

### Addition Prior Learning Assessment : Question 7



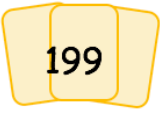

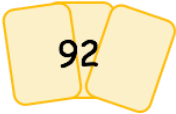

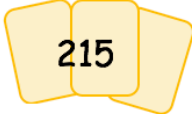

LO: I use estimation to check answers for addition questions.

I can use a formal written method to add sets of numbers together

NC: NAS 2: estimate and use inverse operations to check answers to a calculation

#### Assessment Question:

Prior Learning:

 Addition + Subtraction	<b>Question 7:</b> I can make realistic estimates.	I feel
<p>3 children collect character cards. Estimate how many cards they have collected altogether.</p> <div style="display: flex; justify-content: space-around; align-items: center;"><div style="text-align: center;">  199</div><div style="text-align: center;">  92</div><div style="text-align: center;">  215</div></div> <div style="text-align: right; margin-top: 20px;"></div>		

#### Teacher Input Ideas:

Recap with the children the word rounding. What does this mean? When is it used? Can you give me an example of a number that can be rounded and what it can be rounded to? What can we round numbers to?

Place 891 on to the board. Ask the children to round this number to the nearest ten, hundred and thousand.

Now remind the children of the word estimate. What is the meaning of this? When may we use this? How does estimation link with rounding?

Set up a context for the children to show them how rounding and estimating can be used. For example: use pages from a catalogue to make a catalogue of toys, clothes or electrical items, that are worth around the amounts that are displayed in the yellow price tag sheet, Alternatively use items from around the school or home to set up a class shop. Label each item with an appropriate price tag. Show the children your bank card (yellow sheet 2) with the amount of money you have in it. For example select the

800 pound card. Now inform the children that we are going to go shopping today. I only have 800 pounds in my bank, therefore I do not want to spend any more than this, so I need to know an estimate of how much altogether the items are going to cost before I queue up at the till as I do not want to buy them if I do not have enough.

Select 2 items with the price tags:

£215 and £499.

Ask the children what can I round these amounts to? What are they close to? How can you prove this? How can this help me to estimate if I have enough money in the bank?

Model to the children that 215 can be round to 200 and 499 can be round to 500. Now 200 and 500 is 700. So therefore I estimate that the total will be around 700. Discuss with the children that when I add 499 and 215 that the exact answer will not be 700. How does this estimate help me? Now let's add the actual amounts. Ask the children to select a strategy to use. Allow the children to apply either written or mental strategies.

We estimate that the total will be around £700 and I have £800 in my bank so when I get to the till I should have enough money to pay. Now let's check by adding these amounts together at the till.

Discuss that the answer is £714 . So my estimate was close, £700 and I do have enough money in the bank.

Repeat with 2 other amounts, encouraging children to estimate first and then work out the actual answer. If children are finding it hard to round, they may need a number line or blank number line to help them.

### Practice Activities

**Purple Practice: Most suited for children who will benefit from securing their understanding of rounding to enable them to make estimations when calculating.**

Provide the children with items that have price tags on them with amounts suggested on the green activity or your own suggestions based on the children's ability to add mentally or with written methods. Encourage the children to select 2 items/amounts. The children should then be encouraged to round the amounts to the nearest hundred (you may want this activity to be adult led). The children can be given blank number lines or place value charts to think about rounding the amounts to the nearest hundred. Ask the children to estimate what they think the 2 items will cost. Discuss if the

children feel this is a good estimate. How can we check? How can we work out the total of the 2 items?

**Key questions:**

- Which is closer? Which hundreds will we need to place on our number line? Where would 215 be placed? Which hundred is this closest too? How does the mark in the middle help us? What is that trying to show us?
- So what do we estimate the total to be? Do you think we can buy these? How do you know? Prove to me? Let's work out the answer to check at the till the total. What is the total of 101 and 215? How did you work it out ?

**Green Practice:** Most suited for children who demonstrate errors in Question 7 of the prior learning assessment and will benefit from developing their understanding of using estimates when calculating.

For this activity the children are provided with a sheet that contains items to be added together. The children should be encouraged to round the amounts to the nearest hundred to enable them to estimate what the total of the 2 amounts added together will be. The children should then calculate this by using written or mental methods to do so. Some of the sums provided in this activity do require the children to carry a ten or a hundred when adding so ensure that the children are able to use a written method or mental method to do so.

You could further challenge the children to decide if they can buy the 2 items using their estimates before they calculate the answer, using the amount displayed in their bank.

**Yellow Practice** Most suited for children who show some understanding of estimating and are able to select their own amounts.

This activity requires the children to approximate 2 or 3 amounts that will meet their target budget/ what they can afford. The children are provided with price tags and little bank cards. Give the children purses or wallets with an amount they can spend, then set up a class shop or a catalogue for the children to make purchases. The children should select a purse/bank card and then select 2 or 3 items that they want to buy. They should then be encouraged to round the items to help them estimate the total of the items. Will they be able to purchase these? The children should then calculate the exact total. Encourage the children to discuss anything they notice and discuss how their estimates help them. Some children may notice for example that when they round down 215 and 320 they estimate that the answer will be 500. However, when the calculate this this that they go over budget. Discuss why and that 500 is still a good estimate however discuss what they notice when rounding down.

**Mastery : Reasoning** For this task the children are to estimate what the answer will be to a sum that they are presented with and use this to help them to decide which child in the task has given the most accurate estimation and why. Encourage the children to think about how the children have rounded the amounts to make their estimation.

**Key questions:** Which children in the task have rounded to the nearest ten or hundred? How is this more accurate than rounding to the nearest thousand? Have the children rounded accurately? Can you prove that this is the most accurate estimate? Now let's calculate the answer. What is the answer? Whose estimation was closest?

Look out for children who suggest calculating the answer first and then picking the closest estimation.

**Challenge:** Can you suggest another way of rounding? What if we rounded to the nearest hundred or ten? Will this help? Is it still easy to estimate and calculate mentally quickly?

## Answers

Green :

1) 
$$\begin{array}{r} 101 \\ + 215 \\ \hline \\ \hline \end{array}$$
  
estimate: 300  
answer: 316

2) 
$$\begin{array}{r} 320 \\ + 215 \\ \hline \\ \hline \end{array}$$
  
estimate: 500  
answer: 535

3) 
$$\begin{array}{r} 499 \\ + 215 \\ \hline \\ \hline \end{array}$$
  
estimate: 700  
answer: 714

MORE MONEY BANK  
Account balance:  
£1200

4) 
$$\begin{array}{r} 367 \\ + 678 \\ \hline \\ \hline \end{array}$$
  
estimate: 1100  
answer: 1045

5) 
$$\begin{array}{r} 499 \\ + 954 \\ \hline \\ \hline \end{array}$$
  
estimate: 1500  
answer: 1453

6) 
$$\begin{array}{r} 635 \\ + 999 \\ \hline \\ \hline \end{array}$$
  
estimate: 1600  
answer: 1634

**Mastery:**

Children should notice that James and Thea's estimations will be closest and most accurate as they have rounded to the nearest hundred. When we round to the nearest thousand like Milad, we are adding on over 400 more to round this to 1000, therefore although we can estimate this way, it is not as accurate as rounding the nearest hundred. Also by rounding to the nearest hundred we can still add mentally in our heads. For example  $1000 + 500$ .

They should also spot that Thea rounded 994 down to 900 when it is closer to round to 1000. Therefore, James has the most accurate estimate.

Challenge: Some children may suggest rounding the 994 to 1000 as this is easy to calculate with mentally and then rounding the 523 to 520 as this can be rounded to the nearest ten and still be added easily to the 1000 so 1520 would also be a close estimate too.



Estimate the answer to each calculation to see if you have enough money in your bank to buy these items from the shop. Then calculate the answer to check.

**MORE MONEY BANK**

Account balance:

**£600**

1)

$$\begin{array}{r} 101 \\ + 215 \\ \hline \\ \hline \end{array}$$

estimate:

answer:

2)

$$\begin{array}{r} 320 \\ + 215 \\ \hline \\ \hline \end{array}$$

estimate:

answer:

3)

$$\begin{array}{r} 499 \\ + 215 \\ \hline \\ \hline \end{array}$$

estimate:

answer:

**MORE MONEY BANK**

Account balance:

**£1200**

4)

$$\begin{array}{r} 367 \\ + 678 \\ \hline \\ \hline \end{array}$$

estimate:

answer:

5)

$$\begin{array}{r} 499 \\ + 954 \\ \hline \\ \hline \end{array}$$

estimate:

answer:

6)

$$\begin{array}{r} 635 \\ + 999 \\ \hline \\ \hline \end{array}$$

estimate:

answer:

£215

£367

£499

£678

£101

£999

£320

£635

£954



**MORE MONEY BANK**

**Account balance:**

**£1000**

**MORE MONEY BANK**

**Account balance:**

**£1500**

**MORE MONEY BANK**

**Account balance:**

**£2000**

**MORE MONEY BANK**

**Account balance:**

**£500**

**MORE MONEY BANK**

**Account balance:**

**£1200**

**MORE MONEY BANK**

**Account balance:**

**£800**

Three children are given a sum to estimate the total and then calculate the answer.  
The sum is:

$$523 + 994$$

Here are the 3 estimates the children made:

**Milad**

$$1000 + 1000 = 2000$$

**My estimate is 2000.**

**James:**

$$500 + 1000 = 1500$$

**My estimate is 1500.**

**Thea:**

$$500 + 900 = 1400$$

**My estimate is 1400**

Before calculating the answer, whose estimate do **you** think will be the most accurate? Why? Prove you are correct.

Now calculate the answer. Which estimate was most accurate?