Pool Hayes Academy

# Key Stage Three Exams – Year 7

## Unlocking your potential: KS3 Powerful Knowledge

To prepare our students for their upcoming KS3 exams, please see the Powerful Knowledge they should revise in readiness for this:

| English | |
|---|---|
| **Fiction** | **Personalised Unit** |
| • Context<br>• Character arc<br>• Genre<br>• Narrative structure<br>• Narrative Voice<br>• Setting<br><br>*Conflict/Injustice/Power* | • Trash (Modern Novel) – Literary Analysis |
| Content: To explore a whole text of a modern novel. | |
| • Students will know the plot of the novel;<br>• Students will know the central themes in the novel<br>• Students will know what it means to be different and how we regard difference;<br>• Students will develop their knowledge of how to analyse a text for its structure and language<br>• Students will know how to make informed, analytical responses through evaluation of | • Students will:<br>  ○ Explore the themes of the novel.<br>  ○ Comment on the effects of language and structure on the reader.<br>  ○ Understand writer's intentions when creating a text. |

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## Maths

**In Maths there are 3 tiers of exam: challenge, core and support.**
**Your child will know what they have been studying; if they are unsure, they can ask their Maths teacher.**

| | |
|---|---|
| **Core**<br>**Compare and order decimals**<br>**Round to any given number of decimal places**<br>**Round to 1 significant figure**<br>**Apply rounding to practical problems** | Challenge<br>Round to any given number of significant figures.<br>Estimate answers by rounding<br>State error intervals<br>Support<br>Correctly identify place value<br>Round to the nearest 10, 100, 1000, integer, or any multiple of 10. |
| **Core**<br>**Multiply integers and decimals by positive powers of ten**<br>**Divide integers and decimals by positive powers of ten**<br>**Perform multi-step calculations that involve multiplying or dividing by powers of 10** | Challenge<br>Multiple / divide by negative powers of 10 (e.g. 0.1, 0.01)<br>Convert between numbers written in standard form and ordinary numbers<br>Support<br>Multiply integers by 10, 100, 1000 |
| **Core**<br>**Multiply whole numbers (up to 3 digits by 3 digits) without a calculator.**<br>**Multiply a decimal by a whole number**<br>**Solve problems involving multiplication** | Challenge<br>Multiplication of decimals by decimals (up to 2 decimal place)<br>Multiplying numbers in standard form<br>Support<br>Further practice of multiplication facts up to 10 x 10<br>Multiplication of 2- and 3-digit numbers by a single digit |
| **Core**<br>**Use negative numbers in context**<br>**Compare and order directed numbers**<br>**Calculate with directed numbers (add, subtract, multiply, divide)**<br>**Use a calculator for directed number calculations** | Challenge<br>Evaluating powers of negative numbers $(-2)^3$<br>Support<br>Use negative numbers in context<br>Order directed numbers using number lines |
| **Core**<br>**Interpret algebraic notation**<br>**Know the meaning of 'expression'**<br>**Simplify by adding and subtracting like terms including up to 3 variables**<br>**Multiply out a single bracket by a number or letter (up to 3 terms inside)** | Challenge<br>Collect terms involving indices<br>Multiply out several brackets and simplify by collecting terms eg: *3(x-2)-4(2x-3)*<br>Support<br>Simplify by adding and subtracting like terms, single term<br>Simplifying by adding like terms; two terms |
| **Core**<br>**Convert between metric units of measure**<br>**Convert between metric units of capacity**<br>**Convert between metric units of mass**<br>**Compare different units** | Challenge<br>Add and subtract different units<br>Use inequalities to compare different units<br>Convert between metric and imperial units<br>Support<br>Draw lines in cm and mm<br>Convert units of length, mass and capacity with no decimals. |
| **Core**<br>**Dividing by two digits numbers**<br>**Remainders written as decimals**<br>**Understanding the significance of remainders** | Challenge<br>Division of decimals by decimals<br>Standard form division<br>Support<br>Dividing using times table facts<br>Dividing by a single digit |
| **Core**<br>**Calculate mean, median and mode from a list of numbers.**<br>**Calculate range**<br>**Understanding the difference between averages and spread.** | Challenge<br>Reverse mean problems.<br>Calculate mean, median, mode and range from a frequency table<br>Support<br>Calculate mean, median and mode from small lists of numbers<br>Calculate range |
| **Core**<br>**List factors for a given number**<br>**List multiples of a given number**<br>**Recognise Prime numbers**<br>**Find the HCF by listing factors**<br>**Find the LCM by listing multiples** | Challenge<br>Prime Factor Decomposition<br>Use Venn diagrams to find HCF and LCM<br>Support<br>Factors of numbers using multiplication tables<br>Multiples of numbers using multiplication tables |
| **Core**<br>**Perimeter of rectilinear compound shapes when missing sides need to be found**<br>**Perimeter of other compound shapes**<br>**Perimeter of shapes with special triangles and quadrilaterals** | Challenge<br>Perimeter of shapes as an algebraic expression<br>Circumference of Circle<br>Perimeter of compound shapes involving half and quarter circles<br>Support<br>Perimeter of rectangles<br>Perimeter of shapes/polygons (side lengths given)<br>Perimeter of rectilinear compound shapes (side lengths given) |

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## Science

### Biology

**Cells**

- **Functions** of all main cell parts:
  - **Cell wall** – supports and strengthens the cell (plant cells only)
  - **Cell membrane** – controls what enters and leaves
  - **Cytoplasm** – where chemical reactions happen
  - **Nucleus** – contains genetic material (DNA) and controls the cell
  - **Vacuole** – stores cell sap and helps support the plant cell
  - **Mitochondria** – where energy is released (respiration)
  - **Chloroplasts** – absorb light for photosynthesis (plants only)
- Differences between plant and animal cells
- **Light microscope** labelling parts (eyepiece, objective lenses, stage, focusing knobs)
- Use the magnification formula: **Total magnification = eyepiece × objective lens**
- **Diffusion:** Movement of particles from an area of high concentration to low concentration.
- **Specialised cells** and their functions (Sperm, egg, nerve, muscle, palisade cells, root hair cells, xylem, phloem)
- **Unicellular vs multicellular organisms:** One cell vs many cells working together.

**Skeleton & Muscles**

- **Levels of organisation:**
  Cells → Tissues → Organs → Organ systems
- **Functions of the skeleton:**
  Support, movement, protection of vital organs, and production of blood cells.
- **Muscles and movement:**
  - Major muscle pairs (e.g., biceps and triceps)
  - Muscles work in **antagonistic pairs** — one contracts while the other relaxes
  - Joints and muscles work together to allow movement.

**Practical skills**

- Safe and accurate use of a **light microscope.**

### Chemistry

**Particles & States**

- Particle arrangements in **solids, liquids, gases** and how they move.
- How to **draw** particle diagrams.
- **Energy changes** during melting, freezing, boiling, condensation, sublimation.
- **Melting/boiling points** and using **cooling data** (e.g., stearic acid).
- **Density** differences in solids, liquids, gases.
- **Conservation of mass** in changes of state.
- **Evaporation vs boiling**.

**Diffusion & Gases**

- Diffusion in solids, liquids, gases and why it's different.
- How **concentration differences** cause diffusion.
- **Gas pressure**, effects of **temperature**, and **Brownian motion**.

**Practical skills**

- Safe and accurate use of a **Bunsen burner**.

### Physics

**Energy**

- Energy values in **foods and fuels**.
- The **main energy stores** and **energy transfers**.
- How to **calculate work done**.
- How **friction** causes heating.
- **Useful vs wasted energy** and **efficiency calculations**.
- **Power** and the **power equation**.
- How to **calculate electricity cost**.
- How electricity is made from **fossil fuels** + pros/cons.
- **Renewable vs non-renewable** resources.

**Heat Transfer**

- Difference between **heat** and **temperature**.
- Meaning of **thermal equilibrium**.
- How **conduction**, **convection**, and **radiation** move heat.

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## Spanish

- Saying hello and goodbye
- Saying how you are feeling.
- Giving your name.
- Numbers 1-31.
- Saying your age.
- Months of the year
- Giving your birthday.
- Saying what is in your bag/pencil case.
- Countries of the world
- Nationality
- Family members
- Type of family (single parent, same sex, blended)
- Family tree.
- Pets
- Describing people (physically/character)
- Numbers to one hundred

## Geography

| What is geography and what makes an exceptional geographer? | Why are our ecosystems valuable and what are their biggest threats? |
|---|---|
| • To explore the continents and oceans of our planet<br>• To investigate the difference between human and physical geography<br>• To examine the geography of the UK<br>• To understand how we define High Income Country's, Low Income Countries' Newly Emerging Economies (development classification)<br>• To investigate the differences between Social, economic, environmental factors<br>• To be able to read OS maps including grid references, symbols, contours, compass<br>• To navigate using Longitude and latitude<br>• To understand how to interpret Global Information systems. | • To explore the abiotic and biotic components within ecosystems<br>• To investigate the distribution of biomes around the world.<br>• To understand food chains and food webs within ecosystems<br>• To examines the value of an ecosystem to both humans and the planet .<br>• To explore the threats facing our ecosystems. |

## History

| **Pre-1066:** Who were the English? | **The Norman Conquest:** Who were the Normans and how did they shape England? |
|---|---|
| • An explanation of the migration of the first humans from Africa across the world, e.g. the Cheddar Man.<br>• Chronology of settlers to this country.<br>• Reasons why the Roman Empire was multi-ethnic and multi-racial.<br>• The experiences of Roman Britons with a focus on the Ivory Bangle Lady as a significant individual from 3rd Century Britain<br>• How society changed in the Anglo-Saxon period (5th–11th century), e.g. farming-based livelihoods, Sutton Hoo, spread of Christianity.<br>• How the arrival of the Vikings changed society, e.g. seafaring, warfare, farming, trade, legal systems, craftmanship. | • The succession crisis and contenders for the throne<br>• William defeats Godwinson at the Battle of Hastings in October 1066 and reasons for this include (but are not limited to): strong army, better tactics, Harold's mistakes and luck.<br>• Challenges faced by William after the conquest<br>• The Harrying of the North demonstrated William's control as it showed that rebellions would be severely punished.<br>• The use of the Feudal System and Domesday book to organise society<br>• Motte and Bailey castles were built to establish control and a defence of the country. These developed over time.<br>• Changes to English society under the Normans |