Worksheet - Place value to 10 000 000 and rounding

Year: Year 6 · 20

Show your working.

Question 1

Question 1 – Reading and writing big numbers *(Section A · Skills practice)*

Zara is practising for her maths test. She needs to move between numbers written in figures and in words.

a. Write 4 305 062 in words.
b. Write 8 070 900 in words.
c. Write in figures: six million, two hundred and eight thousand and nine.
d. Write in figures: seven million and forty.

Zara writes "ten million" as 1 000 000. Explain her mistake and write the number correctly.

Question 2

Question 2 – The value of a digit *(Section A · Skills practice)*

Look at the number 3 462 810 in this place value table.

Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
3	4	6	2	8	1	0

a. Write down the value of the digit 6.
b. Write down the value of the digit 4.
c. Which digit is in the thousands column?
d. Write the number in expanded form (as a sum of the values of its digits).
e. What is the value of the digit 8 in 7 480 013?

Question 3

Question 3 – Ordering and comparing *(Section A · Skills practice)*

Four mobile phone apps have been downloaded this many times: 3 450 200, 3 405 200, 3 540 020 and 3 450 020.

a. Put the numbers in order, smallest first.
b. Write < or > in each box: 8 120 456 [ ] 8 102 999 and 5 099 999 [ ] 5 100 000.
c. Which of the four download numbers is closest to 3 500 000?

Question 4

Question 4 – Rounding to different degrees of accuracy *(Section A · Skills practice)*

Round each number as asked. Write one line of working for each answer.

a. 48 637 to the nearest 10
b. 48 637 to the nearest 100 and to the nearest 1 000
c. 354 281 to the nearest 10 000 and to the nearest 100 000
d. 6 450 000 to the nearest million
e. 2 999 500 to the nearest 1 000

Question 5

Question 5 – Counting on and back *(Section A · Skills practice)*

Work out each answer. A place value table may help you.

a. 10 000 more than 2 995 000
b. 100 000 less than 4 050 000
c. 1 000 more than 899 500
d. 1 000 000 less than 10 000 000
e. Continue the sequence by three more terms: 2 350 000, 2 450 000, 2 550 000, ...

Question 6

Question 6 – Negative numbers *(Section A · Skills practice)*

Use the number line in your head, or draw one, to answer these questions about negative numbers.

a. The temperature is −3°C and it rises by 8 degrees. What is the new temperature?
b. Write in order, smallest first: −7, 4, −2, 0, −10.
c. What is the difference between 6 and −4?
d. A diver is at −12 m. She swims up 5 m. Where is she now?
e. Which is colder, −9°C or −2°C?

Question 7

Question 7 – The football stadiums *(Section B · Real-life practice)*

Alfie loves football and has collected the capacities of four stadiums in the table.

Stadium	Capacity
Wembley Stadium	90 000
Old Trafford	74 310

Stadium	Capacity
Celtic Park	60 411
Villa Park	42 682

a. Put the stadiums in order, biggest first.
b. Round each capacity to the nearest 1 000.
c. Round each capacity to the nearest 10 000.
d. What is the difference between the largest and the smallest capacity?
e. Alfie says "Old Trafford holds about 70 000 fans". Is he right to the nearest 10 000?

Question 8

Question 8 – Big cities *(Section B · Real-life practice)*

The table shows the approximate populations of four cities in the UK.

City	Population
Leeds	812 000
Sheffield	556 500
Bristol	472 400
Cardiff	362 000

a. Which city has the greatest population? Which has the smallest?
b. Round each population to the nearest 100 000.
c. Do any two of the cities round to the same number to the nearest 100 000? Explain.
d. The population of London is 8 866 540. Round it to the nearest million and to the nearest 100 000.
e. How many digits does each number in the table have? How many does the London number have?

Question 9

Question 9 – A cold week *(Section B · Real-life practice)*

Ellie records the midday temperature in six places on a cold day in January.

Place	Temperature (°C)
Inverness	−4
Manchester	2
Aberdeen	−7
Cardiff	5
Belfast	−1

Place	Temperature (°C)
Ben Nevis	−11

a. Put the temperatures in order, coldest first.
b. What is the difference between the warmest and the coldest place?
c. By evening Manchester has fallen by 6 degrees. What is its temperature then?
d. Which place is exactly 3 degrees colder than Belfast?
e. The temperature in Inverness rises by 9 degrees. Is it above or below freezing point (0°C)?

Question 10

Question 10 – How many fans? *(Section B · Real-life practice)*

A newspaper reports that the crowd at a rugby match, to the nearest 1 000, was 47 000.

a. What is the smallest number of fans who could have been there?
b. What is the largest number of fans who could have been there?
c. The stadium holds 47 500 fans. Could it have been full? Explain.
d. The next week the crowd, to the nearest 100, was 47 000. Explain why this tells us more.

Question 11

Question 11 – Space facts *(Section B · Real-life practice)*

Leo has found some space facts. All the distances are in kilometres.

Fact	Distance (km)
Distance from the Earth to the Moon	384 400
Diameter of Jupiter	139 820
Diameter of the Sun	1 391 000
Distance round the Earth	40 075

a. Write the distance to the Moon and the diameter of the Sun in words.
b. Round the Sun's diameter to the nearest 100 000 and the nearest million.
c. Round the distance to the Moon to the nearest 10 000.
d. Put the four numbers in order, smallest first.
e. Leo says that the Sun's diameter is more than 30 times the distance round the Earth. Is he correct? Show working.

Question 12

Question 12 – Above and below sea level *(Section B · Real-life practice)*

The table shows the height of some places compared with sea level (0 m).

Place	Height (m)
Ben Nevis	1 345
Scafell Pike	978
Holme Fen (Cambridgeshire)	−2
A submarine on patrol	−150

a. Which place is the lowest and which is the highest?
b. How much higher is Ben Nevis than Holme Fen?
c. The submarine rises 85 m. How far below sea level is it now?
d. A diver starts at sea level and goes down 35 m, then up 12 m. Give her height.
e. Round the height of Ben Nevis to the nearest 100 m.

Question 13

Question 13 – Game sales *(Section B · Real-life practice)*

A video game company sold 3 482 719 copies of its new game in the first month.

a. Round the sales to the nearest 10 000 and to the nearest 100 000.
b. The company says "nearly four million". How many more copies need to be sold to reach 4 000 000?
c. Each copy costs the company £4 to make. Write an easy estimate of the total cost, rounding the sales to the nearest million first.
d. In month two, 517 281 more copies are sold. What is the new total?

Question 14

Question 14 – Visitors to the zoo *(Section B · Real-life practice)*

The table shows the number of visitors to a zoo in three years.

Year	Visitors
2022	415 230
2023	487 900
2024	512 480

a. Write the visitors in 2024 in words.
b. Round each year's visitors to the nearest 10 000.
c. In which year were there the most visitors? By how many more than in 2022?
d. Use your rounded numbers to estimate the total number of visitors in the three years.
e. The zoo hopes for 1 500 000 visitors in total by the end of 2025. How many more does it need to reach that by 2025?

Question 15

Question 15 – The Olympic ticket sale *(Section C · Problem solving)*

Tickets for the Olympic Games are sold in four rounds. The organisers have the figures in the table and they want to publish a short report for the newspapers. Their report is to give each figure to the nearest 100 000 and then give a total.

Round	Tickets sold
Round 1	1 234 560
Round 2	2 408 330
Round 3	1 950 760
Round 4	849 999

a. Round each figure to the nearest 100 000.
b. Use your rounded numbers to estimate the total tickets sold.
c. Find the exact total.
d. What is the difference between your estimate and the exact total?
e. The Games has 7 000 000 tickets. How many are left? Give the exact answer, and then round it to the nearest 10 000.
f. A journalist writes "over half of all tickets were sold in the first two rounds". Is the journalist right? Use your working to explain.

Question 16

Question 16 – Seven digits, one set of cards *(Section C · Problem solving)*

Noor has seven digit cards: 3, 0, 7, 5, 9, 1 and 2. She uses each card once to make a seven-digit number. A number cannot start with zero.

a. Make the largest possible number and write it in words.
b. Make the smallest possible seven-digit number.
c. Find the difference between the largest and the smallest numbers.
d. Round the largest number to the nearest 100 000.
e. Noor makes a number where the 9 is in the ten thousands column and the 7 is in the millions column. Write down one number she could make.

Question 17

Question 17 – The reading challenge *(Section C · Problem solving)*

Children across a county are taking part in a reading challenge. By the end of March they have read 6 540 000 books. The target is 7 000 000 books. Each week another 46 000 books are read.

a. How many more books do they need to reach the target?
b. How many weeks will it take to read that many books?
c. The county librarian wants to round the number of books read so far to the

nearest million. What does she write?

d. How many books will have been read after 6 weeks? Is the target reached by then?
e. The target is raised to 10 000 000 books. How many more books are needed, starting from 6 540 000?

Question 18

Question 18 – The mystery number *(Section C · Problem solving)*

A number has seven digits. Alex gives these clues about it.

- To the nearest 100 000 it rounds to 3 800 000.
- To the nearest 10 000 it rounds to 3 750 000.

a. Explain why the number must be at least 3 750 000.
b. Write down the smallest and the largest number that fit both clues.
c. Alex adds a third clue: "To the nearest 1 000 the number rounds to 3 752 000." What is the smallest number that now fits?
d. Write one number that fits all three clues.

Question 19

Question 19 – The research station *(Section C · Problem solving)*

A scientist records the temperature at midnight at a research station in the Arctic for seven days.

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Temperature (°C)	−12	−18	−21	−15	−9	−4	−7

a. Which day was the coldest and which was the warmest?
b. By how many degrees did the temperature fall from Monday to Wednesday?
c. Between which two following days was the biggest rise in temperature?
d. On how many days was the temperature below −10°C?
e. On Monday the temperature was −12°C. On the day after Sunday it rose by 10 degrees from the Sunday temperature. What was it?
f. The scientist says "the range of the temperatures was 17 degrees". Check her claim.

Question 20

Question 20 – Challenge: the secret code *(Section D · Challenge)*

A seven-digit safe code uses these clues. The millions digit is 3. The hundred thousands digit is double the millions digit. The ten thousands digit is one less than the hundred thousands digit. The thousands digit is the difference between the hundred thousands digit and the millions digit. There are no hundreds. The tens digit is a square

number greater than 1 and less than 9. The ones digit is the only even prime number.

a. Find the code and write it in words.
b. Round the code to the nearest 1 000, the nearest 10 000 and the nearest 100 000.
c. What is the code plus 346 958? Show that your answer is correct by rounding.