



Lesson 3

I am learning to answer reasoning and problem solving questions including rounding and negative numbers.

Try your best to answer as many questions as you can. 😊

Reasoning Questions

Key vocabulary: Digit, rounded, nearest, column, minus, negative, positive	Your answer
<p>Zach rounded 3,315,678 to the nearest million and wrote 3,315,000.</p>  <p>Can you explain to Zach what mistake he has made?</p>	<p>He has rounded to the nearest thousand but has also made a mistake as the digit next to the thousands column is 6 which means you would need to round up. All other columns except for the millions column should be zero.</p>
<p>A company decided to build offices above and below ground level.</p> <p>If they build from -10 to 10, we will have 20 floors.</p>  <p>Do you agree? Explain why.</p> <p>ie</p> <p>masterthecurriculum.co.uk</p>	<p>No, there would be 21 floors because you need to count floor 0.</p>

When counting backwards in tens from any positive one-digit number, the last digit does change.

When counting forwards in tens from any positive one-digit number, the last digit never changes.

Can you find examples to show this?
Explain why this happens.

When counting backwards in tens from any positive one-digit number, the last digit does change.
9, -1, -11, -21

When counting forwards in tens from any positive one-digit number, the last digit never changes.
9, 19, 29, 39

This happens because when you cross 0, the numbers mirror the positive side of the number line. Therefore, the final digit in the number changes and will make the number bond to 10.

8 Three children have rounded 471,958 to the nearest 100,000



Eva

500,000



Jack

400,000



Rosie

472,000

Who is correct?

Explain the mistake the other children have made.

Eva is correct. Jack has made a mistake as he thinks 471,958 is closer to 400,000 than 500,000. 471,958 is bigger than 450,000 and so is closer to 500,000. Rosie appears to have rounded 471,958 to the nearest 1,000 rather than 100,000

Problem Solving

My number is 2,350 when rounded to the nearest 10.



My number is 2,400 when rounded to the nearest 100.

Esin

Both numbers are whole numbers.



What is the greatest possible difference between the two numbers?

The greatest possible difference is 104.

$$2,449 \text{ (rounds to 2,400)} - 2,345 \text{ (rounds to 2,350)} = 104$$

Miss Smith gives out four number cards.

16,987	My number rounds to 16,000 to the nearest 1,000.	Tia
15,813	My number has two hundreds.	Zach
16,201	My number is 16,990 when rounded to the nearest 10.	Malachi
15,101	My number is 15,000 when rounded to the nearest 1,000.	Rosie

Can you work out which child has which card?

81

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Miss Smith gives out four number cards.

My number rounds to 16,000 to the nearest 1,000.	Tia	15,813
My number has two hundreds.	Zach	16,201
My number is 16,990 when rounded to the nearest 10.	Malachi	16,987
My number is 15,000 when rounded to the nearest 1,000.	Rosie	15,101

9 A and B are integers.

A = 300,000 to the nearest 100,000

B = 300,000 to the nearest 10,000

- What is the greatest possible value of $A + B$?
- What is the smallest possible value of $A + B$?
- What is the greatest possible value of $A - B$?

9	a) 654,998 b) 545,000 c) 54,999
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6a. Use the digit cards to create a calculation which equals -18.

2 8 0 1 3

You can only use each digit card once per calculation, but do not need to use all of them.

Is there more than one possible answer?

★ E PS

Various answers, for example: $0 - 18$, $10 - 28$, $-21 + 3$

