MPI: Add and subtract mentally

| Millions | | | Thousands | | | Ones | | |
|---|---|---|---|---|---|---|---|---|
| 100s | 10s | 1s | 100s | 10s | 1s | 100s | 10s | 1s |
| | | | 5 | 2 | 3 | 8 | 1 | 0 |

What is 523,810 subtract 20,000?

_____

$3,514,203 + 4,000,000 =$ ☐

$3,514,203 + 400,000 =$ ☐

$3,514,203 + 40,000 =$ ☐

$3,514,203 + 4,000 =$ ☐

$124,362 - 20,000 =$ ☐

$124,362 - 2,000 =$ ☐

$124,362 - 200 =$ ☐

$124,362 - 2 =$ ☐

☐ $+ 6,453,128 = 9,453,128$

☐ $+ 6,453,128 = 6,953,128$

☐ $+ 6,453,128 = 6,463,128$

$1,234,567 -$ ☐ $= 1,134,567$

$1,234,567 -$ ☐ $= 1,234,267$

$1,234,567 -$ ☐ $= 1,234,562$

$630,421 + 130,000 =$ ☐

$630,421 + 136,000 =$ ☐

$7,125,364 - 24,000 =$ ☐

$7,125,364 - 24,100 =$ ☐

MPI: Add and subtract mentally

$\boxed{\phantom{XXXX}} + 6{,}453{,}128 = 6{,}459{,}128$

$\boxed{\phantom{XXXX}} + 6{,}453{,}128 = 6{,}453{,}828$

$\boxed{\phantom{XXXX}} + 6{,}453{,}128 = 6{,}453{,}158$

$\boxed{\phantom{XXXX}} - 300{,}000 = 4{,}543{,}654$

$\boxed{\phantom{XXXX}} - 2{,}000 = 4{,}543{,}654$

$\boxed{\phantom{XXXX}} - 40 = 4{,}543{,}654$

$3{,}514{,}203 + 900{,}000 - 800{,}000 = \boxed{\phantom{XXXX}}$

$3{,}514{,}203 - 700{,}000 + 400{,}000 = \boxed{\phantom{XXXX}}$

$3{,}514{,}203 + 8{,}000 - \boxed{\phantom{XXXX}} = 3{,}517{,}203$

$3{,}514{,}203 - 6{,}000 + \boxed{\phantom{XXXX}} = 3{,}516{,}203$

$7{,}125{,}364 - 24{,}130 = \boxed{\phantom{XXXX}}$

$7{,}125{,}364 - 24{,}013 = \boxed{\phantom{XXXX}}$

$630{,}421 + 136{,}200 = \boxed{\phantom{XXXX}}$

$630{,}421 + 136{,}205 = \boxed{\phantom{XXXX}}$

Journal in your Maths book...

## Yasmine says she doesn't need to do any written jottings to calculate 4972 + 328 - 1300.

What is the correct answer?

Explain what strategies she may have used to calculate this mentally.

MPI: Crossing the millions boundary

500,000 + 700,000 = ⬜

1,500,000 + 700,000 = ⬜

2,500,000 + 700,000 = ⬜

3,500,000 + 700,000 = ⬜

1,200,000 – 700,000 = ⬜

2,200,000 – 700,000 = ⬜

3,200,000 – 700,000 = ⬜

What calculation is represented by this number line? ⬜



Number line showing: − 500,000 and − 200,000 arrows, with points at 2,500,000, 3,000,000, 3,200,000
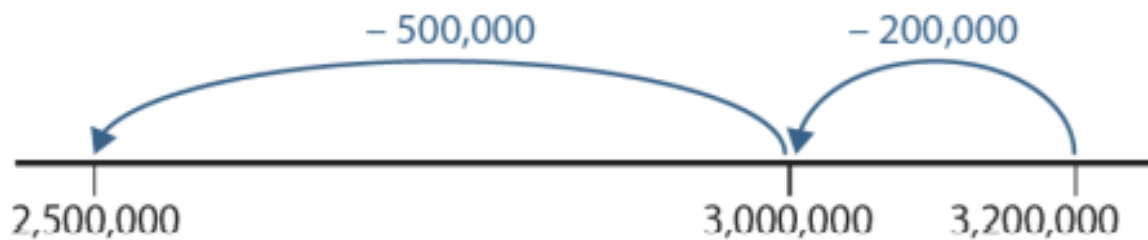
360,000 + ⬜ = 400,000

400,000 – 360,000 = ⬜

What comes next?

| 6,361,040 | 6,371,040 | 6,381,040 | 6,391,040 | 6,401,040 | 6,411,040 | | |

| 2,004,567 | 2,003,567 | 2,002,567 | 2,001,567 | 2,000,567 | 1,999,567 | | |

MPI: Crossing the millions boundary

1,800,000 + 600,000 = ☐

9,000,000 – 2,000,000 = ☐

3,700,000 + ☐ = 4,300,000

9,000,000 – 400,000 = ☐

5,600,000 – 800,000 = ☐

9,000,000 – 60,000 = ☐

9,200,000 – ☐ = 8,800,000

9,000,000 – 8,000 = ☐

2,930,000 + ☐ = 3,000,000

3,000,000 – 2,930,000 = ☐

4,995,000 + ☐ = 5,000,000

5,000,000 – 4,995,000 = ☐

Fill in the missing numbers...

| 7,730,004 |  |  | 7,930,004 | 8,030,004 |  | 8,230,004 |  | 8,430,004 |
|---|---|---|---|---|---|---|---|---|

|  | 9,149,301 |  |  | 9,129,301 | 9,119,301 |  |  | 9,089,301 |
|---|---|---|---|---|---|---|---|---|

## MPI rounding to the nearest million or 100,000

This table shows the number of cans of baked beans a company sold from January to July.

| Month | Cans of baked beans sold |
|---|---|
| January | 1 436 259 |
| February | 1 356 974 |
| March | 1 299 637 |
| April | 1 557 014 |
| May | 1 576 352 |
| June | 1 605 369 |
| July | 1 688 963 |

How many cans of baked beans were sold?

(a)   Give your answer to the nearest 100 000.

March

July

(b)   Give your answer to the nearest 1 000 000.

February

May

230,000        180,000

454,826

190,287        250,001

Circle two numbers which
**do not** round to 200,000

How many people watched
to the nearest million?
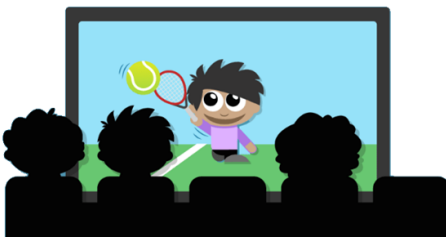
5,387,102   → nearest million

9,999,930   → nearest hundred-thousand

8,712,105 viewers

A number is 6 200 000, rounded to the nearest 100 000.

(a)   What is the greatest possible value of the original number?

(b)   What is the smallest possible value of the original number?

MPI rounding to the nearest million or 100,000

**Population of towns**

| town | population |
|------|-----------|
| Catville | 413,233 |
| Dangerton | 1,376,022 |
| Bravechester | 891,277 |
| Low Heights | 129,039 |
| Jovingham | 9,544,987 |

Macy wants to find out which towns round down to the nearest hundred thousand. She says that she only needs to look at one digit in each number.

<, > or =?

4,153,646 to the nearest million          4,196,999 to the nearest hundred-thousand

100,000 miles
Hetra                     Biff

A spaceship is 57,359 miles into a 100,000 mile journey from the planet Hetra to the planet Biff. Is the spaceship closer to the planet Hetra or the planet Biff?
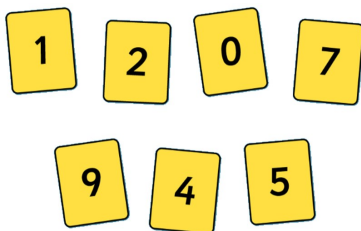
5 7 , 3 5 9

1  2  0  7
9  4  5

Using every digit card once, make the smallest possible number that rounds to 2,000,000 to the nearest million.

Use every card again to make the largest possible number that rounds to 2,000,000 to the nearest million.

What is the **difference** between the two numbers?

## BONUS CHALLENGE:

Write two 7 digit numbers.
Add the two numbers and round to the nearest million.

Now round the original numbers to the nearest million and add them. Do you get the same answer?

Now try different pairs of numbers.
What do you find?

MPI: Rounding larger numbers

| Number | Round to the nearest 10 | Round to the nearest 100 | Round to the nearest 1000 |
|---|---|---|---|
| 105 370 | | | |
| 298 750 | | | |
| 1 300 600 | | | |
| 4 798 640 | | | |
| 7 900 000 | | | |

The table shows the total attendance figures for 3 baseball stadiums.
Round each number to the nearest ten thousand

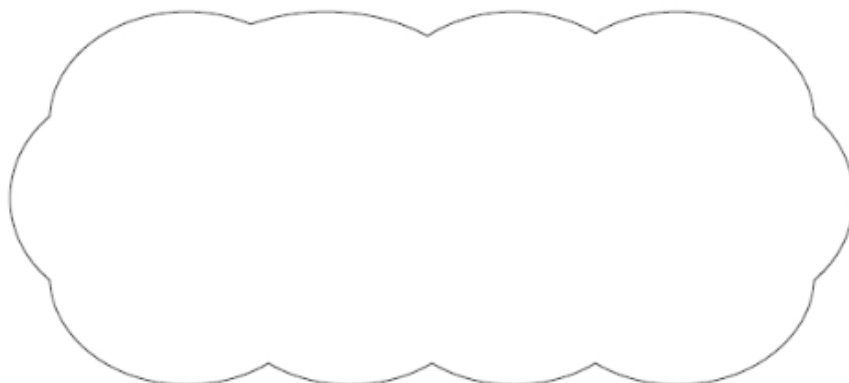| Stadium | Total attendance | Total attendance, rounded to nearest ten thousand |
|---|---|---|
| Dodger Stadium | 3,703,312 | |
| Angel Stadium | 3,016,142 | |
| Fenway Park | 2,955,434 | |

2 marks

Circle the number which is **closer to 1000**

996                    1006

Explain how you know.

1 mark

MPI: Rounding larger numbers

| Rounded to the nearest | 147,283 | 68,547 | 1,656,908 | 900,571 |
|---|---|---|---|---|
| 10 | | | | |
| 100 | | | | |
| 1,000 | | | | |
| 10,000 | | | | |
| 100,000 | | | | |

Complete this table by rounding the numbers to the **nearest hundred**.

| | Rounded to the nearest hundred |
|---|---|
| 20,906 | |
| 2,090.6 | |
| 209.06 | |

2 marks

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

| Eva | Jack | Rosie |
|---|---|---|
| 500,000 | 400,000 | 472,000 |

Who is correct?

_____ is correct.

Explain the mistake the other children have made.

_____

_____

Eduardo says, 'The the population of Mexico City is 11 million (to the nearest million) and the population of New York is 11·2 million (to the nearest hundred thousand).'

He says, 'The population of New York must be bigger than the population of Mexico City because 11·2 million is bigger than 11 million.'

Do you agree with him?
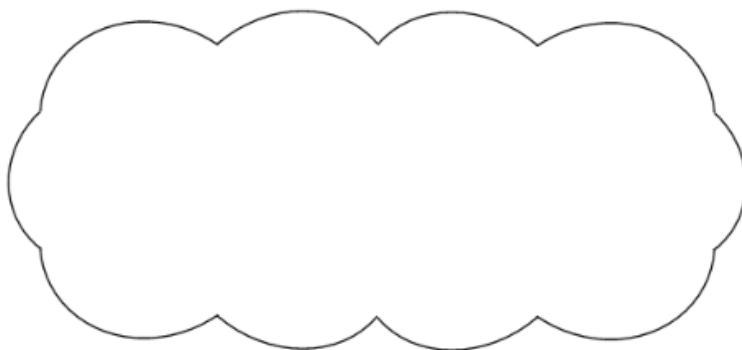
_____

_____

_____

_____

Runa and Jon each start with the same number.

Runa rounds the number to the nearest hundred.

Jon rounds the number to the nearest ten.

Runa's answer is double Jon's answer.

Explain how this can be.

1 mark

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

'Use the digit cards zero to nine to create two numbers. **You may use each card only once.**
The first number rounds to thirteen thousand when rounded to the nearest thousand.'

⟶ 13,000

'The second number rounds to thirty thousand when rounded to the nearest ten thousand.'

⟶ 30,000