Rounding numbers. *Stg 6 x/÷ number* Name: _____

Yee- haa! No silly, we haven't gone all country and western on y'all! Sometimes when we are multiplying or dividing interesting numbers we end up with some small numbers or tiny decimals that we don't really need. 'Rounding' is simply knocking off those annoying fiddly bits so you end up with a practical number you can use.

For example, someone might ask you "how many kids go to your school?" The real, accurate answer might be **513**. But people don't always need or want to know the details. So a more practical answer is: "**About 500**"

So, how do we decide what to get rid of, and then when do we **'round up'** or **'round down'**? First we need to decide how accurate we need to be. Do we only need to know millions (like the population of a country) or to 2 decimal places (like figuring percentages)? It depends on what the numbers relate to. Have a look at these real life number situations and see if you can pick a sensible place value for talking about that number:

1. The number of items in your shopping trolley _____
2. The population of the world _____
3. The size of your hot wheels collection _____
4. The population of Timaru _____
5. The amount of hairs on a cat _____
6. The population of Nigeria _____
7. The number of cornflakes in a bowl _____
8. The number of stars in the sky _____
9. The people in your family _____
10. The litres of Coke in a bottle _____

My choices:
Billions
Millions
Thousands
Hundreds
Tens
Ones
To one decimal place E.g. 1.2
Two decimal places E.g. 1.23
Loads of decimals, all in there

Right then, to business! Once you've decided on your place value, do you round up or down? –say you've decided on 100s. Just take it to the closest 100. *What?* Have a go at these, just circle the closest value: (if it's right in the middle, take the five up) **e.g. 55** rounds up to **60,** but **54** rounds down to **50**

400 ← 439 → 500	600 ← 655 → 700	1000 ← 1234 → 2000
200 ← 293 → 300	40 ← 43.5 → 50	4.00 ← 4.56 → 5.00
5 ← 5.88 → 6	800 ← 872 → 900	1.00 ← 1.99 → 2.00
0.50 ← 0.57 → 0.60	0.02 ← 0.022 → 0.03	9000 ← 9499 → 10000

Round ups were the job of 'cowboys'. The historic American cowboy of the late 19th century arose from the *vaquero* traditions of northern Mexico and became a figure of legend. In addition to ranch work, some cowboys work for or participate in rodeos. - https://en.wikipedia.org/wiki/Cowboy

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Rounding numbers 2 *Stg 6 x/÷ number* Name: _____

Another skill you can practice with rounding is finding the value between two numbers – this is helpful for deciding whether you should round up or down. Find the number that is half-way between these numbers: (watch out for those decimals!) **E.g 2.5** is halfway between **2 and 3**

100 _____ 200	10 _____ 20	1000 _____ 2000
50 _____ 60	30 _____ 40	600 _____ 700
4000 _____ 5000	1 _____ 2	13 _____ 14
30000 _____ 40000	0.1 _____ 0.2	6.25 _____ 6.26
340 _____ 350	0.01 _____ 0.02	0.5763 _____ 0.5764

Ok, time for some practical rounding. Let's try shaving some of these hairy old numbers:

a. The population of Morrinsville is exactly 7493, which is about _____
b. I have exactly 27 teaspoons, which is roughly _____
c. There are precicely 537 pages in a 'Harry Potter' book, which is approximately _____
d. There are 16.178 megapixels recorded in a digital image, which is practically _____
e. One gigabyte of memory is 1024 MB, which is close enough to _____
f. There are 18136 grains of white sugar in a 4g teaspoon, which is about _____
g. A car engine produces about 109KW of energy, which is near enough to _____
h. The average lifespan of a green sea turtle is 89 years, or you could say _____
i. The Burj Khalifa skyscraper is 828m tall, which you can say is roughly_____
j. The population of China in 2014 was 1.393783836 billion, which you could safely round to _____

Ok, that was fun! – now try rounding the answers to these gnarly division questions:
(Use a calcualtor – I'm not that mean!)

1. 456 ÷ 13 = _____ which is approximately: _____
2. 23.76 ÷ 7 = _____ which is approximately: _____
3. 100 ÷ 17 = _____ which is approximately: _____
4. 1.0 ÷ 11 = _____ which is approximately: _____
5. 29 ÷ 3 = _____ which is approximately: _____
6. 8000 ÷ 31 = _____ which is approximately: _____

My old Physics teacher used to call this 'bucket maths' – Don't get caught up worrying about how many millilitres are in the bucket if you can just multiply the buckets!

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