GM Digital Day: Turtley awesome data

The life and times of Bean the green sea turtle

Teacher notes

Microsoft Excel
Worksheet

Activity title	Turtley Awesome Data
Short overview of the workshop/activity	• As the number of phones, tablets, computers, apps and websites being made everyday continues to increase so does the amount of associated data. We want to help students to understand why being able to understand data is important and what technology companies use to do this. • To help bring the topic to life we look at a group of 90,000 turtles in Costa Rica and see what we can learn about them. • We ask the pupils to take the data and look for trends at each stage of the sea turtle's life from hatching from the egg through to being an adult, and then walk through a detailed analysis we have already completed to show what you can do with more time.
Learning outcomes	Pupils will understand how Analytics can help people to make sense of trends and patterns in data Understand how an example technology solution that can be used in relation to the understanding the specific data

How should the resource be delivered in the classroom? Think about whether in groups or as individuals/does the teacher need to deliver a PowerPoint?	• The teacher should set out the context of the lesson using the provided PowerPoint:
	   - What is Analytics: Making Sense of data
	   - Why does it matter: Simple examples
	   - Why is it relevant: Data is everywhere
	• The teach will introduce the Turtles data and ask the pupils to break into teams to look at the data and pick one thing to tell the other pupils about e.g. how many turtles are there, how many hatched their eggs.
	• The teacher / analytics consultant will talk through the online tool that has been put together from the data and how it provides simple visuals to help us understand the data.

Today's Lesson

1. What is Analytics: Making Sense of data

2. Why does it matter: Turtle data

3. Why is it relevant: Data is everywhere

GET TO KNOW BEAN THE GREEN SEA TURTLE

Bean is real. She is an adult female green sea turtle from Costa Rica and one of only 90,000 nesting females left in the entire world. Bean was tagged with satellite transmitters by the Sea Turtle Conservancy and released on August 5, 2018 with the hope of learning more about these endangered species. This is her story.

Egg Number	Hatched	Egg Number	Hatched	Egg Number	Hatched	Egg Number	Hatched
1	Yes	26	Yes	51	Yes	76	Yes
2	No	27	Yes	52	Yes	77	No
3	Yes	28	Yes	53	Yes	78	No
4	No	29	Yes	54	Yes	79	No
5	Yes	30	Yes	55	Yes	80	Yes
6	Yes	31	No	56	Yes	81	No
7	No	32	Yes	57	No	82	Yes
8	Yes	33	Yes	58	Yes	83	Yes
9	Yes	34	Yes	59	Yes	84	Yes
10	Yes	35	Yes	60	No	85	Yes
11	Yes	36	Yes	61	Yes	86	No
12	No	37	Yes	62	Yes	87	Yes
13	Yes	38	Yes	63	Yes	88	No
14	Yes	39	No	64	Yes	89	Yes
15	Yes	40	Yes	65	Yes	90	Yes
16	Yes	41	No	66	Yes	91	Yes
17	Yes	42	Yes	67	No	92	Yes
18	Yes	43	Yes	68	Yes	93	Yes
19	Yes	44	Yes	69	Yes	94	Yes
20	Yes	45	No	70	Yes	95	No
21	Yes	46	Yes	71	Yes	96	Yes
22	Yes	47	Yes	72	Yes	97	Yes
23	No	48	No	73	Yes	98	Yes
24	Yes	49	Yes	74	No	99	Yes
25	Yes	50	Yes	75	Yes	100	Yes

What is analytics?

"Analytics is the discovery, interpretation, and communication of meaningful patterns in data"

"Applying data patterns towards effective decision making"

Introduction to the turtle data

The turtle data we are going to look at is real, Bean is one specific turtle from Costa Rica and one of only 90,000 nesting females left in the world. Bean was tagged with satellite transmitters by the Sea Turtle conservation and released on August 5th 2018 with the hope of learning more about this endangered species.

We are going to look at and analyse two initial parts of the turtle data set and who you how all the data can be used to tell a story.
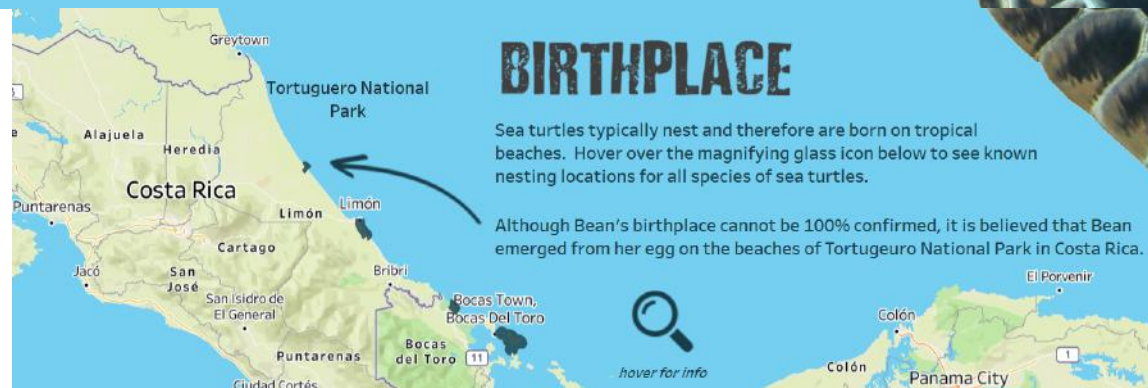
Exercise 1: Turtle eggs hatching data

Egg Number	Hatched
1	Yes
2	No
3	Yes
4	No
5	Yes
6	Yes
7	No
8	Yes
9	Yes
10	Yes
11	Yes
12	No
13	Yes
14	Yes
15	Yes
16	Yes
17	Yes
18	Yes
19	Yes
20	Yes
21	Yes
22	Yes
23	No
24	Yes
25	Yes

Egg Number	Hatched
26	Yes
27	Yes
28	Yes
29	Yes
30	Yes
31	No
32	Yes
33	Yes
34	Yes
35	Yes
36	Yes
37	Yes
38	Yes
39	No
40	Yes
41	No
42	Yes
43	Yes
44	Yes
45	No
46	Yes
47	Yes
48	No
49	Yes
50	Yes

Egg Number	Hatched
51	Yes
52	Yes
53	Yes
54	Yes
55	Yes
56	Yes
57	No
58	Yes
59	Yes
60	No
61	Yes
62	Yes
63	Yes
64	Yes
65	Yes
66	Yes
67	No
68	Yes
69	Yes
70	Yes
71	Yes
72	Yes
73	Yes
74	No
75	Yes

Egg Number	Hatched
76	Yes
77	No
78	Yes
79	No
80	Yes
81	No
82	Yes
83	Yes
84	Yes
85	Yes
86	No
87	Yes
88	No
89	Yes
90	Yes
91	Yes
92	Yes
93	Yes
94	Yes
95	No
96	Yes
97	Yes
98	Yes
99	Yes
100	Yes

1) Count how many eggs hatched

2) Count how many eggs didn't hatch

3) Share the results with the class
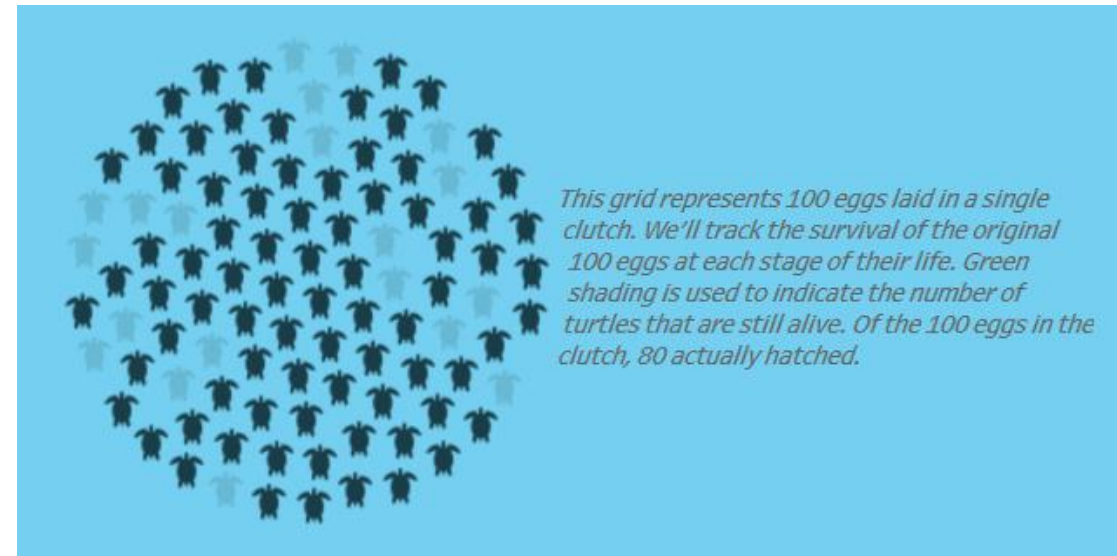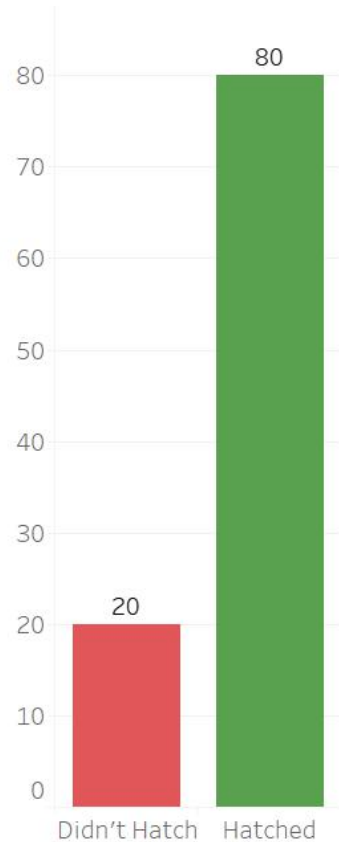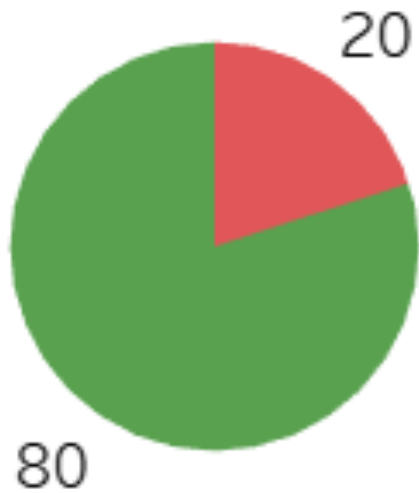
How many eggs hatched?

100 Eggs

80 hatched

20 didn't hatch

Can we make it easier to understand?

Different types of chart can be used to show the answer and further context

This grid represents 100 eggs laid in a single clutch. We'll track the survival of the original 100 eggs at each stage of their life. Green shading is used to indicate the number of turtles that are still alive. Of the 100 eggs in the clutch, 80 actually hatched.

Exercise: Turtles making it to the sea data

1) Count how many turtles made it to the water

2) Display the answers in a way that is easy to understand

Egg Number	Made it
1	Did Not Hatch
2	Made it to Water
3	Did not Make it to Water
4	Did not Make it to Water
5	Made it to Water
6	Did Not Hatch
7	Did Not Hatch
8	Made it to Water
9	Did Not Hatch
10	Did not Make it to Water
11	Made it to Water
12	Did not Make it to Water
13	Made it to Water
14	Did not Make it to Water
15	Made it to Water
16	Made it to Water
17	Did Not Hatch
18	Did not Make it to Water
19	Made it to Water
20	Made it to Water
21	Did Not Hatch
22	Did not Make it to Water
23	Made it to Water
24	Made it to Water
25	Did Not Hatch

Egg Number	Made it
26	Did not Make it to Water
27	Made it to Water
28	Made it to Water
29	Did Not Hatch
30	Did Not Hatch
31	Did not Make it to Water
32	Made it to Water
33	Made it to Water
34	Did not Make it to Water
35	Made it to Water
36	Did Not Hatch
37	Made it to Water
38	Did not Make it to Water
39	Made it to Water
40	Made it to Water
41	Did not Make it to Water
42	Made it to Water
43	Made it to Water
44	Did Not Hatch
45	Did not Make it to Water
46	Made it to Water
47	Did Not Hatch
48	Made it to Water
49	Did not Make it to Water
50	Made it to Water

Egg Number	Made it
51	Did not Make it to Water
52	Made it to Water
53	Did Not Hatch
54	Did not Make it to Water
55	Made it to Water
56	Did not Make it to Water
57	Made it to Water
58	Did not Make it to Water
59	Made it to Water
60	Did Not Hatch
61	Did Not Hatch
62	Did not Make it to Water
63	Made it to Water
64	Did not Make it to Water
65	Made it to Water
66	Did Not Hatch
67	Did not Make it to Water
68	Did Not Hatch
69	Made it to Water
70	Did not Make it to Water
71	Did not Make it to Water
72	Did not Make it to Water
73	Did not Make it to Water
74	Did not Make it to Water
75	Did Not Hatch

Egg Number	Made it
76	Made it to Water
77	Did not Make it to Water
78	Made it to Water
79	Did not Make it to Water
80	Made it to Water
81	Made it to Water
82	Did not Make it to Water
83	Made it to Water
84	Made it to Water
85	Did Not Hatch
86	Did not Make it to Water
87	Did not Make it to Water
88	Did not Make it to Water
89	Did Not Hatch
90	Did not Make it to Water
91	Made it to Water
92	Did not Make it to Water
93	Did not Make it to Water
94	Did not Make it to Water
95	Did not Make it to Water
96	Did not Make it to Water
97	Made it to Water
98	Did not Make it to Water
99	Made it to Water
100	Did not Make it to Water

How many turtles made it to the sea?

80 Turtles

80 made it to the sea

20 didn't make it
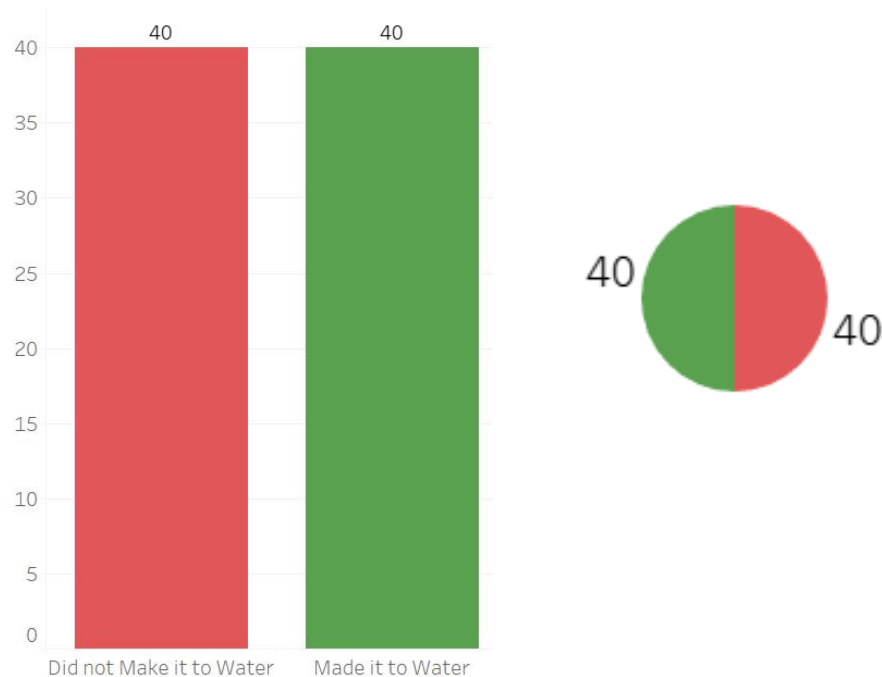
A few days after Bean and her siblings hatched, they emerged together from the nest at night. Bean and her siblings would have then found their way to the water by heading "toward the light" (of the moon).

However, artificial lights from homes can often confuse seat turtles. This is why people are instructed to turn off lights in their houses if staying near nesting beaches. Unfortunately, many of Bean's siblings were mostly likely led astray by this false light.

Due to turtles going toward the wrong light, obstacles on land, and predators such as racoons or sea birds, only half of Bean's family most likely made it to the water.
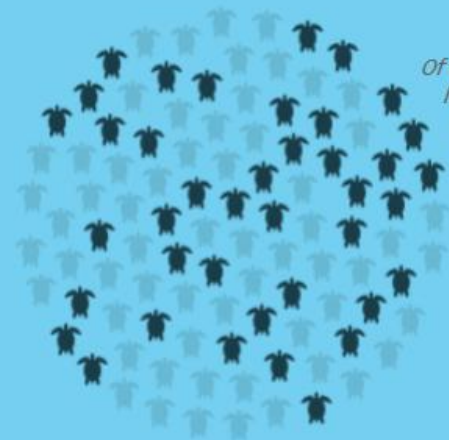
Of the 80 eggs in the clutch that hatched and 100 eggs in total, only 40 survive this stage and make it to the ocean.

Why is it important?

- Companies have huge amounts of data and need to make it easier to understand
    - E.g. as a bank who is my best customer?

- People find charts / graphs easier to understand than tables of data

- You can use it to these to build a story: interactive link

TRACKING BEAN

The Sea Turtle Conversancy tagged Bean in early August 2018 and has been tracking her for over 10 months. Since that time, she has swam 2659 kilometres (1652 miles), which is the straight line distance from New York to Puerto Rico.

On average, the chances of Bean making it to breeding age during a time of human interference was approximately 0.2%. That means that she was lucky...as she was most likely the only green sea turtle to survive out of 500 green sea turtles - not just her mother's clutch of 100 eggs, but four more clutches of 100 eggs.

How you can help?

In case you missed it, green sea turtles are currently **ENDANGERED**. Without effort from all of us, this creature who has survived for millions of years, could go extinct on the account of human hands.

You may not be a marine biologist saving and rehabilitating sea turtles, but there are many ways that you can help, right where you are. Hover over the icons to learn how you can help save these beautiful creatures and help turtles like Bean thrive!

Special Thanks to

SEA TURTLE CONSERVANCY