



Makes Maths Fun

Level 7

DATA

Bloomsmath is a comprehensive mathematics program which provides a fun way for every student to be learning to the best of their ability.

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Data

Level 7 is designed for students in their seventh year at school often called Year 6. Students will display and interpret data in graphs with scales of many-to-one correspondence.

Knowledge: Students will display and interpret data in graphs with scales of many-to-one correspondence.



Students who demonstrate proficiency in this activity move on to Comprehension.



Students stop here as they require additional teacher support to master this activity.

Comprehension: Students will create a column and pie graph of water usage in "Water Works" - Part A.



Students who demonstrate proficiency in this activity move on to Application.



Students stop here if time has run out or they require additional support with this activity.

Application: Students will calculate the difference between water usages in "Water Works" - Part B.



Students who demonstrate proficiency in this activity move on to Analysis.



Students stop here if time has run out or they require additional support with this activity.

Analysis: Students will use graphs to answer questions in "Water Works" - Part C.



Students who demonstrate proficiency in this activity move on to Synthesis.



Students stop here if time has run out or they require additional support with this activity.

Synthesis: Students will create a graph of available stored water in "Water Works" - Part D.

Evaluation: Suggested questions provide a starting point for discussions related to Data.



Students may complete more or fewer activities for each learning outcome depending on the time allocated and their strength in the area being covered.



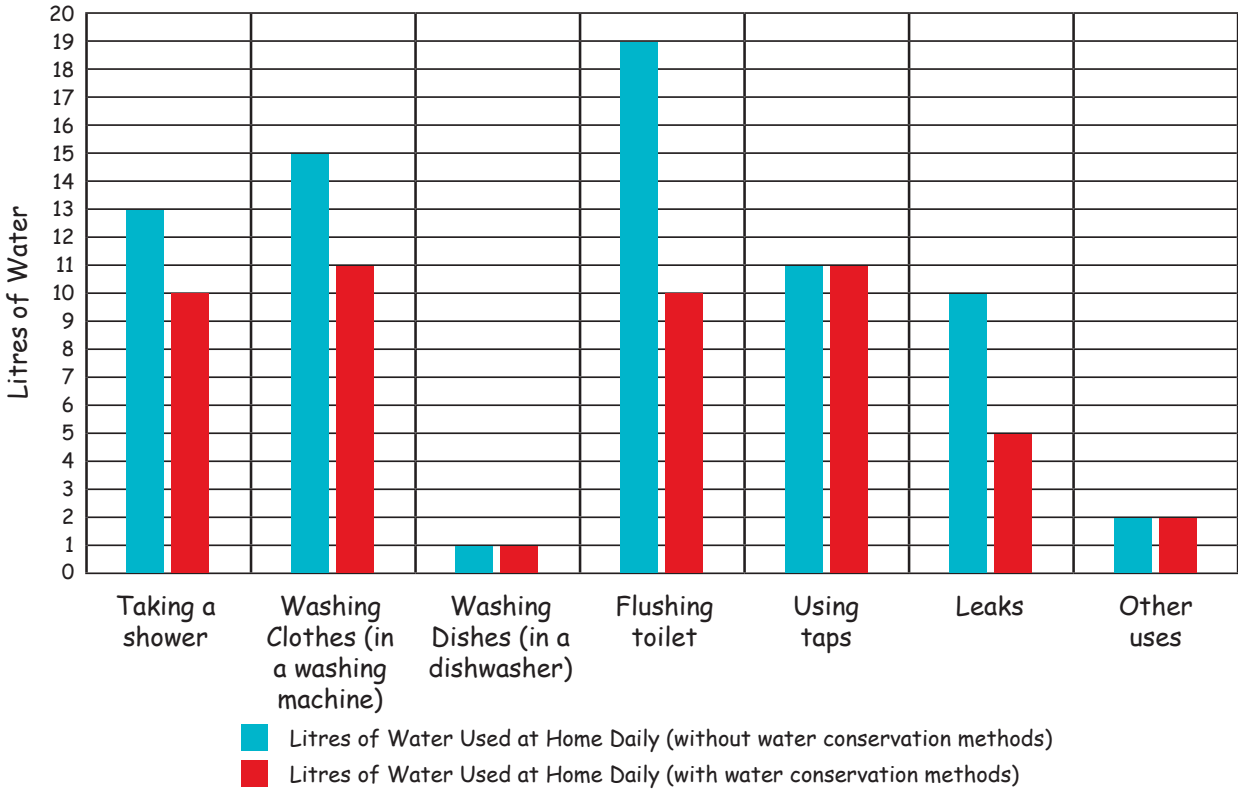
All students should participate in the Evaluation discussion to encourage the use of mathematical language, logical reasoning and reflection on that which they have completed.

Name: _____

Knowledge

Use the graph of average household water consumption to answer these questions.

Water Uses in the Home



1. What uses the most water?

 2. What uses the least water?

 3. For which activity does water conservation have the biggest effect?

 4. a. How much water is used per day for taking a shower?

 - b. How much can this be reduced using water conservation methods?

 5. a. How much water would be saved if only water conservation methods were used?

 - b. What if all leaks were also fixed?

 6. What might some "other uses" be?

- How much do you think this represents your home on a regular weekday? Explain your answer.



Let's Try This Again



Progress To Comprehension

Data - Level 7 - Students will display and interpret data in graphs with many-to-one correspondence.

Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

Name: _____

Comprehension

Water Works - Part A

Use the observation record below to record how many students use the bubbler or tap during a given period of time to drink or refill their bottle. Record the grade of the students also to see if bubbler or tap usage increases or decreases with age. It is a good idea to use a tally mark system to record the number of students and then add these to find the total.

Observation Record A

| Day | Start Time | Finish Time | Total Number of Students at the Bubbler |
|-----|------------|-------------|---|
| | | | |

Observation Record B

| Grade | Number of Students |
|-------|--------------------|
| K | |
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

Once you have completed your observations you can create a column graph of grade versus number of students (you can represent more than one student per row). Once this has been done the column graph can be turned into a pie chart using the following template.



Let's Try This Again



Progress To Application

Data - Level 7 - Students will display and interpret data in graphs with many-to-one correspondence.

Knowledge

Comprehension

Application

Analysis

Synthesis

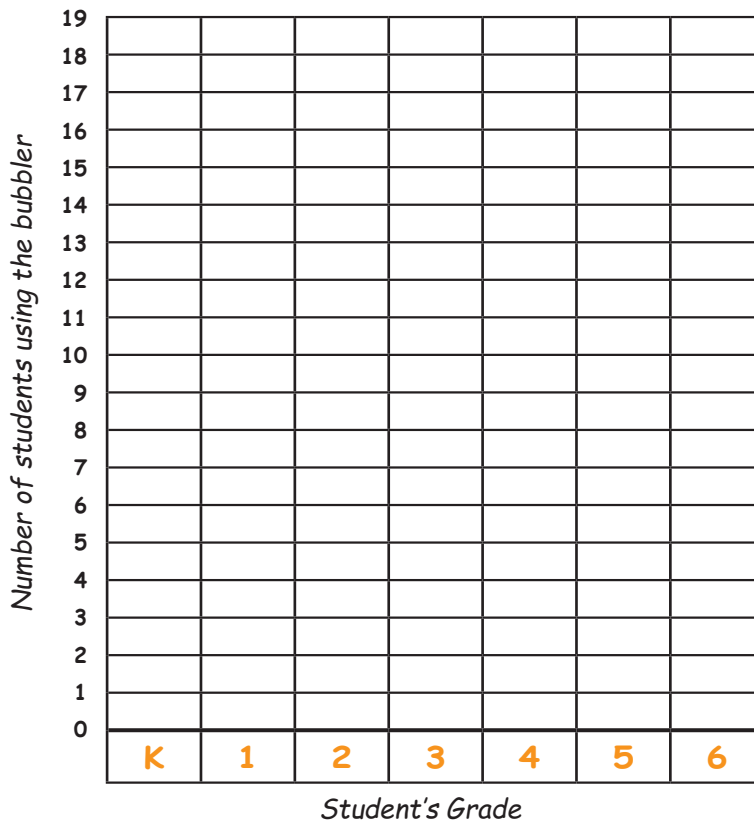
Evaluation



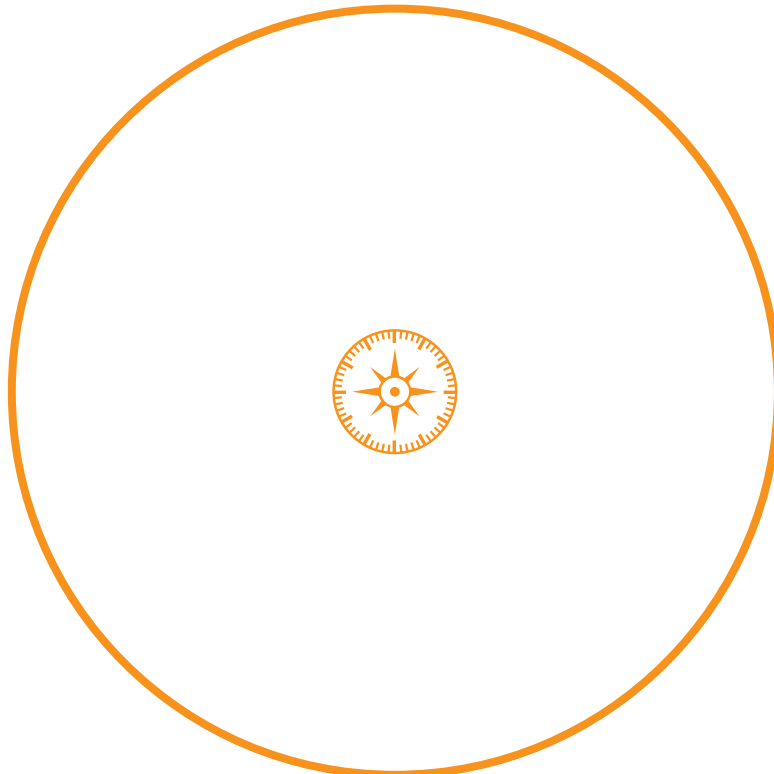
Name: _____

Comprehension

Column graph of grade vs number of students.



Pie chart of grade vs number of students.



Let's Try This Again



Progress To Application

Knowledge

Comprehension

Application

Analysis

Synthesis

Evaluation

Data - Level 7 - Students will display and interpret data in graphs with many-to-one correspondence.



Name: _____

Application

Water Works - Part B

If a student uses a tap to get a drink of water (using their hands as a cup) and leaves the tap running while they swallow it is estimated that they will use approximately 2.5 litres of water. If the same student was to fill a 750ml bottle of water it is estimated that they would waste less than 250 ml.

Using the data collected in Observation Record A calculate how many litres of water are used each morning tea by students using the bubbler. As a comparison calculate how much water would be used if each student was to fill a 500ml bottle of water. The table below can be used to display your results.

| Number of Students | Litres of water if bubblers are used (2.5L per student) | Litres of water if bottles are used (750ml per student) | Total amount of water which can be saved each morning tea. |
|--------------------|---|---|--|
| | | | |

Data - Level 7 - Students will display and interpret data in graphs with many-to-one correspondence.

Knowledge

Comprehension

Application

Analysis

Synthesis

Evaluation



Let's Try This Again



Progress To Analysis

Name: _____

Analysis

Water Works - Part C.

Water Consumption and Storage Report

| Date | 24 hours to 8 a.m. | | | As at 3 p.m. | |
|-----------|---------------------|----------|-------------------------|-------------------|-----------|
| | Maximum Temperature | Rainfall | Total Water Consumption | Available Storage | % Storage |
| Monday | 25°C | 4.0 mm | 1411 ml | 958 500 ml | 40.2% |
| Tuesday | 27°C | Nil | 1438 ml | 956 500 ml | 40.1% |
| Wednesday | 23°C | Nil | 1409 ml | 954 500 ml | 40.0% |
| Thursday | 30°C | 0.2 mm | 1496 ml | 953 000 ml | 40.0% |
| Friday | 25°C | 0.6 mm | 1508 ml | 958 500 ml | 40.2% |
| Saturday | 24°C | 2.0 mm | 1620 ml | 1 054 000 ml | 44.2% |
| Sunday | 29°C | Nil | 1566 ml | 1 049 000 ml | 44.0% |

Use the Water Consumption and Storage Report above to help you answer the following questions.

How many litres make a megalitre?

When did the most rain fall?

When was the most water consumed?

Which day was the hottest?

What was the lowest level to which the water storage dropped?

How many more megalitres were there available on Sunday than Monday?



Let's Try This Again



Progress To Synthesis

Data - Level 7 - Students will display and interpret data in graphs with many-to-one correspondence.

Knowledge

Comprehension

Application

Analysis

Synthesis

Evaluation

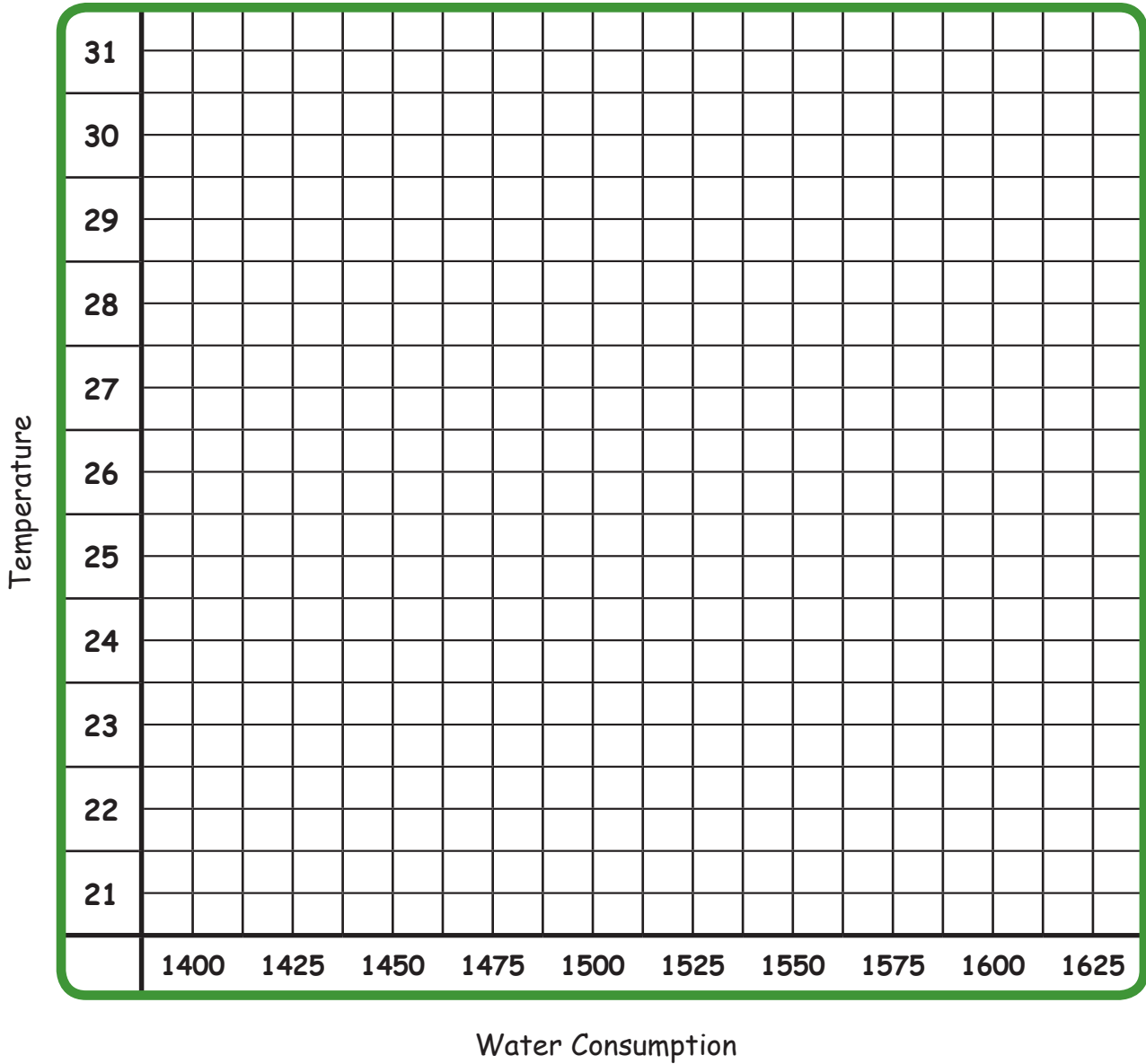


Name: _____

Analysis

Complete the graph below depicting temperature versus consumption.

Temperature Versus Water Consumption



Data - Level 7 - Students will display and interpret data in graphs with many-to-one correspondence.

Knowledge

Comprehension

Application

Analysis

Synthesis

Evaluation



Let's Try This Again



Progress To Synthesis

Name: _____

Synthesis

Water Works - Part D

Use the information below to create a graph of month versus water usage to answer the questions below.

| Month | Available Storage | Month | Available Storage |
|----------|-------------------|-----------|-------------------|
| January | | July | |
| February | | August | |
| March | | September | |
| April | | October | |
| May | | November | |
| June | | December | |

Which month has the lowest level of water available?

Which month has the most water available?

Which months have the same level of water available?

Calculate how much water was used each month.

| Month | Initial Water Level | Final Water Level | Amount of Water Used |
|-----------|---------------------|-------------------|----------------------|
| January | | | |
| February | | | |
| March | | | |
| April | | | |
| May | | | |
| June | | | |
| July | | | |
| August | | | |
| September | | | |
| October | | | |
| November | | | |
| December | | Unknown | ----- |



Let's Try This Again



Progress To Evaluation



Evaluation

The following questions and activities are provide as a starting point for fun discussions related to Data. During these conversations students will have an opportunity to use appropriate mathematical language in its correct context, to engage in reflection on the Data activities they have completed and to use logical reasoning to tie their in-class mathematics to its everyday context.



Was there a correlation between age and water consumption from the classes data collection.



What struggles did students face collecting this data? How did they overcome these?



What was the easiest way to collect the data? Why was this?



What was the easiest method for displaying the data? Both for construction and reading the final results?



Which graph was the easiest to construct? Why was this?



Show students how Excel spreadsheets can be used for data collection and for calculating results such as average water usage.

