Worksheet - Place value, ordering and rounding

Year: Year 7 · 21

Show your working.

Question 1

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

Numbers appear in newspapers, atlases and sports reports. Use place value to answer these questions.

a. Write the number "four million, two hundred and six thousand and thirty-five" in figures.
b. Write 3 070 409 in words.
c. What is the value of the digit 7 in 5 724 310?
d. What is the value of the digit 4 in 80.046?
e. Write these in order of size, smallest first: 6.09, 6.9, 6.089, 6.19.

Question 2

Question 2 – Multiplying and dividing by powers of 10 *(Section A · Skills practice)*

Work these out. You may use a place-value table to help.

a. 36.4×100
b. 0.0725×1000
c. $4\,580 \div 10$
d. $93 \div 1000$
e. 2.5×0.01

Question 3

Question 3 – Rounding to the nearest ten, hundred and thousand *(Section A · Skills practice)*

Round each number as asked.

a. 4 863 to the nearest 10
b. 4 863 to the nearest 100
c. 4 863 to the nearest 1000
d. 25 450 to the nearest 1000
e. 349 999 to the nearest 10 000

Question 4

Question 4 – Decimal places and significant figures *(Section A · Skills practice)*

Round each number as asked.

a. 7.846 to 1 decimal place
b. 7.846 to 2 decimal places
c. 0.0952 to 2 decimal places
d. 0.0952 to 1 significant figure
e. 12 805 to 2 significant figures

Question 5

Question 5 – Ordering numbers *(Section A · Skills practice)*

Put each list in order, smallest first.

a. 3.4, 3.04, 3.44, 3.404, 3.0
b. 0.7, 0.07, 0.707, 0.77, 0.077
c. -5, 3, -12, 0, -1, 8

Question 6

Question 6 – Estimating answers *(Section A · Skills practice)*

Round each number to 1 significant figure to estimate the answer, then check with a calculator.

a. 48×52
b. 3.9×7.1
c. $\dfrac{612}{29}$
d. 198×4.9

Question 7

Question 7 – City populations *(Section B · Real-life practice)*

A geography teacher shows the estimated populations of four cities.

City	Population
Cardiff	362,400
Edinburgh	506,500
Belfast	343,500
Leeds	812,000

a. Write the cities in order from the smallest to the largest population.

b. Round each population to the nearest 100 000.
c. Round each population to the nearest 10 000.
d. The teacher says "Edinburgh has about half a million people". Is she right? Explain using rounding.

Question 8

Question 8 – Football crowds *(Section B · Real-life practice)*

The attendance at five football matches one weekend is shown below.

Match	Attendance
Match A	45 218
Match B	38 906
Match C	60 004
Match D	27 495
Match E	52 780

a. Which match had the biggest crowd?
b. Round each attendance to the nearest 1000.
c. The newspaper rounds each number to the nearest 10 000. Which two matches are reported with the same crowd size?
d. What is the total number of fans, to the nearest 10 000? Estimate by rounding each to the nearest 10 000 first, then work out the exact total.

Question 9

Question 9 – Shopping bills *(Section B · Real-life practice)*

Ella is buying a laptop bag at £34.95, a pack of pens at £4.49, a notebook at £2.99 and a calculator at £9.85. She has £55.

a. Round each price to the nearest pound.
b. Use your rounded prices to estimate the total cost.
c. Work out the exact total.
d. Ella estimates she has enough money. Explain whether her estimate is reliable here, using the exact total.

Question 10

Question 10 – The space facts poster *(Section B · Real-life practice)*

Dan is making a poster about space. He writes down the distance from the Earth to the Moon as 384 400 km and the distance from the Earth to the Sun as 149 600 000 km.

a. Write each distance in words.
b. Round each distance to 2 significant figures.

c. Dan says "the Sun is about 400 times further away than the Moon". Use your rounded values to check.
d. Light travels about 300 000 km every second. Estimate how many seconds light takes to reach the Earth from the Sun.

Question 11

Question 11 – Weighing ingredients *(Section B · Real-life practice)*

In a science lab, four pupils weigh the same sample on different scales and record the results in grams: 12.349, 12.35, 12.3, 12.4.

a. Put the measurements in order of size.
b. Round 12.349 to 2 decimal places and to 1 decimal place.
c. Which two measurements round to 12.4 when rounded to 1 decimal place?
d. Explain why a scale that shows 12.349 might be more precise than one that shows 12.4.

Question 12

Question 12 – Fuel for the road trip *(Section B · Real-life practice)*

The Brown family drive from Manchester to Edinburgh, a distance of 342 miles. Their car travels about 48 miles per gallon. A gallon of petrol costs about £6.60.

a. Round each number to 1 significant figure.
b. Use your rounded values to estimate the number of gallons needed.
c. Estimate the cost of the petrol for the trip.
d. Work out the exact number of gallons, to 1 decimal place.

Question 13

Question 13 – Swimming gala times *(Section B · Real-life practice)*

At a swimming gala, the times for four swimmers in the 50 m freestyle were 31.46 s, 31.5 s, 31.09 s and 31.4 s.

a. Write the times in order, fastest first (smallest time first).
b. Round each time to the nearest tenth of a second.
c. Which swimmers have the same time when rounded to the nearest tenth of a second?

Question 14

Question 14 – Mobile phone data *(Section B · Real-life practice)*

A phone plan gives 5 GB of data. Ava has used 3.76 GB so far this month. Her friend Ben has used 4 096 MB. (1 GB = 1000 MB.)

a. How many MB has Ava used?
b. Who has used more data?
c. Round Ben's usage to the nearest GB.
d. How many MB does each of them have left from the plan?

Question 15

Question 15 – Guess the marbles *(Section C · Problem solving)*

A charity fair runs a guess-the-number game. A large jar contains 2 748 marbles. Five children each make a guess, and the organiser wants to know who was closest. The guesses are shown below.

Child	Guess
Ali	2 500
Beth	3 000
Chen	2 700
Dee	2 800
Eve	2 650

a. Work out the difference between each guess and the real number.
b. Who won?
c. Round the real number to the nearest hundred. Which child guessed that value?
d. Chen says "my guess was 48 away so I was within 2% of the real number". Check whether Chen is right using an estimate.

Question 16

Question 16 – Planning a stadium *(Section C · Problem solving)*

A new sports stadium is planned to hold 62 500 spectators. The council gives the following information about the car parks.

Car park	Spaces
North	4 150
South	3 875
East	5 020
West	2 960

a. Round each number of spaces to the nearest 100 and estimate the total.
b. Find the exact total number of parking spaces.
c. Each car carries on average 3 spectators. Estimate how many spectators could arrive by car if every space is used.
d. What percentage of all spectators is that? Give your answer to the nearest 10%.

Question 17

Question 17 – Rounding errors *(Section C · Problem solving)*

Four pupils each made a rounding mistake. For each one, explain the mistake and write the correct answer.

a. Tom says: 6.395 rounded to 2 decimal places is 6.39.
b. Ruby says: 0.0407 rounded to 1 significant figure is 0.5.
c. Joe says: 45 678 rounded to the nearest thousand is 45 000.
d. Mia says: 9.96 rounded to 1 decimal place is 9.9.

Question 18

Question 18 – The school fete takings *(Section C · Problem solving)*

The school fete raised money from five stalls.

Stall	Money raised (£)
Cakes	1 248.50
Books	876.25
Games	1 034.80
Plants	562.10
Raffle	1 399.95

a. Round each amount to the nearest £10.
b. Use your rounded amounts to estimate the total.
c. Work out the exact total.
d. The head says that they have raised over £5 000. Is the head correct? Explain.
e. Round the exact total to 2 significant figures.

Question 19

Question 19 – The rainfall records *(Section C · Problem solving)*

The table shows the rainfall in millimetres for four months in a town in Wales.

Month	Rainfall (mm)
September	89.4
October	112.75
November	131.08
December	98.6

a. Order the months from driest to wettest.
b. Round each value to the nearest whole number.
c. Round each value to 2 significant figures.

d. The weather forecaster says "the total rainfall was about 430 mm". Work out the exact total and decide whether her statement is a sensible estimate.

Question 20

Question 20 – Money in a jar *(Section C · Problem solving)*

Lola counts the coins in a savings jar. She has 187 1p coins, 96 2p coins, 143 5p coins and 62 10p coins.

a. How much money in pence is in each type of coin?
b. Find the total amount in pounds.
c. Round the total to the nearest pound.
d. She estimates her savings by rounding each number of coins to the nearest 10 and using the same coin values. What estimate does she get?

Question 21

Question 21 – Challenge: the number puzzle *(Section D · Challenge)*

I am thinking of a number with 3 decimal places. When I round it to 2 decimal places I get 4.57. When I round it to 1 decimal place I get 4.6. When I round it to the nearest whole number I get 5.

a. What is the smallest number I could be thinking of?
b. What is the largest?
c. Write an inequality using x to show all the possible values.
d. Is it possible for a number to round to 4.57 (2 d.p.) but to 4.5 (1 d.p.)? Explain.