

# RAFFLES WORLD ACADEMY



**RAFFLES**  

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**WORLD ACADEMY**

**MATHEMATICS - DATA HANDLING**  
**RWA SCOPE AND SEQUENCE**



## RWA Scope and Sequence - Mathematics - Data Handling

### MISSION AND CORE VALUES

Raffles World Academy (RWA) was founded in September 2008. It is an independent co-educational private international day school operated by Inn ventures Educational Investments LLC (aka Inn ventures Education). The school began its history as Raffles International School (West Campus) and changed its name to Raffles World Academy in September 2012. The Academy is authorized to provide IBPYP in KG1-G5, IBMYP curriculum in G6-10 and IB Diploma and Courses to G11-12. It is an IB World School and a center for Cambridge International Examinations. The school also provides other programmes including College Board PSAT and SAT, Trinity, and Mother Tongue language programmes including CNED and DELF for French. Raffles World Academy is regulated by the Dubai Knowledge and Human Development Authority (KHDA).

#### Our Guiding Statements

##### Our Vision

Providing world class education.

##### Our Mission

To empower students with a rigorous, holistic and international education for success in an ever-changing world.

##### Our Philosophy

To be recognized by the success of our students in achieving their personal goals

To make student development the center of all school decisions

To aspire to the highest internationally recognized performance standards

To build and celebrate a culture based on internationalism

To enable the staff to become life-long learners through the development of their professional practice

##### Our Core Values

Achievement | Collaboration | Integrity | Respect | Responsibility

##### The RWA Motto

towards Excellence

##### the RWA Mascot

Arabian Stallion

##### the RWA definition of International-Mindedness:

International Mindedness begins when we are open to and curious about the world in which we live, respect our own culture and want to know about the culture of others. We progress to acknowledge our common humanity and to recognize and value diversity existing within our communities, whether local, national or global. We exercise our individual and collective responsibilities as world citizens to safeguard the planet we share, promote peace, challenge injustice and engage in improving welfare for all, especially the disadvantaged. We seek to develop a deep understanding of the complexity, diversity and motives that underpin human actions and interactions. We strive to foster mutual respect, dialogue and cooperation through being open and willing to see the world through the lens of all those who share it with us.

As an IB school, international-mindedness is embodied in our implementation of the IB Learner Profile, which challenges students to be communicators in multiple languages, principled in their promotion of international justice, risk-takers in the spirit of exploring new cultures, knowledgeable about world issues, thinkers about complex problems, caring and committed to service, inquirers about the world, open-minded toward other perspectives, balanced in their approach to life, and reflective about their own personal development.

### IB MISSION STATEMENT

IB mission statement The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect. To this end the organization works with schools, governments and international organizations to develop challenging programmes of international education and rigorous assessment. These programmes encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.

#### IB Learner Profile

The aim of all IB programmes is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world.

IB learners strive to be:

**Inquirers:** They develop their natural curiosity. They acquire the skills necessary to conduct inquiry and research and show independence in learning. They actively enjoy learning and this love of learning will be sustained throughout their lives.

**Knowledgeable:** They explore concepts, ideas and issues that have local and global significance. In so doing, they acquire in-depth knowledge and develop understanding across a broad and balanced range of disciplines.

**Thinkers:** They exercise initiative in applying thinking skills critically and creatively to recognize and approach complex problems, and make reasoned, ethical decisions.

**Communicators:** They understand and express ideas and information confidently and creatively in more than one language and in a variety of modes of communication. They work effectively and willingly in collaboration with others.

## **RWA Scope and Sequence - Mathematics - Data Handling**

**Principled:** They act with integrity and honesty, with a strong sense of fairness, justice and respect for the dignity of the individual, groups and communities. They take responsibility for their own actions and the consequences that accompany them.

**Open-minded:** They understand and appreciate their own cultures and personal histories, and are open to the perspectives, values and traditions of other individuals and communities. They are accustomed to seeking and evaluating a range of points of view, and are willing to grow from the experience.

**Caring:** They show empathy, compassion and respect towards the needs and feelings of others. They have a personal commitment to service, and act to make a positive difference to the lives of others and to the environment.

**Risk-takers:** They approach unfamiliar situations and uncertainty with courage and forethought, and have the independence of spirit to explore new roles, ideas and strategies. They are brave and articulate in defending their beliefs.

**Balanced:** They understand the importance of intellectual, physical and emotional balance to achieve personal well-being for themselves and others.

**Reflective:** They give thoughtful consideration to their own learning and experience. They are able to assess and understand their strengths and limitations in order to support their learning and personal development.

## RWA Scope and Sequence - Mathematics - Data Handling

### Phase 1

**Overall Expectation Phase 1:** Learners will develop an understanding of how the collection and organization of information helps to make sense of the world. They will sort, describe and label objects by attributes and represent information in graphs including pictographs and tally marks. The learners will discuss chance in daily events

#### PYP Conceptual Understanding:

- We collect information to make sense of the world around us.
- Organizing objects and events helps us to solve problems.
- Events in daily life involve chance.

#### Learning Objectives:

#### Data Handling

- |         |   |
|---------|---|
| KG<br>1 | <b>Represent information through pictographs and tally marks</b> <ul style="list-style-type: none"><li>• <i>C: I can understand that information about themselves and their surroundings can be obtained in different ways</i></li><li>• <i>T: I can represent information through pictographs and tally marks</i></li><li>• <i>A: I can create living graphs using real objects and people</i></li></ul> |
|---------|---|

### Phase 2

## RWA Scope and Sequence - Mathematics - Data Handling

**Overall Expectation Phase 2:** Learners will understand how information can be expressed as organized and structured data and that this can occur in a range of ways. They will collect and represent data in different types of graphs, interpreting the resulting information for the purpose of answering questions. The learners will develop an understanding that some events in daily life are more likely to happen than others and they will identify and describe likelihood using appropriate vocabulary.

### PYP Conceptual Understandings:

- Information can be expressed as organized and structured data.
- Objects and events can be organized in different ways.
- Some events in daily life are more likely to happen than others.

### Learning Objectives:

	Data Handling
KG2	<p><b>Data Handling</b></p> <p><b>Collect and represent data in different types of graphs, for example, tally marks, bar graphs</b></p> <ul style="list-style-type: none"> <li>• <i>C: I can understand that information about themselves and their surroundings can be collected and recorded in different ways</i></li> <li>• <i>T: I can collect and represent data in different types of graphs, for example, tally marks, bar graphs</i></li> <li>• <i>A: I can create a pictograph and sample bar graph of real objects and interpret data by comparing quantities (for example, more, fewer, less than, greater than)</i></li> </ul> <p><b>Probability</b></p> <p><b>Express the chance of an event happening using words or phrases (impossible, less likely, maybe, most likely, certain).</b></p> <ul style="list-style-type: none"> <li>• <i>C: I can understand the concept of chance in daily events (impossible, less likely, maybe, most likely, certain).</i></li> <li>• <i>T: I can express the chance of an event • happening using words or phrases (impossible, less likely, maybe, most likely, certain).</i></li> <li>• <i>A: I can identify and describe chance in daily events (impossible, less likely, maybe, most likely, certain).</i></li> </ul> <p><b>Notes</b></p> <ul style="list-style-type: none"> <li>• An increasing number of computer and web-based applications are available that enable learners to manipulate data in order to create graphs. Students should have a lot of experience of organizing data in a variety of ways, and of talking about the advantages and disadvantages of each. Interpretations of data should include the information that cannot be concluded as well as that which can. It is important to remember that the chosen format should illustrate the information without bias.</li> </ul>
Grade 1	<p><b>Data Handling:</b></p> <p><b>Collect and represent data in different types of graphs, for example, tally marks, bar graphs</b></p> <ul style="list-style-type: none"> <li>• <i>C: I can understand that information about themselves and their surroundings can be collected and recorded in different ways</i></li> <li>• <i>T: I can collect and represent data in different types of graphs, for example, tally marks, bar graphs</i></li> <li>• <i>A: I can collect, display and interpret data for the purpose of answering questions</i></li> </ul> <p><b>Express the chance of an event • happening using words or phrases (impossible, less likely, maybe, most likely, certain).</b></p> <ul style="list-style-type: none"> <li>• <i>C: I can understand the concept of chance in daily events (impossible, less likely, maybe, most likely, certain).</i></li> <li>• <i>T: I can express the chance of an event • happening using words or phrases (impossible, less likely, maybe, most likely, certain).</i></li> <li>• <i>A: I can identify and describe chance in daily events (impossible, less likely, maybe, most likely, certain).</i></li> </ul> <p><b>Notes</b></p> <p>An increasing number of computer and web-based applications are available that enable learners to manipulate data in order to create graphs. Students should have a lot of experience of organizing data in a variety of ways, and of talking about the advantages and disadvantages of each. Interpretations of data should include the information that cannot be concluded as well as that which can. It is important to remember that the chosen format should illustrate the information without bias.</p>

## RWA Scope and Sequence - Mathematics - Data Handling

**Overall Expectation Phase 3:** Learners will continue to collect, organize, display and analyses data, developing an understanding of how different graphs highlight different aspects of data more efficiently. They will understand that scale can represent different quantities in graphs and that mode can be used to summarize a set of data. The learners will make the connection that probability is based on experimental events and can be expressed numerically.

### PYP Conceptual Understandings:

- Data can be collected, organized, displayed and analyzed in different ways.
- Different graph forms highlight different aspects of data more efficiently.
- Probability can be based on experimental events in daily life.
- Probability can be expressed in numerical notations.

### Learning Objectives

Data Handling	
Grade 2	<p><b>Shape and Space: Statistics</b></p> <p><b>Interpret and present data using bar charts, pictograms and tables.</b></p> <ul style="list-style-type: none"> <li>• C: I can understand that data can be collected, displayed and interpreted using simple graphs, for example, bar graphs, line graphs</li> <li>• T: I can interpret and present data using bar charts, pictograms and tables.</li> <li>• A: I can design a survey and systematically collect, organize and display data in pictographs and bar graphs</li> </ul> <p><b>Solve one step and two-step questions (for example, ‘How many more?’ and ‘How many fewer?’) using information presented in scaled bar charts and pictograms and table</b></p> <ul style="list-style-type: none"> <li>• C: I can understand that one of the purposes of a database is to answer questions and solve problems</li> <li>• T: I can solve one step and two-step questions (for example, ‘How many more?’ and ‘How many fewer?’) using information presented in scaled bar charts and pictograms and table</li> <li>• A: I can design a survey and systematically collect, organize and display data in pictographs and bar graphs</li> </ul> <p><b>Probability:</b></p> <p><b>Conduct chance experiments, identify and describe possible outcomes and recognize variation in results</b></p> <ul style="list-style-type: none"> <li>• C: I can understand that probability is based on experimental events.</li> <li>• T: I can conduct chance experiments, identify and describe possible outcomes and recognize variation in results</li> <li>• A: I can express probability using simple fractions.</li> </ul> <p><b>Notes</b> Using data that has been collected and saved is a simple way to begin discussing the mode. A further extension of mode is to formulate theories about why a certain choice is the mode. Students should have the opportunity to use databases, ideally, those created using data collected by the students then entered into a database by the teacher or together.</p>
Data Handling	

## RWA Scope and Sequence - Mathematics - Data Handling

<p>Grade 3</p>	<p><b>Shape and Space: Statistics</b></p> <p><b>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</b></p> <ul style="list-style-type: none"><li>• <i>C: I can understand that scale can represent different quantities in graphs</i></li><li>• <i>T: I can interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</i></li><li>• <i>A: I can select appropriate graph form(s) to display data interpret range and scale on graphs</i></li></ul> <p><b>Solve comparison, summand difference problems using information presented in bar charts, pictograms, tables and other graphs.</b></p> <ul style="list-style-type: none"><li>• <i>C: I can understand that one of the purposes of a database is to answer questions and solve problems</i></li><li>• <i>T: I can solve comparison, summand difference problems using information presented in bar charts, pictograms, tables and other graphs.</i></li><li>• <i>A: I can design a survey and systematically collect, organize and display data in pictographs and bar graphs</i></li></ul> <p><b>Probability:</b></p> <p><b>Conduct chance experiments, identify and describe possible outcomes and recognize variation in results</b></p> <ul style="list-style-type: none"><li>• <i>C: I can understand that probability is based on experimental events.</i></li><li>• <i>T: I can conduct chance experiments, identify and describe possible outcomes and recognize variation in results</i></li><li>• <i>A: I can express probability using simple fractions.</i></li></ul> <p><b>Notes</b></p> <p>Using data that has been collected and saved is a simple way to begin discussing the mode. A further extension of mode is to formulate theories about why a certain choice is the mode. Students should have the opportunity to use databases, ideally, those created using data collected by</p>
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## RWA Scope and Sequence - Mathematics - Data Handling

**Overall Expectation Phase 4:** Learners will collect, organize and display data for the purposes of valid interpretation and communication. They will be able to use the mode, median, mean and range to summarize a set of data. They will create and manipulate an electronic database for their own purposes, including setting up spreadsheets and using simple formulas to create graphs. Learners will understand that probability can be expressed on a scale (0-1 or 0%-100%) and that the probability of an event can be predicted theoretically.

### PYP Conceptual Understandings:

- Data can be presented effectively for valid interpretation and communication.
- Range, mode, median and mean can be used to analyses statistical data.
- Probability can be represented on a scale between 0-1 or 0%-100%.
- The probability of an event can be predicted theoretically.

### Learning Objectives:

Data Handling	
Grade 4	<p><b>Shape and Space: Statistics</b></p> <p><b>Solve comparison, sum and difference problems using information presented in a line graph.</b></p> <ul style="list-style-type: none"> <li>• <i>C: I can understand that different types of graphs have special purposes</i></li> <li>• <i>T: I can solve comparison, sum and difference problems using information presented in a line graph.</i></li> <li>• <i>A: I can design a survey and systematically collect, record, organize and display the data in a line graph</i></li> </ul> <p><b>Complete, read and interpret information in tables including timetables</b></p> <ul style="list-style-type: none"> <li>• <i>C: I can understand that different types of graphs have special purposes</i></li> <li>• <i>T: I can solve comparison, sum and difference problems using information presented in a line graph.</i></li> <li>• <i>A: I can use timetables and schedules (12- • hour and 24-hour clocks) in real-life situations</i></li> </ul> <p><b>Probability</b></p> <p><b>Express probabilities using scale (0-1) or per cent (0%-100%).</b></p> <ul style="list-style-type: none"> <li>• <i>C: I can understand that probability can be expressed in scale (0-1) or per cent (0%-100%) understand</i></li> <li>• <i>T: I can express probabilities using scale (0-1) • or per cent (0%-100%).</i></li> <li>• <i>A: I can determine the theoretical probability of an event and explain why it might differ from experimental probability</i></li> </ul> <p><b>Notes</b></p> <p>A database is a collection of data, where the data can be displayed in many forms. The data can be changed at any time. A spreadsheet is a type of database where information is set out in a table. Using a common set of data is a good way for students to start to set up their own databases. A unit of inquiry would be an excellent source of common data for student practice.</p>
Data Handling	

## RWA Scope and Sequence - Mathematics - Data Handling

### Grade 5 Data Handling: Geometry and Statistics

Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.

- *C: I can understand the properties of circles*
- *T: I can illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.*
- *A: I can use geometric vocabulary when describing shape and space in mathematical situations and beyond*

Interpret and construct pie charts and line graphs and use these to solve problems.

- *C: I can understand that different types of graphs have special purposes*
- *T: I can interpret and construct pie charts and line graphs and use these to solve problems.*
- *A: I can design a survey and systematically collect, record, organize and display the data in a circle graph*

Calculate the mean as an average. Time at the beginning or end of the term for consolidation n ,gap filling, seasonal activities, assessments ,etc.

- *C: I can understand that the mode, median, mean and range can summarize a set of data*
- *A: I can calculate the mean as an average. Time at the beginning or end of the term for consolidation n ,gap filling, seasonal activities, assessments ,etc.*
- *A: I can identify, describe and explain the range, mode, median and mean in a set of data*

#### Probability

Express probabilities using scale (0-1) or per cent (0%-100%).

- *C: I can understand that probability can be expressed in scale (0-1) or per cent (0%-100%) understand*
- *T: I can express probabilities using scale (0-1) • or per cent (0%-100%).*
- *A: I can determine the theoretical probability of an event and explain why it might differ from experimental probability*

#### Notes

A database is a collection of data, where the data can be displayed in many forms. The data can be changed at any time. A spreadsheet is a type of database where information is set out in a table. Using a common set of data is a good way for students to start to set up their own databases. A unit of inquiry would be an excellent source of common data for student practice.