

# Place Value Lesson 3

Thursday 11<sup>th</sup> June 2020

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

# Starter:

True or False ?

Round any number

A 4-digit number will always be a 4-digit number after being rounded to the nearest thousand.

Answer:

True or False ?

Round any number

False

If the thousands digit is 9 and  
the hundreds digit is 5 or more,  
it will round to 10,000

# Revision

## Rounding and Negative numbers

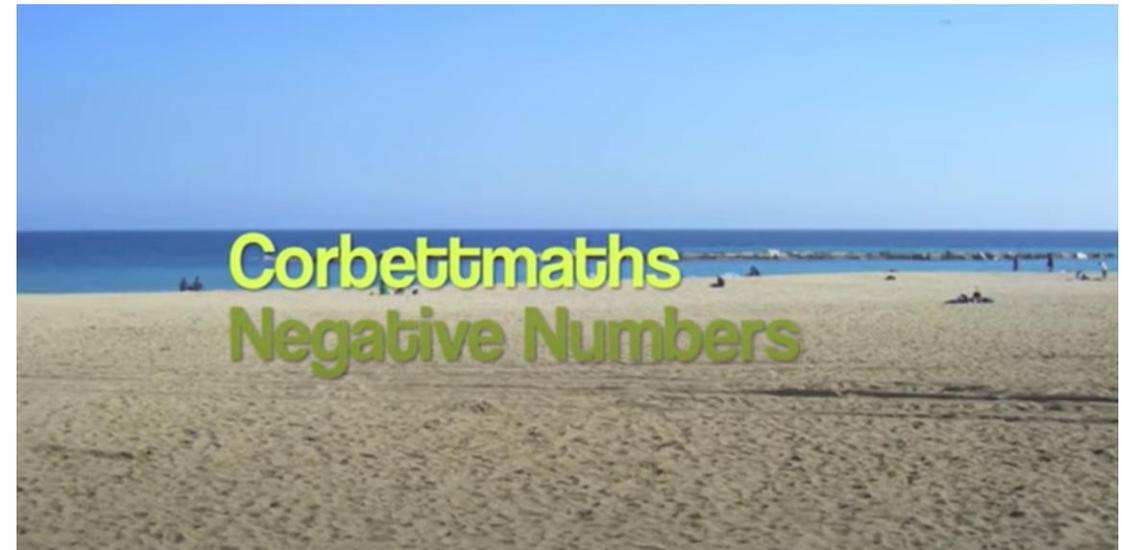
Watch these rounding videos:

<https://corbettmathsprimary.com/2018/07/31/rounding-video/>

<https://www.youtube.com/watch?v=47lajakFQIQ>

Watch these negative numbers videos:

<https://corbettmathsprimary.com/2018/07/31/negative-numbers-video/>



# Reasoning Questions

## A.P.E.

### Answer it

What is the answer to the question you've been asked?

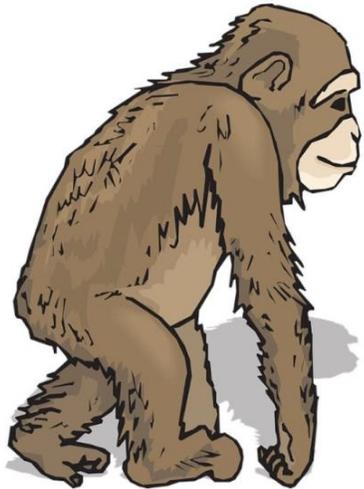
### Prove it

Show how you know that is the answer with pictures, diagrams, calculations or in another way.

### Explain it

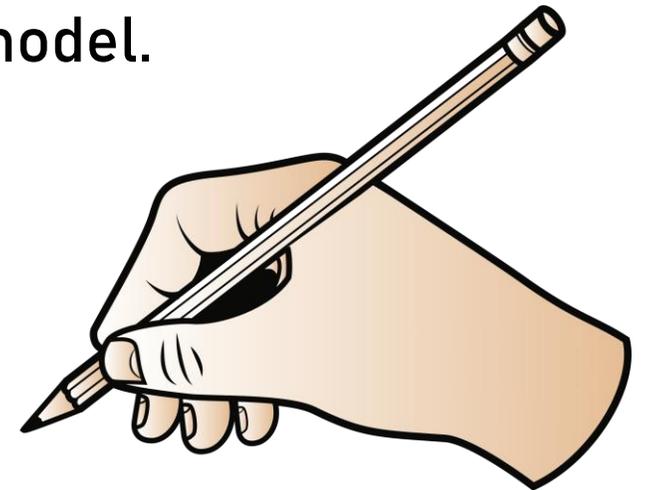
Write some sentences which make it clear why you came to your answer.

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This could also explain the mistakes that have been made.

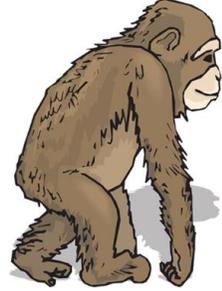
Remember some answers require a written answer. When you see the words 'explain' or 'prove it,' use the A.P.E model.



Let's practise using APE:

Your turn:

**A.P.E.** **Answer it**  
What is the answer to the question you've been asked?



**Prove it**  
Show how you know that is the answer with pictures, diagrams, calculations or in another way.

**Explain it**  
Write some sentences which make it clear why you came to your answer.

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Whitney rounded 2,215,678 to the nearest million and wrote 2,215,000

Can you explain to Whitney what mistake she has made?

Answer:

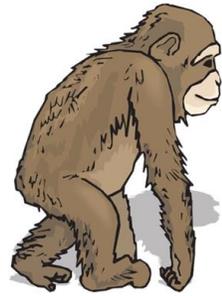
Whitney rounded 2,215,678 to the nearest million and wrote 2,215,000

Can you explain to Whitney what mistake she has made?

Answer Prove Explain

The answer is 2,000,000. When rounding to the nearest million, you look at the hundred thousands digit (which is 2). When the next digit is 2, you need to round down to 2,000,000. Whitney has rounded the number to the nearest thousand but has also done this incorrectly as the digit next to the thousands digit (5) is 6 so she needed to round up. When rounding to the nearest million, all the other digits to the right of the millions, need to be 0s.

**A.P.E.** Answer it  
What is the answer to the question you've been asked?



**Prove it**  
Show how you know that is the answer with pictures, diagrams, calculations or in another way.

**Explain it**  
Write some sentences which make it clear why you came to your answer.

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Let's practise using APE:

Your turn:

**A.P.E.** **Answer it**  
What is the answer to the question you've been asked?

**Prove it**  
Show how you know that is the answer with pictures, diagrams, calculations or in another way.

**Explain it**  
Write some sentences which make it clear why you came to your answer.



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A company decided to build offices over ground and underground.

If we build from  $-20$  to  $20$ , we will have 40 floors.



Do you agree? Explain why.

**Answer:**

A company decided to build offices over ground and underground.

If we build from  $-20$  to  $20$ , we will have 40 floors.



Do you agree? Explain why.

**A.P.E.** **Answer it**  
What is the answer to the question you've been asked?

**Prove it**  
Show how you know that is the answer with pictures, diagrams, calculations or in another way.

**Explain it**  
Write some sentences which make it clear why you came to your answer.



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**Answer** **Prove** **Explain**

**I disagree.** They have forgotten to count floor zero. There would be 41 floors. From  $-20$  to  $-1$ , there would be 10 floors, then floor 0 and then 10 floors from 1 to 20.

# Problem Solving Questions

## Your Turn



Rosie

My number is 1,400  
when rounded to the  
nearest 100



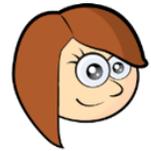
Mo

My number is 1,350 when  
rounded to the nearest 10

Both numbers are whole numbers.

What is the greatest possible difference between the two numbers?

# Answer:



Rosie

My number is 1,400  
when rounded to the  
nearest 100



Mo

My number is 1,350 when  
rounded to the nearest 10

Both numbers are whole numbers.

What is the greatest possible difference between the two numbers?

To find the greatest possibility, you must find the smallest possible number which rounds to 1350 and the largest possible number which rounds to 1,400.

The greatest possible difference is 104.

$$- 1,449 \text{ (rounds to 1,400)} - 1,345 \text{ (rounds to 1,350)} = 104$$

# Your Turn

15,987

15,813

15,101

16,101

Tommy says, "My number rounds to 16,000 to the nearest 1,000"

Alex says, "My number has one hundred."

Jack says, " My number is 15,990 when rounded to the nearest 10"

Dora says, "My number is 15,000 when rounded to the nearest 1,000"

Can you work out which child has which card?

# Answers:

15,987

15,813

15,101

16,101

Tommy says, "My number rounds to 16,000 to the nearest 1,000" **16,101, 15,813 or 15,987**

Alex says, "My number has one hundred." **15,101 or 16,101**

Jack says, "My number is 15,990 when rounded to the nearest 10" **15,987**

Dora says, "My number is 15,000 when rounded to the nearest 1,000" **15,101**

Can you work out which child has which card?

Work out which numbers fit the clues as there may be more than one and then look at all the answers to work out which number each child had.

As Jack and Dora only have one option, you can eliminate them from the other children.

Tommy = 15,813

Alex = 16,101

Jack = 15,987

Dora = 15,101