

Year 11

Mock Exam

Revision Guide 2026



There will be two Computer Science Papers in the November Mock they will be following these topics in the J277 specification:

Paper 1:

1.2 Memory and storage

1.3. Computer networks, connections and protocols

1.4 Network security

1.5 Systems software

1.6 Ethical, legal, cultural and environmental impacts of digital technology

Paper 2:

2.1 Algorithms

2.2 Programming fundamentals

2.3 Producing robust programs

2.4 Boolean logic

2.5 Programming languages and Integrated Development Environments

Construction and Food Tech

Construction:

Students should use their homework booklets to continue revising over the half-term break. A scheduled revision task has been set within the booklet, along with additional preparation activities towards the back. Students can also use this time to catch up on any previous mixed homework tasks they may not have completed.

Food Prep:

Students should use their homework booklets to continue revising over the half-term break. A scheduled revision task has been set within the booklet, along with additional preparation activities towards the back. Students can also use this time to catch up on any previous mixed homework tasks they may not have completed.

Drama Revision Guide: Component 3

Section A: The It, by Vivianne Franxmann

Re-read the play to recap on plot and characters

Physical and vocal skills, you should be able to list these and understand them! (The list is at the front of your drama book)

Key terminology for lighting

Key terminology for sound

Key terminology for costume

Key terminology for set

Recall the 4 stage types

Plan your EXPRESSIONIST set designs for sections of The IT. Consider how to adapt them for different stage types.

Writing structure: WHEN, WHAT, HOW, WHY

Section B: Live Theatre

Use your 'Two Moments' from Paddington sheet to recall:

Costume, hair & Make-up

Lighting

Sound

Set

Also: What clearly made Paddington in the style of a musical?

Writing structure: WHEN, WHAT, HOW, WHY, OPINION

Unit R057: Health and well-being for child development

Topic Area 1: Pre-conception health and reproduction

1.1 Factors affecting pre-conception health for women and men

☐ Weight ☐ Smoking ☐ Drinking alcohol ☐ Taking recreational drugs ☐ Parental age	To include: • why pre-conception health matters • how each of these factors can affect the chances of conceiving for women and men Does not include: • risks to the mother and baby during pregnancy
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1.2 Other factors affecting the pre-conception health for women

☐ Folic acid ☐ Up to date immunisations	To include: • the reasons for taking folic acid before pregnancy • the importance of the mother being up to date with immunisations
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1.3 Types of contraception methods and their advantages and disadvantages

☐ Barrier methods ▪ Male condoms ▪ Female condoms ▪ Diaphragm or cap ☐ Hormonal methods ▪ Contraceptive pills ○ Combined pill ○ Progesterone only pill (POP) ▪ Contraceptive injection ▪ Contraceptive implant ▪ Intrauterine device ▪ Intrauterine system ▪ Emergency contraceptive pill ☐ Natural family planning ▪ Temperature method ▪ Cervical mucus method ▪ Calendar method	To include: • how each type prevents pregnancy • effectiveness if used correctly • availability • suitability of choices for personal circumstances such as breastfeeding
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1.4 The structure and function of the reproductive systems

1.4.1 The structure and function of the female reproductive system

- ☐ Ovaries
- ☐ Fallopian tubes
- ☐ Uterus/womb
- ☐ Cervix
- ☐ Vagina
- ☐ The menstrual cycle

1.4.2 The structure and function of the male reproductive system

- ☐ Testes
- ☐ Sperm duct/epididymis
- ☐ Urethra
- ☐ Penis
 - Vas deferens
 - Seminal vesicle

To include:

- know parts of the male and female reproductive systems on a diagram
- how each part of the male and female reproductive system works
- what happens during the menstrual cycle from the first day of woman's menstruation (a period) to the day before her next period
 - interpret a menstrual cycle diagram

Does not include:

- drawing the systems

1.5 How reproduction takes place

- ☐ Ovulation
- ☐ Conception/fertilisation
- ☐ Implantation
- ☐ Development of the embryo and foetus:
 - Amniotic fluid
 - Umbilical cord
 - Placenta
- ☐ Multiple pregnancies
 - Identical
 - Non identical/fraternal

To include:

- know what happens during reproduction
- when the embryo becomes a foetus
- how multiple pregnancies occur

Does not include:

- detailed week by week development of the embryo/foetus

1.6 The signs and symptoms of pregnancy

- ☐ Breast changes
- ☐ Missed period
- ☐ Nausea
- ☐ Passing urine frequently
- ☐ Tiredness

To include:

- know the common signs and symptoms

Topic Area 2: Antenatal care and preparation for birth

2.1 The purpose and importance of antenatal clinics

□ The meaning of the term antenatal □ The timing of first antenatal clinic appointment □ □ The roles of different health professionals: ▪ GP (General Practitioner) ▪ Midwife ▪ Obstetrician □ The reasons for routine tests/checks and what conditions they can identify: ▪ Baby's heartbeat ▪ Blood pressure ▪ Blood tests ▪ Examination of the uterus ▪ Urine test ▪ Weight check	To include: • how antenatal clinics prepare the mother for a safe pregnancy and delivery • how each health professional supports the pregnant mother and unborn baby
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2.2 Screening and diagnostic tests

2.2.1 The reasons for screening tests and what conditions they can identify

- Ultrasound scans
 - Dating
 - Anomaly
- Nuchal fold translucency scan
- Triple test
- Non-Invasive Prenatal Testing (NIPT)

2.2.2 The reasons for diagnostic tests and what conditions they can identify

- Amniocentesis
- Chorionic villus sampling (CVS)

- To include:
- know at what point of the pregnancy each test is carried out
 - difference between screening and diagnostic tests
- Does not include:
- 'how' each test is carried out

2.3 The purpose and importance of antenatal (parenting) classes

□ Prepares both parents for labour and parenthood □ Promotes healthy lifestyle and diet ▪ Food to avoid during pregnancy □ Provide advice on feeding and caring for the baby ▪ Why breast feeding is encouraged for at least the first two weeks	Does not include: • specific examples of nutrients and foods for a healthy diet • implying breast feeding is best
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2.4 The choices available for delivery

□ Hospital birth □ Home birth	To include: • reasons for choosing a hospital or home birth • the advantages and disadvantages of each Does not include: • different types of hospital birth
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2.5 The role of the birth partner in supporting the mother through pregnancy and birth

- | | |
|--|--|
| <ul style="list-style-type: none">☐ Physical support☐ Emotional support | <p>To include:</p> <ul style="list-style-type: none">• how the birth partner can offer physical and emotional support• the benefits of having a birth partner |
|--|--|

2.6 The methods of pain relief when in labour

- | | |
|---|--|
| <ul style="list-style-type: none">☐ Epidural anaesthetic☐ Gas and air (Entonox)☐ Pethidine☐ TENS | <p>To include:</p> <ul style="list-style-type: none">• advantages and disadvantages of each method |
|---|--|

2.7 The signs that labour has started

- | | |
|--|---|
| <ul style="list-style-type: none">☐ A show☐ Waters breaking☐ Contractions start | <p>To include:</p> <ul style="list-style-type: none">• know the signs that could indicate that labour has started |
|--|---|

2.8 The three stages of labour and their physiological changes

- | | |
|--|--|
| <ul style="list-style-type: none">☐ Stage 1:<ul style="list-style-type: none">▪ Neck of the uterus opens☐ Stage 2:<ul style="list-style-type: none">▪ Birth of the baby☐ Stage 3:<ul style="list-style-type: none">▪ Delivery of placenta | <p>To include:</p> <ul style="list-style-type: none">• know what happens at each stage |
|--|--|

2.9 The methods of assisted birth

- | | |
|---|--|
| <ul style="list-style-type: none">☐ Forceps☐ Ventouse☐ Episiotomy☐ Elective/ emergency caesarean section | <p>To include:</p> <ul style="list-style-type: none">• how each method is carried out• why assisted delivery may be necessary |
|---|--|

Topic Area 3: Postnatal checks, postnatal care and the conditions for development

3.1 Postnatal checks

3.1.1 The postnatal checks that are carried out on the baby immediately after birth and the reasons why:

- ☐ Apgar score
- ☐ Skin
 - Vernix
 - Lanugo
- ☐ Weight
- ☐ Length
- ☐ Head circumference

To include:

- the purpose of vernix and lanugo

3.1.2 The checks that are carried out on the baby within one to five days of birth and the reasons why:

- ☐ Physical examination:
 - Feet
 - Fingers
 - Hips
 - Eyes
 - Heart
 - Testicles in boys
 - Fontanelle
- ☐ Heel prick test (blood spot test)

3.2 Postnatal care of the mother and baby

- ☐ The role of the Health Visitor in supporting the new family including:
 - Safe sleeping - Sudden Infant Death Syndrome (SIDS) and how to reduce the risk
- ☐ How partner, family and friends can provide physical and emotional support
- ☐ The purpose of the mother's '6 week postnatal check' with the GP

To include:

- information, advice and support the health visitor will provide
- what the mother's 6 week postnatal check includes

3.3 The developmental needs of children from birth to five years

- ☐ Warmth
- ☐ Feeding
- ☐ Love and emotional security
- ☐ Rest/sleep
- ☐ Fresh air
- ☐ Exercise
- ☐ Cleanliness/hygiene
- ☐ Stimulation
- ☐ Routine
 - Bath time
 - Feeding
- ☐ Shelter/home
- ☐ Socialisation/play
- ☐ Opportunities for listening and talking
- ☐ Acceptable patterns of behaviour

To include:

- the importance of each developmental need
- how these needs can be met

Y11 Parents' Evening Information – Revision Materials and Guidance

Language Paper 1 and Language Paper 2

Revise the framework structures and complete timed practices. Physics and Maths Tutor website (PMT) has all of the past English papers and mark schemes.

Also, use the updated Masterclass PowerPoints which have been put on Satchel One for you previously and is also in the Shared Area on the Homepage and in your class Team, with a wealth of other revision materials and resources. You also have your exercise books and past papers with Feed Forward targets.

Literature Paper 1

Macbeth

Students have their orange exercise books with previous assessments and practice to look back over. You have covered revision area focuses in class and these revision PowerPoints have been shared with you to use at home to support your revision.

Revise the framework structures and complete timed practices.

Prepare for:

- How does Shakespeare present Macbeth's downfall – who is responsible?
 - How does Shakespeare present the characters of Macduff and Banquo as foils to Macbeth?
 - How does Shakespeare present the idea of kingship in the play?
 - How does Shakespeare present the idea of masculinity?
 - How does Shakespeare present the idea of morality?
 - How far do you think Macbeth is presented as a character who abandons his sense of right and wrong?
 - How does Shakespeare present ideas about evil in the play? *A witch repeat question?*
 - How far does Shakespeare present Macbeth as a hero?
 - How far does Shakespeare present madness in the play?
- Act 3,4,5 as extract potentials?

Jekyll and Hyde

Students have their current orange exercise books with previous assessments and practice to look back over. You have covered revision area focuses in class and these revision PowerPoints have been shared with you to use at home to support your revision.

Revise the framework structures and complete timed practices.

Prepare for:

- Science and duality
- Utterson/Lanyon
- Reputation/ Victorian Gentleman (Chapter 10 Now however, and in the light of the morning's accident...)
- Hyde as evil and unforgiving criminal
- Scientific discovery – Science v. Religion
- Appearance and Reality

Literature Paper 2

An Inspector Calls

Students have their current red exercise books with previous assessments and practice to look back over. You have covered revision area focuses in class and these revision PowerPoints have been shared with you to use at home to support your revision.

Revise the framework structures and complete timed practices.

Prepare for:

- What do you think is the importance of the opening of the play?
- How does Priestley present the Inspector's entrance and exit and how does this impact on others?
- How and where does Priestley create drama and tension to put his message about society across?
- How does Priestley present the abuse of power and position in An Inspector Calls?
- How does Priestley use the character of Eva to convey social inequality and responsibility?
- How does Priestley use the character of Arthur/ Gerald etc. to convey social inequality and responsibility?

Power and Conflict Poetry

Students have their current red exercise books with previous assessments and practice to look back over. You have covered revision area focuses in class and these revision PowerPoints have been shared with you to use at home to support your revision.

Revise the framework structures and complete timed practices.

Prepare for:

- Compare the ways poets present ideas about loss in 'The Emigree' and one other poem from the anthology.
- Compare the ways in which individual experiences are portrayed in 'The Emigree' and one other poem from the anthology.
- Compare the way that poets present memories in 'Remains' and one other poem from the anthology.
- Compare how identity is presented in Checking Out Me History and one other poem from the anthology.
- Compare how the power of nature is presented in Exposure and one other from the anthology.
- Compare the way that poets present the power of the individual in 'Tissue' and one other poem from the anthology.
- Compare how bravery and patriotism is explored in Storm on the Island and one other poem from the anthology.
- Compare the way place and the power it can have is presented in The Emigree and one other poem from the anthology.
- Compare how patriotism and attitudes towards conflict are conveyed in Charge of the light Brigade and one other poem from the anthology.

Which poems have already been named?

- Ozymandias x2
- Storm on the Island x1 in sample
- Poppies x1 in sample
- Bayonet Charge x2
- London x1
- Remains x1

- War Photographer x1
- My Last Duchess x1
- Kamikaze x1
- Exposure x1

What could therefore be named?

Power and identity focus:

eg. **The Emigree**, **Tissue**, **Checking out me History**, London, My Last Duchess

War focus:

eg. **Charge of the Light Brigade**, Remains

Memories focus:

eg. **The Emigree**, Remains, **Poppies**, War Photographer

Nature focus:

Eg. **Storm on the Island**, Exposure, **The Prelude**, Ozymandias

Unseen Poetry and Unseen Comparison Poetry

Students have their current red exercise books with previous assessments and practice to look back over. You have covered revision area focuses in class and these revision PowerPoints have been shared with you to use at home to support your revision.

Revise the framework structures and complete timed practices.

Additional Resources:

AQA website has useful materials.

BBC Bitesize.

Seneca.

You Tube – Mr Bruff.

Physics and Maths Tutor website – all past papers for English Literature and English Language, with mark schemes.

GCSE Business Paper 1 (Edexcel) – The Absolute Essentials

1. Enterprise

Entrepreneur

Risks vs Rewards

Business ideas

2. Business Opportunity

Customer needs

Market research

Gap in the market

USP (Unique Selling Point)

3. Finance

Revenue

Costs

Profit

Break-even

Sources of finance

Key formulas:

Revenue = Price × Quantity

Profit = Revenue – Costs

4. Marketing (4Ps)

Product

Price

Promotion

Place

5. Business Decisions

Location

Customer service

Business ownership (sole trader, partnership, Ltd)

6. External Influences

Economy

Technology

Laws

Environment & ethics

Geography:

Students can use Seneca for revision

There are lots of resources available for students including

Knowledge organisers,

Past papers,

RAG revision sheets,

Case study revision sheets and all of the GCSE pods on Share Point

The topics are:

Distinctive landscapes

Sustaining Ecosystems

Dynamic Development

Urban Futures

History

The exam will be on Germany from 1918-1933.

This covers the first two booklets.

Students should use the booklets to revise alongside the Classroom42 website that they all have logins for.

PER

Christian beliefs

Matters of life and death

Crime and Punishment

Peace and conflict.

AQA Combined Science Trilogy (8464) - November Mock Revision Guide

Paper 1 topics only for Biology, Chemistry and Physics.

Biology Paper 1

- Cell Biology
- Organisation
- Infection and Response
- Bioenergetics
- Required Practicals: Microscopy, Osmosis, Food Tests, Enzymes, Photosynthesis

Chemistry Paper 1

- Atomic Structure and the Periodic Table
- Bonding, Structure and Properties of Matter
- Quantitative Chemistry
- Chemical Changes
- Energy Changes
- Required Practicals: Electrolysis, Preparing Salts, Temperature Changes

Physics Paper 1

- Energy
- Electricity
- Particle Model of Matter
- Atomic Structure
- Required Practicals: Specific Heat Capacity, Resistance, Density

Online Revision Resources

Cognito

- Excellent short videos, quizzes and exam questions.
- <https://cognitoedu.org>

BBC Bitesize

- Student-friendly summaries and quizzes.
- <https://www.bbc.co.uk/bitesize>

Seneca Learning

- Structured courses matched to AQA.
- <https://www.senecalearning.com>

Physics & Maths Tutor

- Topic questions, flashcards and past papers.
- <https://www.physicsandmathstutor.com>

AQA Past Papers

- Essential for Year 11 mocks.
- <https://www.aqa.org.uk/find-past-papers-and-mark-schemes>

Freesciencelessons (YouTube)

- Ideal for independent revision.
- <https://www.youtube.com/@Freesciencelessons>

Foundation Revision - QR Code Poster



Number

BIDMAS	Rounding	Estimating	Calculator	Fraction Calculations	Equivalent Fractions	Percentages	Order FDP	Ratio
Squares, Cubes, Roots	HCF & LCM	Product of Primes	Negative Numbers	Decimals	Fractions of an Amount	FDP	Percentage of an Amount	Best Buys

Algebra

Collect Like Terms	Substitution	Expand Single Bracket	Factorise	Change Subject	Forming and Solving	Shape Equations	Linear Graphs	Quad. Graphs
Indices	nth Term	Double Brackets	Factorise Quadratics	Solving Equations	Trial & Improve	Inequalities	Conversion Graphs	Distance-Time

Geometry

Perimeter	Area	Circles	Compound Shapes	Surface Area	Volume	Pythagoras	Bearings	Plans & Elevations
Angles	Quadrilaterals	Polygons	Parallel Lines	Rotations	Enlargements	Centre of Enlargement	Loci	Maps & Scale

Statistics

Types of Data	Averages	Questionnaires	Tally Chart	Pictograms	Stem & Leaf	Pie Charts	Probability	Sample Space
Comparing Data	Mean from a Table	Two Way Tables	Timetables	Bar Charts	Line Graphs	Frequency Polygons	Scatter Graphs	Relative Frequency

Find somewhere quiet to work!

Identify the topics you need to work on!

@accessmaths
www.accessmaths.co.uk

Practice in small chunks every day!

Ask for help if you are still unsure!

Higher Revision - QR Code Poster



Number



Prime factors



Recurring Decimals



FDP Conversion



Add Fractions



Fractional Indices



Negative Indices



Bounds



Best Buys



Reverse Percentage



Independent Probability



Tree Diagrams



Direct Proportion



Inverse Proportion



Ratio



Sequences



Speed, Distance, Time



Surds 1



Surds 2

Algebra



Change the Subject



Quadratic Formula



Complete the Square



Circle Equation



Double Brackets



Simultaneous Equations



Indices



Substitution



Alg. Fraction 1



Alg. Fraction 2



Alg. Fraction 3



Alg. Fraction 4



Solve Inequalities



Factorise Quadratics



Solving Equations



Shape Equations



Form Equations



Alg. Fraction 5

Geometry



Trigonometry 1



Trigonometry 2



Sine Rule



Cosine Rule



3D Trig.



Area of a Triangle



Cylinders



Similar Shape Area



Similar Shape Vol.



Rotations



Vectors



3D Pythagoras



Neg. Enlargements



Frac. Enlargements



Alternate Segment



Circle Theorems



Polygons



Circle Segment

Statistics & Graphs



Stratified Sampling



Pie Charts



Histograms 1



Histograms 2



Harder Histograms



Cumulative Frequency



Frequency Polygons



Interpret Box Plots



Drawing Quadratics



Simultaneous Equations



Pythagoras Graphs



Graph Transformations



3D Coordinates



Midpoint of a Line



Distance Time Graphs



Inequality Regions



Equation of a Line



Perpendicular Lines

Find
somewhere
quiet to work!

Identify the
topics you need
to work on!

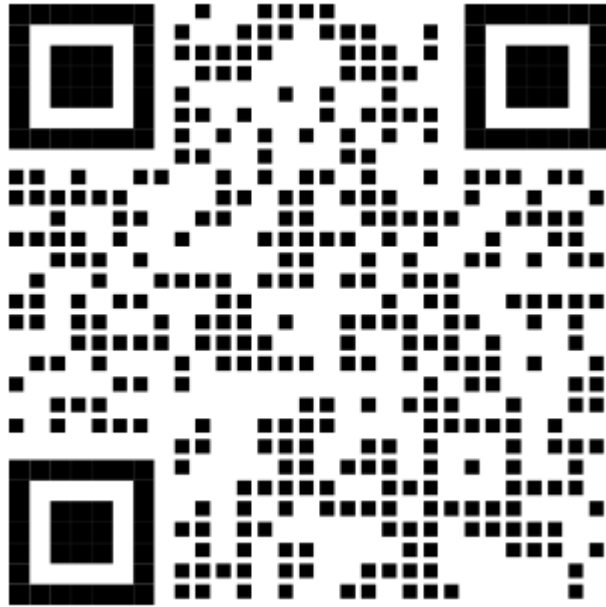


@accessmaths
www.accessmaths.co.uk

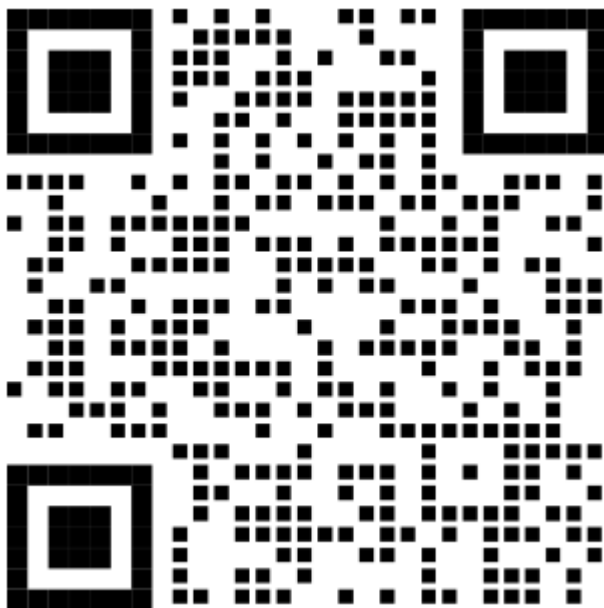
Practice in
small chunks
every day!

Ask for help if
you are still
unsure!

Higher Level - Every Topic Video



Foundation Level Every Topic Video



GCSE Foundation Tier Edexcel Checklist

Angle Facts - Video 35, 30, 34, 39
Types of Angle - Video 38
Angles in Parallel Lines - Video 25
Angles in a Triangle - Video 37
Angles in a Quadrilateral - Video 33
Angles in Polygons - Video 32
Bearings - Videos 26, 27
Scales & Maps - Video 283
Perimeter - Video 241
Area of Rectangles/Triangles - Videos 45, 49
Area of a Trapezium - Video 48
Units - Videos 347, 349
Sensible Estimates - Video 285
Line Symmetry - Video 316
Rotational Symmetry - Video 317
Constructions - Videos 72, 78, 83
Loci - Videos 75, 76, 77
Faces, Edges, Vertices - Videos 5, 3
Nets - Video 4
Views and Elevations - Video 354
Time Calculations - Video 322
Timetables - Video 320
Distance Charts - Video 318
Speed, Distance, Time - Video 299
Travel Graphs - Video 171
Density - Video 384
Pressure - Video 385
Translations - Video 325, 326
Reflections - Videos 272, 273
Rotations - Video 275
Enlargements - Videos 104, 105, 107
Parts of the Circle - Video 61
Circumference - Video 60, 243
Area of a Circle - Video 59, 47
Arc Length - Video 58
Area of a Sector - Video 46
Volume of a Cylinder - Video 357
Pythagoras - Video 257
Trigonometry - Videos 329, 330, 331
Exact Trig Values - Video 341
Similar Shapes (sides) - Video 292
Congruent Triangles - Video 67
Volume of a Cuboid/Prism - Video 355, 356
Volume of a Sphere/Cone - Videos 359, 361
Surface Area - Video 310
Surface area of Sphere/Cone - Videos 313, 314
Vectors - Video 353a, 353

Tally Charts - Video 321
Frequency Trees - Video 376
Two-way Tables - Video 319
Pictograms - Videos 161, 162
Bar Charts - Videos 147, 148
Frequency Polygons - Videos 155, 156
Line Graphs - Video 160
Pie Charts - Video 163, 164
Probability - Videos 245, 246, 248
Relative Frequency - Video 248
Listing Outcomes - Video 253
Scatter Graphs - Videos 165 to 168
Stem and Leaf - Videos 169, 170
Averages & Range - Videos 56, 50, 53, 57
Mode: Frequency Table - Video 56a
Median: Frequency Table - Video 51
Combined Mean - Video 53a
Estimated Mean - Video 55
Venn Diagrams - Video 380
Tree Diagrams - Video 252
Reading Tables - Video 387
Samples - Video 281a
Coordinates - Video 84
Function Machine - Video 386
Writing Expressions - Video 16
Collecting Like Terms - Video 9
Multiplying & Dividing Terms - Videos 18, 11
Laws of Indices - Video 174
Sequences - Videos 286, 287, 290, 287a
The nth Term - Video 288
Expanding Brackets - Videos 13, 14
Factorising - Video 117
Factorising Quadratics - Videos 118, 120
Solving Equations - Video 110, 113, 266
Forming Equations - Videos 114, 115
Inequalities - Videos 177, 178, 179
Conversion Graphs - Video 151
Drawing Linear Graphs - Video 186
 $y = mx + c$ - Video 191
Gradient - Video 189
Real Life Graphs - Video 171a
Parallel graphs - Video 196
Substitution - Video 20
Changing the Subject - Video 7
Simultaneous Equations - Videos 295, 297
Quadratic Graphs - Video 264
Cubic Graphs - Video 344
Reciprocal Graphs - Video 346



GCSE Higher Tier Edexcel Checklist

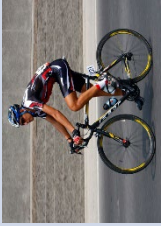
Adding Fractions - Video 133
 Multiplying Fractions - Video 142
 Dividing Fractions - Video 134
 Reciprocal - Video 145
 Decimals - Video 90, 91, 92, 93, 94
 Use of a Calculator - Video 352
 Estimation - Video 215
 Best Buys - Video 210
 Currency - Video 214a
 Conversion Graphs - Video 151, 152
 LCM/HCF - Videos 218, 219
 Product of Primes - Videos 223, 224
 Indices - Videos 172, 174
 Indices (fractional/negative) - Videos 173, 175
 Standard Form - Videos 300, 301, 302, 303
 Percentages of Amounts - Videos 234, 235, 238
 Percentage change - Video 233
 Simple Interest - Video 236a
 Compound Interest - Video 236
 Reverse Percentages - Video 240
 Recurring Decimals to Fractions - Video 96
 Ratio - Videos 270, 271, 271a, 271b, 271c
 Direct Proportion - Video 254
 Inverse Proportion - Video 255
 Proportional Graphs - Video 255b
 Proportion (application) - Video 255c
 Limits of Accuracy - Videos 183, 184
 Surds - Videos 305, 306, 307, 308
 Product Rule for Counting - Video 383
 Error Intervals - Video 377, 280
 Collecting Like Terms - Video 9
 Expanding Brackets - Videos 13, 14, 15
 Factorising - Video 117
 Factorising Quadratics - Videos 118, 119, 120, 119a
 Algebraic Fractions - Videos 21, 22, 23, 24
 Sequences (nth term) - Videos 288, 289
 nth term (quadratics) - Video 388
 Substitution - Video 20
 Equations - Videos 110, 113, 114, 115
 Changing the Subject - Videos 7, 8
 Inequalities - Videos 177, 178, 179
 Inequalities (Regions) - Video 182
 Quadratic Inequalities - Video 378
 Linear Graphs - Videos 191, 186, 189, 194
 Midpoint of a Line - Video 198
 Distance between 2 points - Video 185
 Real-life Linear Graphs - Video 171a
 Parallel or Perpendicular Lines - Videos 196, 197
 Simultaneous Equations - Video 295
 Non-linear Simultaneous Equations - Video 298
 Graphical Simultaneous Equations - Video 297

Frequency Trees - Video 376
 Two-way Tables - Video 319
 Pie Charts - Videos 163, 164
 Scatter Graphs - Videos 165, 166
 Histograms - Video 157, 158, 159
 Frequency Polygons - Videos 155, 156
 Stem-and-leaf - Videos 169, 170
 Cumulative Frequency - Videos 153, 154
 Box Plots - Video 149
 Quartiles - Video 57a
 Estimated Mean - Video 55
 Combined Mean - Video 53a
 Median (frequency table) - Videos 51, 52
 Modal class (frequency table) - Video 56a
 Probability - Video 250
 Relative frequency - Video 248
 Samples - Video 281a
 Tree Diagrams - Video 252
 Conditional Probability - Video 247
 Capture Recapture - Video 391
 Venn Diagrams - Video 380
 Equation of a Circle - Video 12
 Equation of a tangent - Video 372
 Instantaneous rates of change - Video 390a
 Average rates of change - Video 390b
 Area under a curve - Video 389
 Composite Functions - Video 370
 Inverse Functions - Video 369
 Quadratic Graphs - Video 264
 Solving Quadratics Graphically - Videos 267c, 267d
 Sketching Quadratics - Video 265
 Trigonometric Graphs - Videos 338, 339
 Cubic Graphs - Video 344
 Reciprocal Graphs - Video 346
 Exponential Graphs - Video 345
 Geometric Sequences - Video 375
 Algebraic Proof - Video 365
 Quadratic Formula - Video 267
 Completing the Square - Video 10, 371
 Transformations of Graphs - Video 323, 324
 Iteration - Video 373, 373a, 373b

Angles in Parallel Lines - Video 25, 39
 Bearings - Video 26, 27
 Angles in Polygons - Video 32
 Constructions - Video 78, 72, 79, 80, 70
 Loci - Videos 75, 76, 77
 Views - Video 354
 Area of a Trapezium - Video 48
 Circumference - Video 60
 Area of a Circle - Video 40
 Arc Length - Video 58
 Area of a Sector - Video 48
 Volume of a Cylinder - Video 357
 Pythagoras - Video 257, 259
 Trigonometry - Videos 329, 330, 331
 3D Trig and Pythagoras - Videos 259, 332
 Exact Trig Values - Video 341
 Volume of a Prism - Video 356
 Volume of Cone/Pyramid/Sphere - Videos 359-361
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 Metric Units (area/volume) - Videos 350, 351
 Translations - Video 325
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 Congruent Triangles - Video 67
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GCSE PE Knowledge Organiser Component One

Name:

GCSE Physical Education – Components of Fitness		
Health – A state of complete mental, physical and social well-being. fitness. Fitness - The ability to meet the demands of the environment. Exercise - A form of physical activity done primarily to improve health and/or fitness. Not competitive sport. Performance – The action of performing a task/action.	Relationship between these: - Regular exercise increases general health & fitness. - High levels of fitness can in turn have a positive impact on performance.	
Skill Related Components of Fitness		
Component	Definition	Sporting Example
Coordination	The ability to move two or more body parts at the same time.	
Reaction Time	The time taken for a response to occur after a stimulus.	
Agility	The ability to change direction at speed.	
Balance	The ability to keep the body steady when in a static position or when moving.	
Speed	The time taken to cover a set distance/complete a movement.	
Power	The ability to combine speed and strength.	
Health Related Components of Fitness		
Component	Definition	Sporting Example
Body Composition	The percentage of a body that is fat, muscle, bone and water.	
Muscular Strength	The amount of the force muscles can generate against a resistance.	
Muscular Endurance	The ability to use voluntary muscles, over long periods of time without getting tired.	
Flexibility	The range of movement at a joint.	
Cardiovascular Fitness (Aerobic Endurance)	The ability of the heart and circulatory system to meet the demands of the body for a long period of time.	

GCSE Physical Education – Fitness Testing

Muscular Strength

Test: Hand Grip Dynamometer Test

Protocol: Grip the dynamometer in one hand. Start with your hand up and bring down to side while pulling in handle. No swinging your hand.



Advantages	Disadvantages
• Simple and easy to complete	• Only one size of dynamometer which may affect reading. • Focuses solely on forearm strength.

Muscular Endurance

Test: 1 minute sit up test

Test: 1 minute press up test

Protocol: Complete as many full sit ups/press ups as possible in 1 minute.



Advantages	Disadvantages
• Simple test to complete • Minimal equipment needed.	• Difficult to assess whether each repetition is performed correctly. Difficult to accurately measure large groups.

Flexibility

Test: Sit and Reach Test

Protocol: Sit with legs straight out in front and soles of feet against box/table. Reach forward without bending knees. No jerking movements.



Advantages	Disadvantages
• Quick and easy to perform. • Data table readily available for comparison	• Can cause injury if not fully warmed up appropriately. • Only measures flexibility of lower back and hamstrings.

Cardiovascular Fitness (Aerobic Endurance)

Test: 12 min Cooper Run

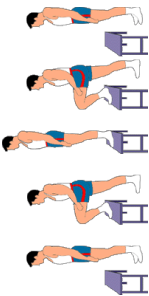
Protocol: Continuously run/swim for 12 minutes.
Distance recorded.



Advantages	Disadvantages
• Minimal equipment needed • Test can be self administered.	• Inaccuracy of heart rate measurements • Motivation dependant

Test: Harvard Step Test

Protocol: Step continuously for 5 minutes. Measure heart rate at 1, 2 and 3 minutes after exercise.



Agility

Test: Illinois Agility Test

Protocol: Start lying down at the start line. Complete course as quick as possible (10m x 5m – 4 central cones)



Advantages	Disadvantages
• Simple and easy to complete	• Motivation dependant / Timing errors.

Speed

Test: 30m Sprint Test

Protocol: Start from stationary position. Complete distance in the quickest possible time. Time is stopped when chest crosses the line.

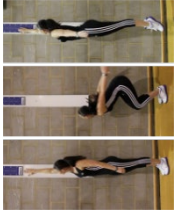


Advantages	Disadvantages
• Quick test to complete. • Minimal equipment needed and can be performed anywhere with a flat 50m run.	• Running surfaces/weather conditions can affect the results. • Inaccuracies with stopwatch usage.

Power

Test: Vertical jump Test

Protocol: Stand next to wall and mark an initial reach while feet are flat on the ground. Standing jump to reach as high as possible. Measure distance from first mark to second.



Advantages	Disadvantages
• Quick and easy to perform. • Easy to complete with large groups.	• Technique plays a large role in successful completion.

Reliability /Validity

Validity relates to whether the test actually measures what it sets out to measure.

Reliability is a question of whether the test is accurate. It is important to ensure that the procedure is correctly maintained for ALL individuals.

Results can be improved:

- By using experienced testers & calibrating equipment
- Ensuring performers have the same level of motivation to complete each test
- Repeatedly test to avoid human error (x3)



GCSE Physical Education – Methods of Training

Continuous training - Involves a steady but regular pace at a moderate intensity (aerobic) which should last for at least 20 minutes. i.e. running, walking, swimming, rowing or cycling. Used by a **marathon runner**.



Advantages	Disadvantages
• Ideal for beginners • Highly effective for long distance athletes	• Can be extremely boring as repetitive

Fartlek training – Referred to as ‘**speed play**’

This is a form interval training but without rest. Involves a variety of changing intensities over different distances and terrains.

i.e. 1 lap at 50% max, 1 lap walking, 1 lap at 80% (aerobic and anaerobic used)

Used by **games players** – **Hockey players**



Advantages	Disadvantages
• More enjoyable than interval and continuous training • Good for sports which require changes in speed • Easily adapted to suit the individuals level of fitness and sport.	• Performer must be well motivated particularly when intensity is high • Difficult to assess whether performer is performing at the correct intensity

Weight/Resistance training – A form of training that uses progressive resistance against a muscle group. Used by **cyclists**.

Muscular strength:

High weight x low repetitions

Muscular endurance:

Low weight x high repetitions



Advantages	Disadvantages
• Variety of equipment to prevent boredom • Strengthens the whole body or the muscle groups targeted. • Can be adapted easily to suit different sports	• Requires expensive equipment • If exercises are not completed with the correct technique it can cause injury to the performer

Fitness classes

Body pump – Weight based exercise class

Aerobics – Rhythmical dance movements set to music

Pilates/Yoga – Series of movements completed to core muscle strength & posture

Spinning – A high intensity workout on a stationary bike.



Advantages	Disadvantages
• Variety avoids boredom • Instructor will challenge & motivate • Great way to meet new people	• Gym membership can be expensive. • Group classes are not tailored to individual needs.

Interval training - Involves periods of work followed by periods of rest. *i.e. Sprint for 20 metre + walk back to start.*

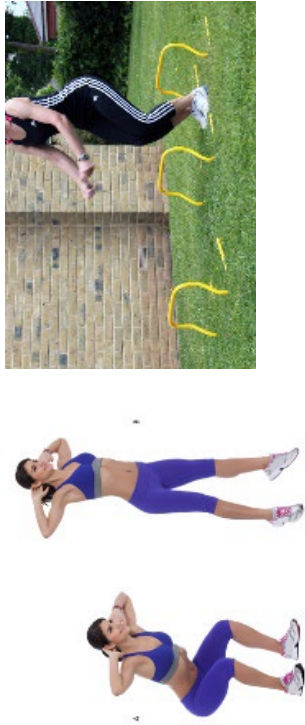
Used by a **200m sprinter**



Advantages	Disadvantages
• Quick and easy to set up. • Can mix aerobic and anaerobic exercise which replicates team games.	• It can be hard to keep going when you start to fatigue (high motivation and self discipline needed) • Over training can occur if sufficient rest is not allowed between sessions (48 hours)

Plyometrics training

Involves high-impact exercises that develop **power**. *i.e. bounding/hopping, squat jumps.* Used by **long jumpers, 100 m sprinters** or **basketball players**.



Advantages	Disadvantages
• Easy to set up requiring little or no equipment • Hugely effective in developing power	• Can result in injury if not fully warmed up. • Can place a great stress on joints and muscles.

Circuit training - A series of exercises completed one after another. Each exercise is called a station. Each station should work a different area of the body to avoid fatigue.

i.e. press ups, sit ups, squats, shuttle runs.



Advantages	Disadvantages
• Quick and easy to set up • Easy to complete with large groups • Can be adjusted to be made specific for certain sports. <i>i.e. netball specific circuit</i>	• Technique can be affected by fatigue and can increase risk of injury • Must have motivation and drive to complete the set amount of repetitions and sets.

GCSE Physical Education – Principles of Training

Principles of training - Guidelines that ensure training is effective and results in positive adaptations. These principles are used in Personal Exercise Programmes (PEP)

FITT Principle

Frequency	How often training takes place.	Increase training from once a week to two
Intensity	How hard the exercise is.	Increase resistance from 10kg to 15kg or increase incline on the treadmill.
Time	The length of the session.	Increase training session from 45 minutes to 55 minutes.
Type	The method of training used.	Change to from interval training to Fartlek training.

Specificity

Training showed be matched to the requirements of the sport or position the performer is involved in.
Training must be specifically designed to develop the right:

- Muscles
- Type of fitness
- Skills



PAR-Q – Physical Activity Readiness Questionnaire

Conducted before fitness testing or an activity programme to examine the performer’s readiness for training or any health conditions/lifestyle choices that may affect the successful completion.

Progressive Overload

Working the body harder than normal/gradually increasing the amount of exercise you do. i.e. bench press 50kg x 10 repetitions and increase to 55kg x5 repetitions.

Reversibility

If training is not regular, adaptations will be reversed. This can happen when:

- Suffering from illness and cannot train
- Injury
- After an off-season.

Individual needs

All PEP’s would differ depending on:

- Performer’s goals/targets
- Strength and weaknesses
- Age/gender
- Current health/fitness levels

Overtraining

Occurs when you train too hard and do not allow the body enough rest/recovery time. Signs/symptoms include: extended muscle soreness, frequent illness & increase injuries.

Calculating Training Zones/Thresholds of Training

Karvonen formula used to calculate aerobic and anaerobic target training zones.

Maximum Heart Rate (MHR) = 220 – age

Aerobic target zone: 60–80% of MHR
(60% = x 0.6 / 80% = x 0.8)

Anaerobic target zone: 80%–90% of MHR
(80% = x 0.8 / 90% = x 0.9)

90%

80%

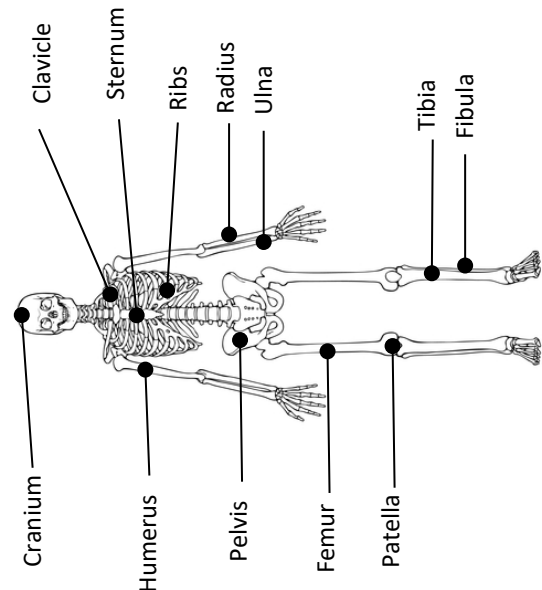
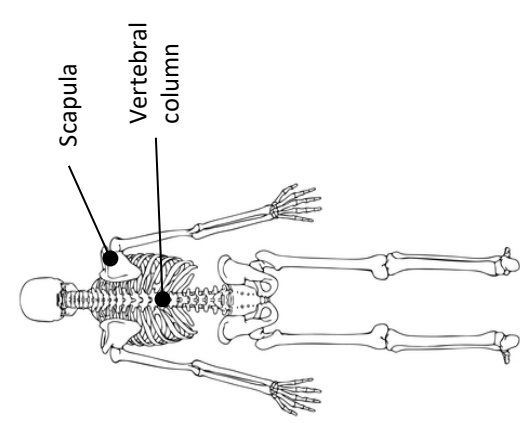
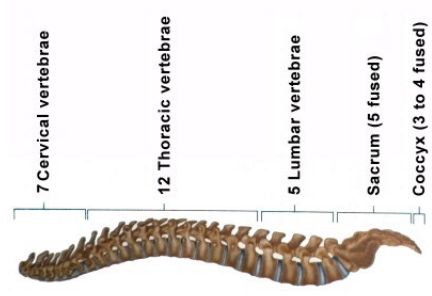
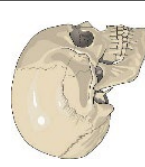
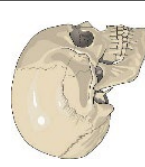
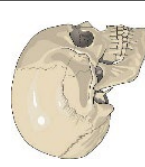
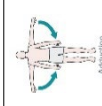
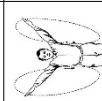
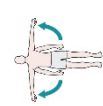
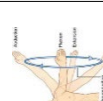
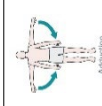
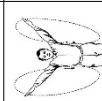
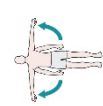
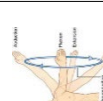
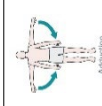
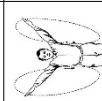
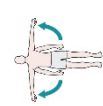
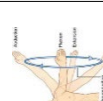
60%

Anaerobic training target zone
(Training for power and speed)

Aerobic training target zone
(Training for cardiovascular fitness and muscular endurance)

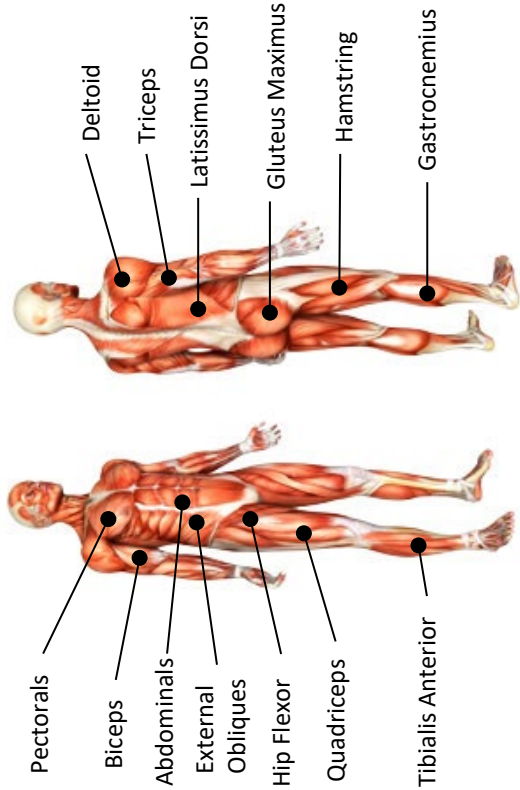


GCSE Physical Education – The structure and functions of the skeletal system

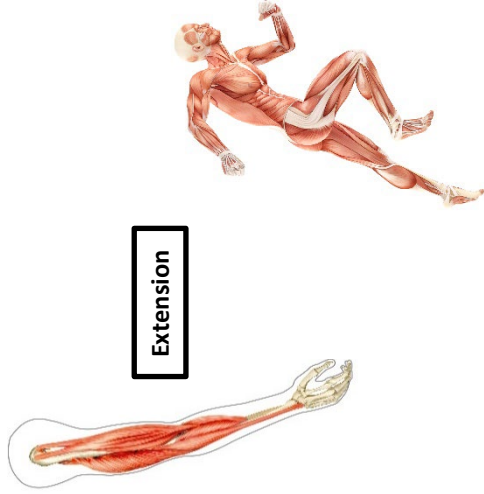
Structure of the skeletal system		Structure of the skeletal system		Vertebral Column																					
				The vertebral column is divided into 5 sections. It is made up of irregularly shaped bones called vertebrae.  Each vertebra is protected with cartilage to prevent friction. The vertebrae protects the spinal cord. Carpals Metacarpals Phalanges Tarsals Metatarsals Phalanges																					
Function of the skeleton		Classification of bones																							
- Protection of vital organs - Muscle attachment - Joints for movement - Blood cell production (platelets, red and white) - Storage of calcium and phosphorus		<table><tr><th>Long (leverage)</th><th>Short (weight bearing)</th><th>Flat (protection + muscle attachment)</th><th colspan="2">Irregular (protection and muscle attachment)</th></tr><tr><td> Clear shaft region to the bone. <i>i.e. femur, humerus & phalanges</i> </td><td> Light, small and very strong. <i>i.e. carpals & tarsals</i> </td><td> Broad surface area for muscle attachment. <i>i.e. cranium</i> </td><td colspan="2"> Assist the functioning of certain joints. <i>i.e. Patella/vertebrae</i> </td></tr></table>				Long (leverage)	Short (weight bearing)	Flat (protection + muscle attachment)	Irregular (protection and muscle attachment)		 Clear shaft region to the bone. <i>i.e. femur, humerus & phalanges</i>	 Light, small and very strong. <i>i.e. carpals & tarsals</i>	 Broad surface area for muscle attachment. <i>i.e. cranium</i>	 Assist the functioning of certain joints. <i>i.e. Patella/vertebrae</i>											
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Classification of joint		Joint movements																							
- Pivot (neck – atlas and axis) - Hinge (elbow and knee) - Ball and socket (hip and shoulder) - Condyloid (wrist)		<table><tr><th>Flexion</th><th>Adduction</th><th>Rotation</th><th colspan="2">Dorsi-Flexion (ankle joint)</th></tr><tr><td> Decreasing the angle at a joint (bending) </td><td> Limbs moving towards the midline of the body. </td><td> A twisting/turning action around a joint. </td><td colspan="2"> When the toes are turned up to the body. </td></tr><tr><th>Extension</th><th>Abduction</th><th>Circumduction</th><td colspan="2">Planter-Flexion (ankle joint)</td></tr><tr><td> Increasing the angle at a joint (straightening) </td><td> Limbs moving away from the midline of the body. </td><td> A combination of flexion, extension, adduction & abduction. </td><td colspan="2"> When the toes are pointed away from the body. </td></tr></table>				Flexion	Adduction	Rotation	Dorsi-Flexion (ankle joint)		 Decreasing the angle at a joint (bending)	 Limbs moving towards the midline of the body.	 A twisting/turning action around a joint.	 When the toes are turned up to the body.		Extension	Abduction	Circumduction	Planter-Flexion (ankle joint)		 Increasing the angle at a joint (straightening)	 Limbs moving away from the midline of the body.	 A combination of flexion, extension, adduction & abduction.	 When the toes are pointed away from the body.	
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Connective tissue																									
Ligaments – attaches bone to bone to add joint stability. Tendons – attaches muscles to bone and contributes to joint movement as a result of muscle contraction.																									

GCSE Physical Education – The structure and functions of the muscular system

Structure of the muscular system



Antagonistic pairs - Muscles are arranged in antagonistic pairs.
As one muscle contracts (shortens) its partner relaxes (lengthens) *i.e. Biceps and Triceps*.



Agonist = the muscle that contracts to produce movement.
Antagonist = the muscle that relaxes to allow the movement to occur.

Examples in the body:

- Biceps & Triceps
- Quadriceps & Hamstring
- Hip Flexor & Gluteus Maximus
- Tibialis Anterior & Gastrocnemius

Types of muscle

Voluntary muscles enable movement throughout the body.

Involuntary muscles are essential in maintaining healthy body systems.

Cardiac muscle is vital in sport because it makes the heart pump. Fitness training will strengthen cardiac muscle making the heart more efficient at pumping blood around the body.

The **short term effects** of exercise on the muscles:

1. Working muscles produce heat
2. Increased muscle fatigue due to lactate accumulation
3. Blood is re-distributed to working muscles (Shunting)

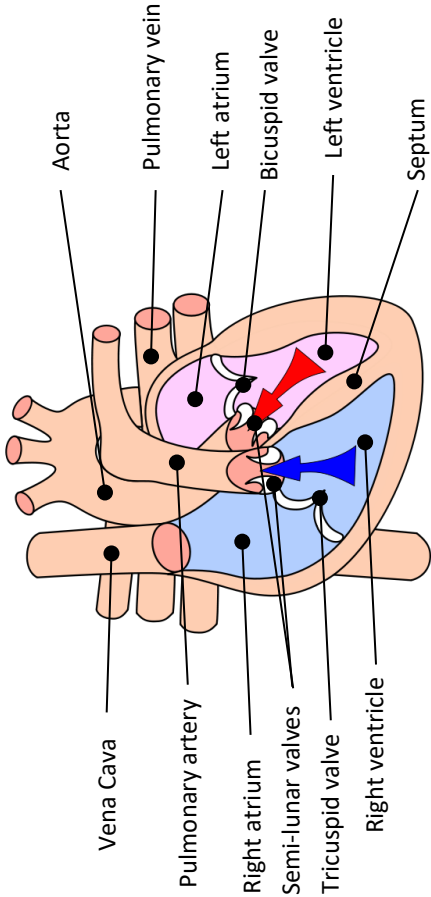
Muscle fibre types

Slow twitch muscle fibres (Type I)	Fast twitch muscle fibres (Type IIa)	Fast twitch muscle fibres (Type IIx/b)
1. Smaller in size. 2. Work aerobically with high fatigue resistance. 3. Have a good oxygen supply = deep red in colour. 4. They contract slowly, but can work for long periods. Marathon runner	1. Larger in size 2. Work anaerobically & linked to high intensity activities. 3. Are paler in colour and have limited oxygen supply. 4. They contract quickly and powerfully, but tire easily. 400/800m runner	1. Large in size 2. Work anaerobically & linked to extreme high intensity activities. 3. Very high speed of contraction but low fatigue resistance. 100m Sprinter



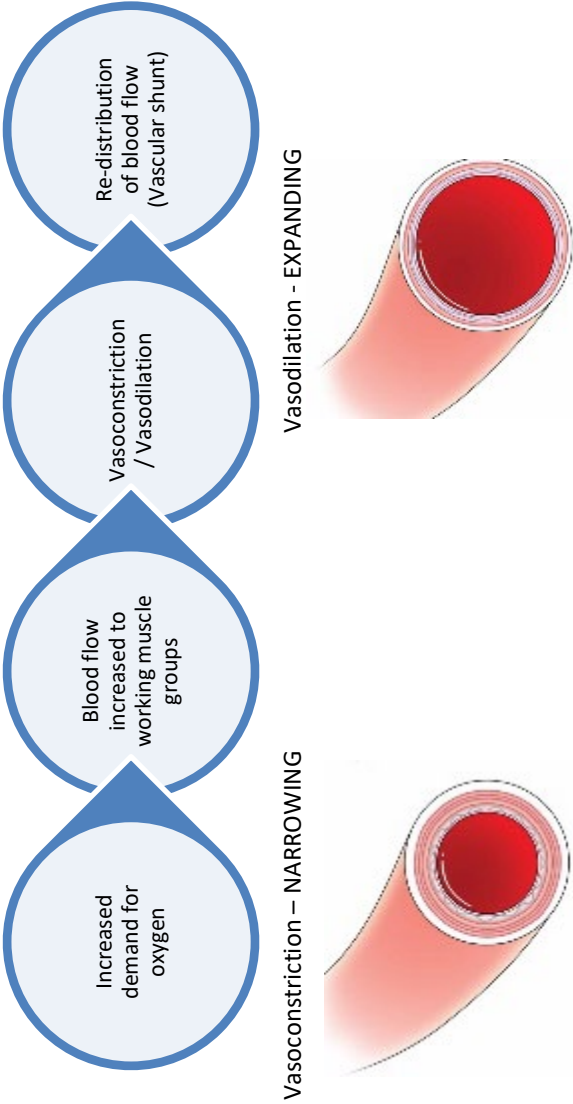
Link of the muscular and skeletal system – both systems work together to produce movement. *i.e. a contracting muscle pulls on a bone which changes the angle at a joint.*

Structure of the cardiovascular system



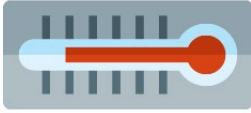
Deoxygenated blood = **BLUE** (Right side)
Oxygenated = **RED** (Left side)

Vascular Shunting



Function of the cardiovascular system

- Transport of oxygen, carbon dioxide and nutrients
- Clotting of open wounds
- Regulation of body temperature



Blood vessels

Arteries	Veins	Capillaries
1. Away from the heart 2. Oxygenated blood (except pulmonary artery) 3. Thick/elastic walls 4. High pressure 5. Small lumen 	1. Back to the heart 2. Deoxygenated blood (except pulmonary vein) 3. Thin walls + larger lumen 4. Lower pressure 5. Valves 	1. In the tissue 2. Site of gaseous exchange 3. Very thin walls 

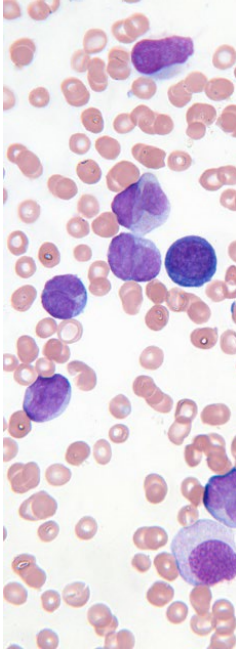
Components of blood - Red blood cells

Carry oxygen from the lungs to the working muscles + Removes CO₂.
Haemoglobin binds the oxygen



White blood cells

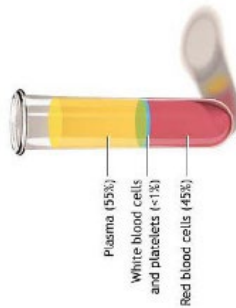
Are part of the immune system and **fight disease** and infection.



Platelets & Plasma

Platelets **clot blood** and form a scab around the site of injury.

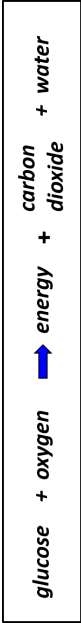
Plasma is the **liquid/fluid** part of blood that allows it to flow.



GCSE Physical Education – Aerobic/Anaerobic and long term effects of exercise

Aerobic and Anaerobic exercise – two methods of energy production by the body (Energy: the capacity to do work)
Two factors determine which method is used: **Intensity & duration**

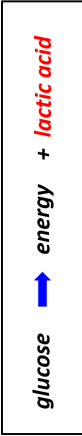
Aerobic energy production – takes place in the presence of oxygen



Exercise intensity is moderate/low for a sustained period of
i.e. marathon runner/endurance cycling
By products are released as sweat and CO2 exhaled.



Anaerobic energy production – takes place in the absence of oxygen



Intensity of anaerobic activity is high as muscle contraction are powerful & quick time.
i.e. 100m sprinter/long jump
By product (lactic acid) builds up and causes fatigue.



Cardiovascular system

Cardiac equation – Cardiac output (Q) = Stroke Volume (SV) x Heart Rate (HR)

Long term effects of exercise

1. Cardiac hypertrophy – this is the increased size of the heart due to training. This impacts on the cardiac equation above.

Lower resting HR

-

Increased maximum Q

-

Increased SV

2. Increased elasticity in the walls of arteries and veins – more efficient constriction and dilation.

3. Increased number of red blood cells – has capacity to carry more oxygen to working muscles.

Respiratory system

Long term effects of exercise

1. Increased capillarisation – better blood supply around the alveoli.

2. Increased number of alveoli – results in better gaseous exchange (oxygen delivery and waste product removal)

3. Increased strength of diaphragm and intercostal muscles – this increased tidal volume and vital capacity.

Muscular system

Long term effects of exercise

1. Muscular hypertrophy – increase in muscle size and strength/endurance.

2. Increase size and number of mitochondria – produces more energy aerobically.

3. Increased tolerance to lactic acid – reduces muscle fatigue.

Skeletal system

Long term effects of exercise

1. Increased bone density – strong bones reduce the risk of injuries.

2. Increased strength of ligaments and tendons – allows the body to change direction quickly without injury occurring.

GCSE Physical Education – Performance-enhancing drugs, injury and prevention

Injury prevention – to prevent injury performers and coaches should recognise and identify risks and reduce them.



Using the right principles of training to **over** overuse injuries

Understanding and following the rules of the sport during play

Using appropriate protective clothing

Checking the equipment to make sure it is in good condition and age appropriate

Following a full warm up and cool down

Checking the facilities

Ensuring competition is balanced

Performance Enhancing Drugs (PEDs)

The rewards that come with winning are so great that athletes are increasingly tempted to cheat. Fame, money and pressure are commonly cited despite the health risks or even death.

Drug	Reason for athlete taking this	Health risk	Sporting example who might use it
Beta Blockers	Slows heart rate, calms and steadies hands	Lowers blood pressure and oxygen delivery to muscles	Target sports
Anabolic Steroids	Promote muscle growth and promotes a faster recovery time	High blood pressure, aggressive behaviour & develops male features	Power Events - 100m
Narcotic Analgesics	Masks pain and increase pain threshold	Vomiting, addiction and liver/kidney damage	Any athlete wanted to mask pain.
Diuretics	Rapid weight loss from removal of fluids. Masks other PEDs	Dehydration, nausea and headaches. Heart and kidney failure.	Jockey Boxing
Stimulants	Increased alertness and reduce tiredness	Heart rate irregularities & increased aggression.	Boxing 100m sprinter
Peptide Hormones	EPO – increase Red Blood Cell production Growth Hormone – increase muscle mass	Increased blood thickness/blood clot Abnormal growth	

Blood doping – a method of artificially increasing red blood cell count – increases endurance.

Injuries

Soft tissue injuries

Strain – Pulled or overstretched muscle.

Sprain - Twisted or wrenched ligament.

Treatment for strain and sprain = **RICE** (Rest, Ice, Compression, Elevation)



R – **rest** the injured part.

C – **Compress** the injured area using a bandage.



I - Apply **ice** to reduce the swelling for a maximum of 10 minutes.

E – **Elevate** the injured part to decrease the blood supply.

Golfers Elbow/Tennis Elbow – overuse injury caused by inflamed tendons that attach muscles to the elbow joint. Symptoms also include soreness and pain.

Abrasions – minor injuries to the surface of the skin. *i.e. a graze*. Symptoms are a hot/burning sensation, redness and occasionally some light bleeding. Treatment – clean and cover with a low adhesive dressing.

Torn Cartilage – This can occur when a joint is twisted excessively. This is commonly caused when players change direction quickly. Treatment – ice and surgery

Concussion – An injury to the brain caused by a knock to the head. Common in contact sports. If an athlete is concussed, they may:

- Become unconscious.
- Feel sick, dizzy or drowsy.
- Get confused, stare & suffer memory loss.

Dislocation - a sudden impact on a joint can cause the bones that meet to become disconnected.

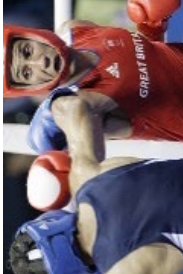
Fracture – a broken bone.

Open/compound/complex fracture – bone through the skin

Closed/simple fracture – bone remains in the skin.

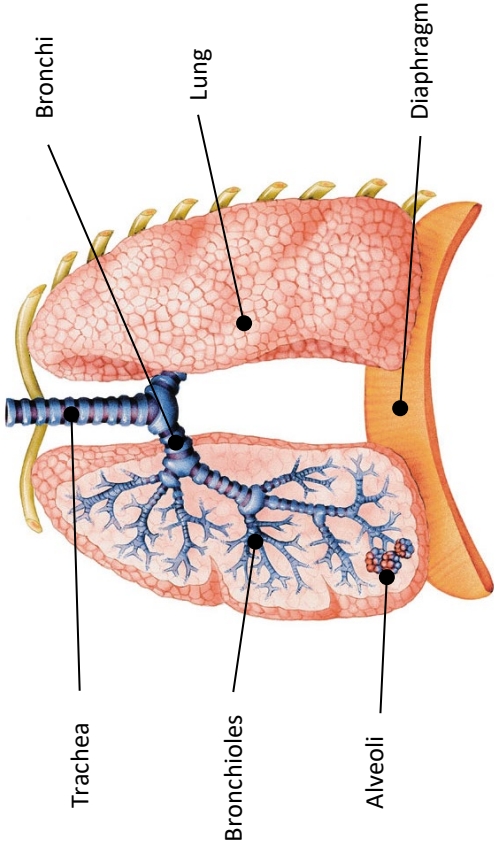
Greenstick fracture – bone bends (younger children)

Stress fracture - repeated or prolonged forces against the bone



GCSE Physical Education – The structure and functions of the respiratory system

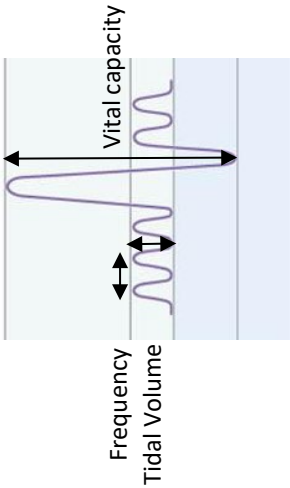
Structure of the respiratory system



Respiratory values

- Tidal Volume** – the amount of air inhaled and exhaled per breath.
Resting value = 500ml
- Vital Capacity** – The maximum amount of air exhaled following a maximal breath in.
- Frequency** – The number of breaths taken per minute. Resting value – 12-20 breaths.

Minute Ventilation – The amount of air inhaled and exhaled per minute. Measured in litres.



Gaseous exchange at the alveoli

- Diffusion is the movement of molecules from an area of high concentration to a low one.
- The alveoli have thin moist walls to allow diffusion to occur.
- Capillaries are closely wrapped around the alveoli to reduce the distance of diffusion and increase efficiency.

During inhalation:

- The concentration of **oxygen** is air is higher than the alveoli.
- The concentration of **carbon dioxide** in the blood is higher than that in the air.

During exercise

- Gaseous exchange increases as the intensity of the activity increases to cope with:
- An increase demand for oxygen at working muscles
 - An increase in carbon dioxide production and the need to rid this waste product.

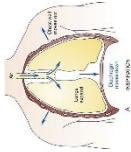
Frequency ↑ + Tidal Volume ↑

Training increases total lung capacity and vital capacity readings.

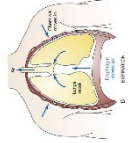
Composition of inhaled and exhaled air

Gas	Inhaled air	Exhaled air
Oxygen	21%	16%
Carbon dioxide	0.04%	4%
Nitrogen	78%	78%

Inhalation/Inspiration

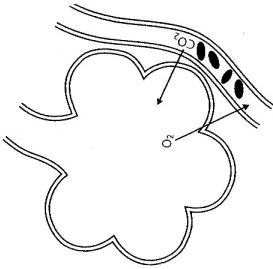


- Diaphragm and intercostal contract
- Diaphragm flattens and pulls down
- Lung size increases and air pressure inside is reduced
- Air pressure outside the lungs moves from high to low and is drawn in



- Diaphragm and intercostal relax
- Diaphragm returns to dome shape
- Lung size reduces and air pressure inside is increased
- Air pressure outside the lungs is lower and therefore air is exhaled

Exhalation/Expiration



Levers – a rigid bar that moves around a pivot point with force applied to it.

Fulcrum (F)	Effort (E)	Load (L)
A fixed pivot point 	The source of energy that will be applied 	The weight/resistance to be moved 

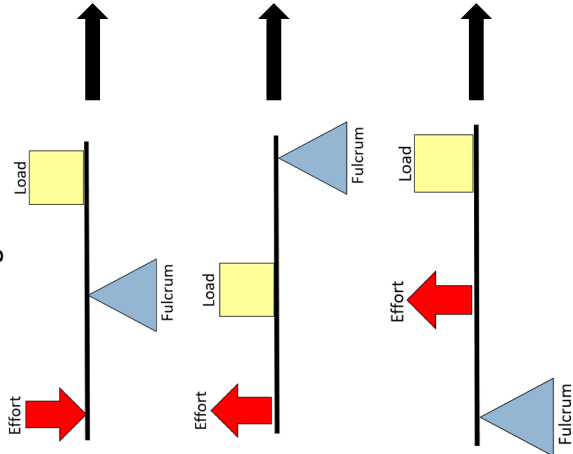
Classes of lever

First class lever:

Example



Drawing

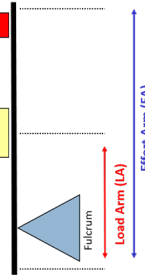
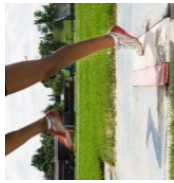


Second class lever:

Third class lever:

Mechanical advantage

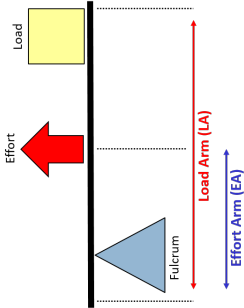
This is where a lever's **effort arm** is greater than its **load arm**.



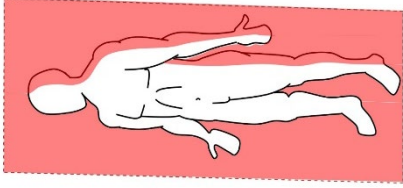
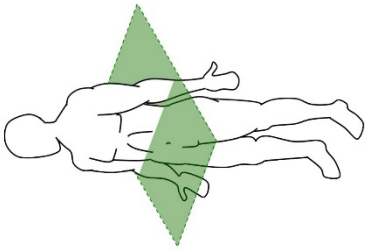
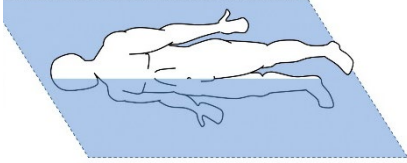
Large loads can be moved with limited effort.

Mechanical disadvantage

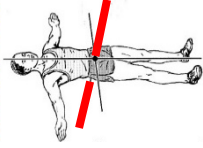
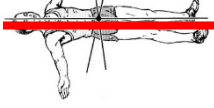
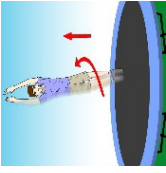
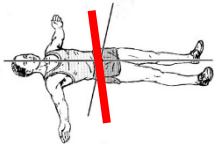
This is where a lever's **load arm** is longer than its **effort arm**.



Planes – imagery lines that divide the body into two.

Frontal plane	Transverse plane	Sagittal plane
A vertical plane but this divides the body into front and back . 	A horizontal plane that divides the body into upper and lower halves. 	A vertical plane that divides the body into right and left sides. 

Axes – imagery lines that the whole body turns around.

Sagittal axis	Vertical axis	Frontal axis
Runs through the body horizontally from the back to front.  Example: Cartwheel 	Runs through the body vertically from the top to bottom.  Example: Full twist 	Runs through the body horizontally from the left to right.  Example: Somersault 



Notley High

School and Sixth Form

Enjoy, Enrich, Achieve, Aspire.