AIMSSEC

AFRICAN INSTITUTE FOR MATHEMATICAL SCIENCES
SCHOOLS ENRICHMENT CENTRE
TEACHER NETWORK

ELEVEN THOUSAND

9132 4567

8395 1913

7726 6474

3648 2881

Choose pairs of these numbers to make the total of each pair as close to eleven thousand as possible?

Which total is closest to eleven thousand?

Which pair has the largest total?

What number would you add to each of these 8 numbers to make eleven thousand?

You might like to work with a partner and check each other's calculations.

Alternatively this can be a game for the whole class using Flard cards.

SOLUTION

The pairs are:

9132 + 1913 = 11 045

8395 + 2881 = 11 276

7726 + 3648 = 11 374

6474 + 4567 = 11 041

The closest to eleven thousand is 6474 + 4567 = 11 041

The largest total is **7726 + 3648 = 11 374**

To make a total of 11 000:

9132 + 1868 = 11 000

8395 + 2605 = 11 000

7726 + 3274 = 11 000

6474 + 4526 = 11 000

4567 + 6433 = 11 000

3648 + 7352 = 11 000

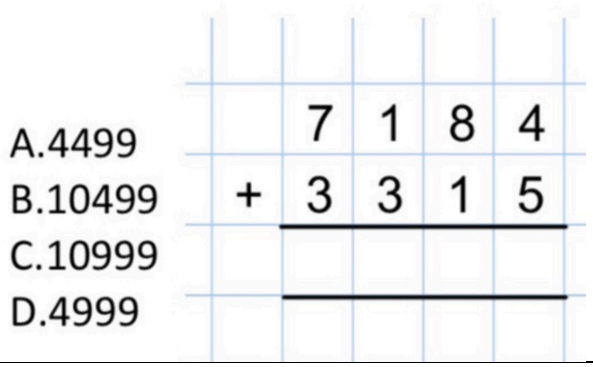
2881 + 8119 = 11 000

1913 + 9087 = 11 000

NOTES FOR TEACHERS

Diagnostic Assessment This should take about 5–10 minutes.

1. Write the question on the board, say to the class:
   "Put up 1 finger if you think the answer is A, 2 fingers for B, 3 fingers for C and 4 fingers for D".
2. Notice how the learners responded. Ask a learner who gave answer A to explain why he or she gave that answer and DO NOT say whether it is right or wrong but simply thank the learner for giving the answer.
3. Then do the same for answers B, C and D. Try to make sure that learners listen to these reasons and try to decide if their own answer was right or wrong.
4. **Ask the class again to vote for the right answer by putting up 1, 2, 3 or 4 fingers. Notice if there is a change and who gave right and wrong answers.** It is important for learners to explain the reason for their answer otherwise many learners will just make a guess.
5. If the concept is needed for the lesson to follow, explain the right answer or give a remedial task.



B. is the correct answer.

Common Misconceptions

A. Some learners, who have no understanding of place value or of how the algorithm works, just use subtraction (here in the thousands column) because it does not involve carrying.

C. Error on calculation.

D. Multiple errors.

https://diagnosticquestions.com

Why do this activity?

This activity gives learners practice in adding, and finding the difference between, pairs of 4 digit whole numbers. It also requires some strategic mathematical thinking.

It can either be a game for pairs of learners to compete with other pairs in the class or the class can use FLARD CARDS (which can be downloaded before the lesson) and the activity can be made into a game involving groups of learners.

Intended learning outcomes

- Practice in addition and subtraction of 4 digit numbers.
- Development of understanding of place value

Suggestions for teaching

(1) Start with the diagnostic question and review the addition algorithm.
(2) Then ask learners to work out 7896 + 1234 in their heads and to write the answer on their showboards, or put up their hands when they have found the answer.
Ask the learners who found the answer 8230 most quickly how they did it. Did they do this take 4 from 1234 and add it to 8000?

Next Either

(3) CLASS GAME FOR PAIRS OF LEARNERS TO COMPETE WITH OTHER PAIRS
Write the eight 4-digit numbers on the board. Learners work in pairs to compete in this game. Tell the learners that the winners will be the first pair of learners to find the two numbers whose total is closest to eleven thousand. Suggest that they should take a few minutes to plan with their partner how they are going to set about trying to find the correct pair of numbers.

When learners think they have got the answer tell them to write their answer on the board. If they have got 11 041 then they have won. If not tell the class that the number on the board is not the closest possible and they should continue looking for a total closer to eleven thousand. Continue until learners find the answer.

Continue by next asking for them to find the largest total and to find what number they would add to each of these 8 numbers to make eleven thousand. Then check the answers with the whole class and give one point to each pair of learners for each correct answer they find.

Or

(4) USING FLARD CARDS GAME FOR GROUPS OF 8 LEARNERS (see pages 5 to 8).

Resources: One set of Flard cards. Put the cards for 5000, 200, 50 and 9 aside as they are not used in this activity. You will need sufficient space for the learners to get together in groups of 8, if necessary sitting on the ground.

Write the 8 numbers on the board.

If you have fewer than 32 learners in your class:

Give out the 24 Flard Cards for thousands, hundreds and tens and keep the remaining cards on a table with the units cards. *Remember you do not use the cards for 5000, 200, 50 and 9.*

If you have 32 learners or more in your class:

Give out all the Flard cards to 32 learners. Assign the eight 4-digit numbers to the remaining learners and you might give these cards to the most able learners to do the calculations without the Flard cards. Alternatively they can join the groups with the Flard cards to make larger groups.

If you have more than 50 learners then you could use 2 sets of Flard Cards.

(i) Tell the learners to walk around and find other learners to make up one of the eight 4-digit numbers along with their own card. For example the learners holding the cards for 9000, 100, 30 and 2 should get together.

In a very small class the groups might need to make up their 4 cards by collecting the remaining cards from the table.

(ii) Now each group of learners with 4 Flard cards should find the group with the set of 4 cards with whom they can add all their cards and make a total **as close to eleven thousand as possible**. Then the learners should add up their total of the two 4-digit numbers.

In a big class the learners who have the only been assigned a 4-digit number and have not been given Flard Cards get together in pairs and work on steps (iii), (iv) and (v).

(iii) The first group of learners to get their correct total wins the game and gets 3 points.

(iv) Then the groups must work out what number has to be added to each of the eight 4-digit numbers to make eleven thousand. They get 1 point for each correct answer.

(v) Each learner should copy down all the calculations.

Finally the learners should return to their seats in the classroom. The calculations should be discussed. If time you might get learners to write their calculations on the board. Learners should add up their points to see which group has won the game.

For example they might add the numbers on their individual cards:

putting the cards for 9000, 100, 30 and 2

with the cards for 1000, 900, 10 and 3

to get 10 000, 1000, 40 and 5 to give the total 11045.

Key questions

What is your card worth?
Which of the eight 4-digit numbers does your card belong to?
What do you add to your number to get eleven thousand? Which of our eight numbers is closest to that?
Can you explain how you are adding up your numbers?
How would you find out how close that number is to eleven thousand?

Possible extension

What is the total of all eight 4-digit numbers?

Possible support

Before this lesson you might work with the class on adding and subtracting 2-digit, 3-digit and 4-digit numbers using Flard cards (see pages 5 to 8).

Note: The Grades or School Years specified on the AIMING HIGH Website correspond to Grades 4 to 12 in South Africa and the USA and to Years 4 to 12 in the UK.				
	Lower Primary or Foundation Phase	Upper Primary	Lower Secondary	Upper Secondary
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
USA	Kindergarten and G1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
UK	Reception and Years 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 13
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6

1	0	0	0

FLARD CARDS THERE ARE 40 CARDS. YOU WILL NEED TO CUT THEM OUT.

2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0

1	0	0

FLARD CARDS

2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0

1	0

1

FLARD CARDS

2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0

2
3
4
5
6
7
8
9

0

0	0

0	0	0

0	0	0	0