Explorer Education Programme

Lesson Plan: Number Problems
Class: Third / Fourth Class
Strand: Number
Strand Units: Place value, Operations, Fractions, Decimals

TITLE: NUMBER PROBLEMS

Aim / Description:

The aim of this lesson plan is to introduce 3rd and 4th class students to numbers from zero to nine thousand nine hundred and ninety-nine (0 to 9999) by reviewing the strand units:

- **Place value**
- **Operations**
  - **Addition**
  - **Subtraction**
  - **Multiplication**
  - **Division**
- **Fractions**
- **Decimals**

Materials:

- Worksheet-Maths 13: Number Problems
- Answer Sheet & Information: Worksheet-Maths 13
- Spare paper for rough work

Activity:

Step1
- Provide the Worksheet-Maths 13 to each student, and spare paper for rough work if needed.
- Ask students to work through the first problem set of 5 questions (Place value) and to write their answers in the column provided.

Step 2
- When all five questions have been completed, ask students to provide you with the answers. These can be written on the board.

Step 3
- Add the 5 answers together on the board to get the answer to the scientific question, such as how many types of whale and dolphin have been seen in Irish waters?

Step 4
- Repeat steps 2 and 3 for all the problems sets. Each set is based around a different unit of the numbers strand and will provide your class with the answer to a scientific question.

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Extension for Fourth Class

Step 5

- Complete steps 1 to 3 as above for problem set 1.
- Ask students to calculate the answer to the scientific question themselves by adding all 5 answers written on the board together.
- Repeat for problem sets 2, 3, 4, 5 and 7. In the case of problem set 6 the teacher should add the fractions together to get the answer to the question.

Outcome / Objective:

The students in third and fourth class will have become familiar with the numbers 0-999 and 0-9999 respectively and with place value and general operations including addition, subtraction, multiplication and division and fractions and decimals using:

- **Counting**
- **Comparing**
- **Ordering**

The children in the class will have developed skills in the following:

- **Understanding and recalling**
- **Communication and expression**
- **Reasoning and implementing**
- **Applying and problem solving**

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Worksheet-Maths 13: Number Problems
Class: Third / Fourth Class
Strand: Number

TITLE: NUMBER PROBLEMS

Aim / Description:
The aim of this worksheet is to introduce students to numbers from 0 to 9999 while carrying out problem sets in the areas of place value, addition, subtraction, division, multiplication, fractions and decimals. By working through 5 problems in each set, and by adding together the answers from the problems, students will discover the answer to a scientific question.

Exercise:
Ask students to work through each problem set by writing the answers to each question in the column provided.

For 3rd class students, ask students to provide you with the answers for each question and add them together on the board. 4th class students can carry out the exercise themselves by adding together all the figures in the answers column.

The resulting figure will provide students with the answer to a specific scientific question.

For the correct answers and information on each scientific question see Answer Sheet & Information: Worksheet-Maths 13.

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Worksheet-Maths 13: Number Problems
Class: Third / Fourth Class
Strand: Number

Problem Set 1: Place Value

		Question	Answer
A	838	What is the number of hundreds in A?	
B	547	What digit has the greatest value in B?	
C	83̲5	What is the number of tens (underlined) in C?	
D	3955	Write the number of thousands in D	
E	378	What digit has the lowest value in E?	
How many types of whale and dolphin have been seen in Irish Waters? Add your answers together find out.			

Problem Set 2: Addition

		Question	Answer
A	975 + 340	What is the sum of numbers in A?	
B	There are 269 green seahorses and 278 red seahorses swimming in the sea	What is the total number of seahorses in B?	
C	There are 143 red fish and 267 blue fish and 428 green fish swimming in the sea	What is the total number of fish in C?	
D	1351+864 + 1338	What is the sum of the numbers in D?	
E	237 +156 +147	What is the sum of the numbers in E?	
How many types of crab are there in the world? Add your answers together to find out.			

Problem Set 3: Subtraction

		Question	Answer
A	346 – 237=☐	Subtract the numbers in A	
B	Out of 693 fish swimming in the sea, 281 are caught in a net.	How many fish are not caught in the net?	
C	There are 492 seahorses. 283 of which are green.	How many seahorses are not green?	
D	1548 - 414 = ☐	Subtract the numbers in D	
E	45 80 12 56	Look at the numbers in E. Which two have a difference of 24?	i. ii.
The number of types of sea star in the world? Add your answers together to find out.			

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Worksheet-Maths 13: Number Problems
Class: Third / Fourth Class
Strand: Number

Problem Set 4: Multiplication

		Question	Answer
A	7 X 9 = ☐	Multiply the numbers in A	
B	45 32 72 94	Which of the following numbers are multiples of 8?	i. ii.
C	128 X 6 = ☐	Multiply the numbers in C	
D	There are 2 sea snails on each rock. You collect a total of 4 rocks while you are at the seashore.	How many sea snails do you have?	
E	3 X 2 X 6 = ☐	Multiply the numbers in E	
How many metres is the world's highest waterfall, Angel Falls in South America? Add your answers together to find out.			

Problem Set 5: Division

		Question	Answer
A	27 ÷ 3 = ☐	Divide the numbers in A	
B	☐ ÷ 6 = 12	Fill in the blank in B	
C	450 ÷ 9 = ☐	Divide the numbers in C	
D	4 | 12 | 3 20 | 32 |	Divide by 4: Fill in the blanks in D	i. ii. iii.
E	You have 110 fish. Each fish tank can hold 2 fish.	How many fish tanks do you need?	
What weight can the Blue Whale grow to in tons? Add your answers together to find out.			

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Worksheet-Maths 13: Number Problems
Class: Third / Fourth Class
Strand: Number

Problem Set 6: Fractions

		Question	Answer
A	The are four green seahorses and six red seahorses.	How do you write what fraction of the total seahorses are green? Use a slash (/) to separate the numerator and denominator.	
B	$^{2}/_{5}$ $^{1}/_{2}$ $^{4}/_{6}$	Which fraction is equal to $^{2}/_{3}$?	
C	Of six whales feeding $^{1}/_{3}$ are blue.	How many blue whales are feeding?	
D	$^{1}/_{2} = {}^{2}/\square = {}^{4}/_{8} = {}^{5}/_{10}$	Fill in the blank in D	
E	$^{1}/_{2}$ of 6 = $\square$	Calculate	
What is the average length of a Giant Squid in metres? Add your answers together and round off to the closest whole number to find out.			

Problem Set 7: Decimals

		Question	Answer
A	$5\ ^{4}/_{5}$	Write the mixed number in A as a decimal number	
B	Three and a half	Write B as a decimal number	
C	5.2, 5.4, $\square$, 5.8	Fill in the missing number to make the pattern in C	
D	5.2 + 1.7 = ___	Add the decimal numbers in D	
E	1.3 + 5.5 + 6.4 = $\square$	Add the decimal numbers in E	
What size is the world's largest seahorse, the pot bellied seahorse, in centimetres? Add your answers together to find out.			

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Answer Sheet & Information: Worksheet-Maths 13
Class: Third / Fourth Class
Strand: Number

TITLE: NUMBER PROBLEM ANSWERS AND INFORMATION

Problem Set 1: Place Value

		Question	Answer
A	838	What is the number of hundreds in A?	8
B	547	What digit has the greatest value in B?	7
C	8<u>3</u>5	What is the number of tens (underlined) in C?	3
D	3955	Write the number of thousands in D	3
E	378	What digit has the lowest value in E?	3
How many types of whale and dolphin have been seen in Irish Waters? Add your answers together to find out.			24

There are 24 species of whale and dolphin (cetacean) which have been recorded in Irish waters. These range from common dolphins, to porpoises (the smallest cetacean around Ireland) to the blue whale (the largest animal on earth). All cetaceans can be either classed as toothed whales or baleen whales. Baleen whales are whales which have no teeth. They have sheets of baleen or whalebone hanging from their upper jaw which they use to strain plankton (tiny animals and plants) from the ocean. They include blue whales and fin whales. Toothed whales have conical teeth in their upper and lower jaw for eating similar to the teeth in your mouth. They include dolphins and killer whales. For full details of the 24 species recorded in our waters see the Irish Whale and Dolphin Group Website on www.iwdg.ie

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Answer Sheet & Information: Worksheet-Maths 13
Class: Third / Fourth Class
Strand: Number

Problem Set 2: Addition

		Question	Answer
A	975 + 340	What is the sum of numbers in A?	1315
B	There are 269 green seahorses and 278 red seahorses swimming in the sea	What is the total number of seahorses in B?	547
C	There are 143 red fish and 267 blue fish and 428 green fish swimming in the sea	What is the total number of fish in C?	838
D	1351+864 + 1338	What is the sum of the numbers in D?	3553
E	237 +156 +147	What is the sum of the numbers in E?	540
How many types of crab are there in the world? Add your answers together find out.			6793
There are approximately 6,793 types of crab in the world. Common species around our shores include shore crabs, edible crabs, velvet swimming crabs, porcelain crabs and hermit crabs. One of the smallest crabs around Ireland is the pea crab which lives inside mussel shells. Spider crabs are a large species of crab found around Ireland. The Chinese mitten crab is an invasive freshwater crab which has been found on the banks of the River Suir in Co. Waterford. For more information on the Chinese mitten crab see http://invasivespeciesireland.com/			

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Answer Sheet & Information: Worksheet-Maths 13
Class: Third / Fourth Class
Strand: Number

Problem Set 3: Subtraction

		Question	Answer
A	346 – 237	Subtract the numbers in A	109
B	There are 693 fish swimming in the sea, 281 are caught in a net	How many fish are not caught in the net?	412
C	There are 492 seahorses. 283 are green	How many seahorses are not green?	209
D	1548 - 414	Subtract the numbers in D	1134
E	45 80 12 56	Look at the numbers in E. Which two have a difference of 24?	i. 80 ii. 56
The number of types of sea star in the world? Add your answers together to find out.			2000

There are some 2,000 species (types) of sea star (starfish) living in the world's oceans. They live in a variety of marine habitats from tropical waters to the cold seafloor. Sea stars are invertebrates (animals with no backbone) and are part of a family of animals called the echinoderms. Echinoderms are a group of animals that live in the marine environment. The name means spiny skin and the group includes sea urchins, sea stars and sea cucumbers. While most sea stars have five arms some species have 10, 20 and even 40 arms. Sea stars are carnivorous animals which can live for up to 35 years in the wild. Sea stars are famous for being able to regenerate their limbs. While most sea stars need the central body to be intact to regenerate, some can grow an entire new sea star from just one arm. Sea stars are also well known for the way they eat their prey. Most sea stars push their stomach outside of their bodies, and then put it inside the shell of their prey, where they eat and digest them. Once the prey has been digested the sea star brings its stomach back inside its body.

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Answer Sheet & Information: Worksheet-Maths 13
Class: Third / Fourth Class
Strand: Number

Problem Set 4: Multiplication

		Question	Answer
A	7 X 9	Multiply the numbers in A	63
B	45 32 72 94	Which of the following numbers are multiples of 8?	i. 32 ii. 72
C	128 X 6	Multiply the numbers in C	768
D	There are 2 sea snails on each rock. You collect a total of 4 rocks while you are at the seashore.	How many sea snails do you have?	8
E	3 X 2 X 6	Multiply the numbers in E	36
How many metres is the world's highest waterfall, Angel Falls in South America? Add your answers together to find out.			979

Angel Falls, the world's highest waterfall has a height of 979 metres. The height of 979m includes a main plunge of 807m plus 172m of sloped cascades and rapids. The waterfall drops over the edge of the Auyantepui mountain, located in the Canaima National Park in Venezuela. Before reaching the ground it is thought that most of the water is dissipated as mist. The waterfall feeds into the Kerep River.

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Answer Sheet & Information: Worksheet-Maths 13
Class: Third / Fourth Class
Strand: Number

Problem Set 5: Division

<table>
<tr><td></td><td></td><td>Question</td><td>Answer</td></tr>
<tr><td>A</td><td>27 ÷ 3</td><td>Divide the numbers in A</td><td>9</td></tr>
<tr><td>B</td><td>☐ ÷ 6 = 12</td><td>Fill in the blank in B</td><td>72</td></tr>
<tr><td>C</td><td>450 ÷ 9</td><td>Divide the numbers in A</td><td>50</td></tr>
<tr><td>D</td><td><table><tr><td>4</td><td></td></tr><tr><td>12</td><td>3</td></tr><tr><td>20</td><td></td></tr><tr><td>32</td><td></td></tr></table></td><td>Divide by 4: Fill in the blanks in D</td><td>i. 1
ii. 5
iii. 8</td></tr>
<tr><td>E</td><td>You have 110 fish. Each fish tank can hold 2 fish.</td><td>How many fish tanks do you need?</td><td>55</td></tr>
<tr><td colspan="3">What weight can the Blue Whale grow up to in tons? Add your answers together to find out.</td><td>200</td></tr>
<tr><td colspan="3">Blue Whales are the largest animals ever known to live on the planet. They can grow to 32 metres in length and up to 200 tons in weight. Blue Whales are a baleen whale. Baleen whales are whales which have no teeth. They have sheets of baleen or whalebone hanging from their upper jaw which they use to strain plankton (tiny animals and plants) from the ocean with. It is estimated that their tongue alone can weigh as much as an elephant, while their heart can weigh the same as a small car.</td><td></td></tr>
</table>

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Answer Sheet & Information: Worksheet-Maths 13
Class: Third / Fourth Class
Strand: Number

Problem Set 6: Fractions

		Question	Answer
A	The are four green seahorses and six red seahorses.	How do you write what fraction of the total seahorses are green? Use a slash (/) to separate the numerator and denominator.	4/10
B	$^{2}/_{5}$ $^{1}/_{2}$ $^{4}/_{6}$	Which fraction is equal to $^{2}/_{3}$	4/6
C	Of six whales feeding $^{1}/_{3}$ are blue.	How many blue whales are feeding	2
D	$^{1}/_{2} = {}^{2}/\square = {}^{4}/_{8} = {}^{5}/_{10}$	Fill in the blank	4
E	$^{1}/_{2}$ of 6	Calculate	3
What is the average length of a Giant Squid in metres? Add your answers together and round off to the closest whole number to find out (TEACHER SHOULD DO THIS CALCULATION).			$10\ ^{2}/_{30} = 10$
The average length of a giant squid is 10m, but individuals of 18m have been found. They are one of the largest invertebrate (animal without a backbone) on the planet. They live in deep sea habitats and the majority of what we know about them comes from specimens found washed up on beaches or hauled up by fisherman in fishing nets. Giant squid along with their cousins, the colossal squid, have the largest eyes in the animal kingdom, which are about the size of a basketball.			

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Answer Sheet & Information: Worksheet-Maths 13
Class: Third / Fourth Class
Strand: Number

Problem Set 7: Decimals

		Question	Answer
A	$5\ ^{4}/_{5}$	Write the mixed number in A as a decimal number	5.8
B	Three and a half	Write B as a decimal number	3.5
C	5.2, 5.4, ☐, 5.8	Fill in the missing number to make the pattern in C	5.6
D	5.2 + 1.7	Add the decimal numbers in D	6.9
E	1.3 + 5.5 + 6.4	Add the decimal numbers in E	13.2
What size is one of the world's largest seahorse, the pot bellied seahorse, in centimetres? Add your answers together to find out.			35

The pot bellied seahorse, or big bellied seahorse, lives in the south-west Pacific around Australia and New Zealand. Unlike other bony fish they have a layer of skin over bony plates on the outside of their bodies instead of scales. Males and females mate for life and work together to develop their young. The female grows the eggs in her body and then transfers them to the male, who has a brood pouch on his front. The young remain in this pouch until they are ready to be born, at which stage the male gives birth to them. To find out more about seahorses around Ireland visit www.theseahorsetrust.org