salt	117		<a href="https://www.youtube.com/watch?v=saRBT5oZfh8">https://www.youtube.com/watch?v=saRBT5oZfh8</a>
	3.19 Recall the general rules which describe the solubility of common types of substances in water: a all common sodium, potassium and ammonium salts are soluble b all nitrates are soluble c common chlorides are soluble except those of silver and lead d common sulfates are soluble except those of lead, barium and calcium e common carbonates and hydroxides are insoluble except those of sodium, potassium and ammonium	118		
	3.20 Predict, using solubility rules, whether or not a precipitate will be formed when named solutions are mixed together, naming the precipitate if any	118		
	3.21 Describe the method used to prepare a pure, dry sample of an insoluble salt	119		

# Chemistry Paper 1 - F

Exam date: 27<sup>th</sup> May

These specification points will **not be assessed** on this paper.

Spec point	Edexcel Revision Guide
Topic 4 Extracting metals and equilibria – Obtaining and using metals (4.1–4.12)	
Topic 4 Extracting metals and equilibria – Reversible reactions and equilibria (4.13–4.17)	

# Physics Paper 1 - F

These specification points and core practical will be the **major focus** of this paper

**Exam date: 9<sup>th</sup> June**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 2 Motion and forces – Velocity and acceleration	2.1 Explain that a scalar quantity has magnitude (size) but no specific direction	156/157/158	<a href="https://www.bbc.co.uk/bitesize/guides/zgcp7p3">https://www.bbc.co.uk/bitesize/guides/zgcp7p3</a>	<a href="https://www.youtube.com/watch?v=P1ISWWUkMdQ">https://www.youtube.com/watch?v=P1ISWWUkMdQ</a>
	2.2 Explain that a vector quantity has both magnitude (size) and a specific direction			
	2.3 Explain the difference between vector and scalar quantities			
	2.4 Recall vector and scalar quantities, including: a displacement/distance; b velocity/speed; c acceleration; d force; e weight/mass; f momentum; g energy			
	2.5 Recall that velocity is speed in a stated direction			
	2.6 Recall and use the equations: a (average) speed (metre per second, m/s) = distance (metre, m) ÷ time (s) b distance travelled (metre, m) = average speed (metre per second, m/s) × time (s)		<a href="https://www.bbc.co.uk/bitesize/guides/z2x9v9q">https://www.bbc.co.uk/bitesize/guides/z2x9v9q</a>	<a href="https://www.youtube.com/watch?v=M_0FRIX8wIM">https://www.youtube.com/watch?v=M_0FRIX8wIM</a>
	2.7 Analyse distance/time graphs including determination of speed from the gradient	159		<a href="https://www.youtube.com/watch?v=DkCw2C-DkT0&amp;t=74s">https://www.youtube.com/watch?v=DkCw2C-DkT0&amp;t=74s</a>
	2.8 Recall and use the equation: acceleration (metre per second squared, m/s <sup>2</sup> ) = change in velocity (metre per second, m/s) ÷ time taken (second, s) a = (v-u) / t	158		<a href="https://www.youtube.com/watch?v=r5iXzDCRMSE">https://www.youtube.com/watch?v=r5iXzDCRMSE</a>
	2.9 Use the equation: (final velocity) <sup>2</sup> ((metre/second) <sup>2</sup> , (m/s) <sup>2</sup> ) – (initial velocity) <sup>2</sup> ((metre/second) <sup>2</sup> , (m/s) <sup>2</sup> ) = 2 × acceleration (metre per second squared, m/s <sup>2</sup> ) × distance (metre, m) v <sup>2</sup> – u <sup>2</sup> = 2 × a × x			<a href="https://www.youtube.com/watch?v=qpgWzTwnwUk">https://www.youtube.com/watch?v=qpgWzTwnwUk</a>
	2.10 Analyse velocity/time graphs to: a compare acceleration from gradients qualitatively; b calculate the acceleration from the gradient (for uniform acceleration only); c determine the distance travelled using the area between the graph line and the time axis (for uniform acceleration only)	159		<a href="https://www.youtube.com/watch?v=r5iXzDCRMSE">https://www.youtube.com/watch?v=r5iXzDCRMSE</a>
	2.11 Describe a range of laboratory methods for determining the speeds of objects such as the use of light gates	160		<a href="https://www.youtube.com/watch?v=M_0FRIX8wIM">https://www.youtube.com/watch?v=M_0FRIX8wIM</a>
	2.12 Recall some typical speeds encountered in everyday experience for wind and sound, and for walking, running, cycling and other transportation systems	156		
	2.13 Recall that the acceleration, g, in free fall is 10 m/s <sup>2</sup> and be able to estimate the magnitudes of everyday accelerations	163		

# Physics Paper 1 - F

These specification points and core practical will be the **major focus** of this paper

**Exam date: 9<sup>th</sup> June**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 2 Motion and forces – Reaction times and stopping distances	2.27 Explain methods of measuring human reaction times and recall typical results	166/168	<a href="https://www.bbc.co.uk/bitesize/guides/zxh2qhv">https://www.bbc.co.uk/bitesize/guides/zxh2qhv</a>	<a href="https://www.youtube.com/watch?v=Fm02i4vEi5Q">https://www.youtube.com/watch?v=Fm02i4vEi5Q</a>
	2.28 Recall that the stopping distance of a vehicle is made up of the sum of the thinking distance and the braking distance			<a href="https://www.youtube.com/watch?v=drMKdcMq3o0">https://www.youtube.com/watch?v=drMKdcMq3o0</a>
	2.29 Explain that the stopping distance of a vehicle is affected by a range of factors including: a the mass of the vehicle b the speed of the vehicle c the driver's reaction time d the state of the vehicle's brakes e the state of the road f the amount of friction between the tyre and the road surface			
	2.30 Describe the factors affecting a driver's reaction time including drugs and distractions			
	2.31 Explain the dangers caused by large decelerations			

# Physics Paper 1 - F

These specification points and core practical will be the **major focus** of this paper

**Exam date: 9<sup>th</sup> June**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 3 Conservation of energy – energy transfers and efficiency	3.1 Recall and use the equation to calculate the change in gravitational PE when an object is raised above the ground: change in gravitational potential energy (joule, J) = mass (kilogram, kg) × gravitational field strength (newton per kilogram, N/kg) × change in vertical height (metre, m) $\Delta GPE = m \times g \times \Delta h$	173	<a href="https://www.bbc.co.uk/bitesize/guides/zxpwrwx">https://www.bbc.co.uk/bitesize/guides/zxpwrwx</a>	<a href="https://www.youtube.com/watch?v=-zy9eWzmGe4&amp;list=PL9IouNCPbCxWNjJvmgwZ4vKy4VfcAhsCj">https://www.youtube.com/watch?v=-zy9eWzmGe4&amp;list=PL9IouNCPbCxWNjJvmgwZ4vKy4VfcAhsCj</a>
	3.2 Recall and use the equation to calculate the amounts of energy associated with a moving object: kinetic energy (joule, J) = $\frac{1}{2} \times \text{mass (kilogram, kg)} \times (\text{speed})^2$ ((metre/second) <sup>2</sup> , (m/s) <sup>2</sup> ) $KE = \frac{1}{2} m v^2$			<a href="https://www.youtube.com/watch?v=-zy9eWzmGe4">https://www.youtube.com/watch?v=-zy9eWzmGe4</a>
	3.3 Draw and interpret diagrams to represent energy transfers	169/170		<a href="https://www.youtube.com/watch?v=gj1tu8bTKjI">https://www.youtube.com/watch?v=gj1tu8bTKjI</a>
	3.4 Explain what is meant by conservation of energy			
	3.5 Analyse the changes involved in the way energy is stored when a system changes, including: a an object projected upwards or up a slope b a moving object hitting an obstacle c an object being accelerated by a constant force d a vehicle slowing down e bringing water to a boil in an electric kettle			
	3.6 Explain that where there are energy transfers in a closed system there is no net change to the total energy in that system	169/170		
	3.7 Explain that mechanical processes become wasteful when they cause a rise in temperature so dissipating energy in heating the surroundings			
	3.8 Explain, using examples, how in all system changes energy is dissipated so that it is stored in less useful ways			
	3.9 Explain ways of reducing unwanted energy transfer including through lubrication, thermal insulation		<a href="https://www.bbc.co.uk/bitesize/guides/zsb6w6f">https://www.bbc.co.uk/bitesize/guides/zsb6w6f</a>	
	3.10 Describe the effects of the thickness and thermal conductivity of the walls of a building on its rate of cooling qualitatively			
	3.11 Recall and use the equation: Efficiency = useful energy transferred / total energy supplied			<a href="https://www.youtube.com/watch?v=NI5jaeBrIgQ">https://www.youtube.com/watch?v=NI5jaeBrIgQ</a>

# Physics Paper 1 - F

These specification points and core practical will be the **major focus** of this paper

**Exam date: 9<sup>th</sup> June**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 4 Waves – Waves and their effects	4.1 Recall that waves transfer energy and information without transferring matter	175--180	<a href="https://www.bbc.co.uk/bitesize/guides/z97rsrd">https://www.bbc.co.uk/bitesize/guides/z97rsrd</a>	<a href="https://www.youtube.com/watch?v=iTe6snlZBp8">https://www.youtube.com/watch?v=iTe6snlZBp8</a>
	4.2 Describe evidence that with water and sound waves it is the wave and not the water or air itself that travels			
	4.3 Define and use the terms frequency and wavelength as applied to waves			
	4.4 Use the terms amplitude, period, wave velocity and wavefront as applied to waves			
	4.5 Describe the difference between longitudinal and transverse waves by referring to sound, electromagnetic, seismic and water waves			<a href="https://www.youtube.com/watch?v=0f5iYCNCnoW">https://www.youtube.com/watch?v=0f5iYCNCnoW</a>
	4.6 Recall and use both the equations below for all waves: wave speed (metre/second, m/s) = frequency (hertz, Hz) × wavelength (metre, m) $v = f \times \lambda$ wave speed (metre/second, m/s) = distance (metre, m) ÷ time (second, s) $V = x / t$			<a href="https://www.youtube.com/watch?v=Aucu7YshyQ0">https://www.youtube.com/watch?v=Aucu7YshyQ0</a>
	4.7 Describe how to measure the velocity of sound in air and ripples on water surfaces			<a href="https://www.youtube.com/watch?v=UNmv6H-f180&amp;t=4s">https://www.youtube.com/watch?v=UNmv6H-f180&amp;t=4s</a>
	4.10 Explain how waves will be refracted at a boundary in terms of the change of direction			<a href="https://www.youtube.com/watch?v=wO49W5IsP0s">https://www.youtube.com/watch?v=wO49W5IsP0s</a>
	4.17 Core Practical: Investigate the suitability of equipment to measure the speed, frequency and wavelength of a wave in a solid and a fluid			<a href="https://www.youtube.com/watch?v=ZXAmiRC0GB0">https://www.youtube.com/watch?v=ZXAmiRC0GB0</a>

# Physics Paper 1 - F

These specification points and core practical will be the **major focus** of this paper

**Exam date: 9<sup>th</sup> June**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 5 Light and the electromagnetic spectrum – Electromagnetic waves	5.7 Recall that all electromagnetic waves are transverse, that they travel at the same speed in a vacuum	181-184	<a href="https://www.bbc.co.uk/bitesize/guides/zc9k4qt">https://www.bbc.co.uk/bitesize/guides/zc9k4qt</a>	<a href="https://www.youtube.com/watch?v=u5vkYjV1V1A">https://www.youtube.com/watch?v=u5vkYjV1V1A</a>
	5.8 Explain, with examples, that all electromagnetic waves transfer energy from source to observer			
	5.9 Core Practical: Investigate refraction in rectangular glass blocks in terms of the interaction of electromagnetic waves with matter			<a href="https://www.youtube.com/watch?v=wO49W5IsP0s">https://www.youtube.com/watch?v=wO49W5IsP0s</a>
	5.10 Recall the main groupings of the continuous electromagnetic spectrum including (in order) radio waves, microwaves, infrared, visible (including the colours of the visible spectrum), ultraviolet, x-rays and gamma rays			
	5.11 Describe the electromagnetic spectrum as continuous from radio waves to gamma rays and that the radiations within it can be grouped in order of decreasing wavelength and increasing frequency			
Topic 5 Light and the electromagnetic spectrum – Harmful effects and uses of electromagnetic radiation	5.20 Recall that the potential danger associated with an electromagnetic wave increases with increasing frequency			
	5.21 Describe the harmful effects on people of excessive exposure to electromagnetic radiation, including: a microwaves: internal heating of body cells b infrared: skin burns c ultraviolet: damage to surface cells and eyes, leading to skin cancer and eye conditions d x-rays and gamma rays: mutation or damage to cells in the body			
	5.22 Describe some uses of electromagnetic radiation a radio waves: including broadcasting, communications and satellite transmissions b microwaves: including cooking, communications and satellite transmissions c infrared: including cooking, thermal imaging, short range communications, optical fibres, television remote controls and security systems d visible light: including vision, photography and illumination e ultraviolet: including security marking, fluorescent lamps, detecting forged bank notes and disinfecting water f x-rays: including observing the internal structure of objects, airport security scanners and medical x-rays g gamma rays: including sterilising food and medical equipment, and the detection of cancer and its treatment			<a href="https://www.youtube.com/watch?v=L0iivb-acqU">https://www.youtube.com/watch?v=L0iivb-acqU</a>
	5.24 Recall that changes in atoms and nuclei can a generate radiations over a wide frequency range b be caused by absorption of a range of radiations			

# Physics Paper 1 - F

These specification points and core practical will be the **major focus** of this paper

**Exam date: 9<sup>th</sup> June**

Topic	Concepts	Edexcel Revision Guide	Bitesize	YouTube
Topic 6 Radioactivity – Activity of radioactive sources, half-life, dangers and applications	6.23 Describe how the activity of a radioactive source decreases over a period of time	193-197	<a href="https://www.bbc.co.uk/bitesize/guides/z8x9v9g">https://www.bbc.co.uk/bitesize/guides/z8x9v9g</a>  Pages 1-3	<a href="https://www.youtube.com/watch?v=F_Y1-JieCrg">https://www.youtube.com/watch?v=F_Y1-JieCrg</a>
	6.24 Recall that the unit of activity of a radioactive isotope is the Becquerel, Bq			
	6.25 Explain that the half-life of a radioactive isotope is the time taken for half the undecayed nuclei to decay or the activity of a source to decay by half			<a href="https://www.youtube.com/watch?v=wj9BzGFao8k">https://www.youtube.com/watch?v=wj9BzGFao8k</a>
	6.26 Explain that it cannot be predicted when a particular nucleus will decay but half-life enables the activity of a very large number of nuclei to be predicted during the decay process			
	6.27 Use the concept of half-life to carry out simple calculations on the decay of a radioactive isotope, including graphical representations			
	6.29 Describe the dangers of ionising radiation in terms of tissue damage and possible mutations and relate this to the precautions needed		<a href="https://www.bbc.co.uk/bitesize/guides/zgxjdxs">https://www.bbc.co.uk/bitesize/guides/zgxjdxs</a>	
	6.31 Explain the precautions taken to ensure the safety of people exposed to radiation, including limiting the dose for patients and the risks to medical personnel			<a href="https://www.youtube.com/watch?v=teGu0VAPIOg">https://www.youtube.com/watch?v=teGu0VAPIOg</a>
	6.32 Describe the differences between contamination and irradiation effects and compare the hazards associated with these two			



# Physics Paper 1 - F

**Exam date: 9<sup>th</sup> June**

These specification points will **not be assessed** on this paper.

Spec point	Edexcel Revision Guide
Topic 2 Motion and forces – Newton's 1st law and 2nd law (2.14–2.23)	
Topic 3 Conservation of energy – Energy sources and patterns in usage of energy (3.13–3.14)	
Topic 5 Light and the electromagnetic spectrum – Emission and absorption of thermal radiation (5.12–5.14)	