

All Kinds of Word Problems

Number and Place Value
10 Questions, Answers and a
Challenge

Year 6




THIRD SPACE
LEARNING

Year 6 Problems on Number and Place Value

Name.....

Date.....Class.....

School.....

 Please write your answer on the answer line provided. You can use the space provided below the question for working out if you need it.

1 A spaceship is travelling between planets A, B, C and D. The distances between the planets are shown below.

Journey	Distance (km)
A – B	9 001 343
A – C	9 246 145
A – D	8 156 254
B – C	9 961 040
B – D	9 061 211
C – D	8 179 101

Order the distances from shortest to longest.

Answer

.....

- 2** On the Planet Zog they only write numbers in words. Can you match the numbers in words to the numbers written in numerals and complete the table?

Seven million, two hundred and fifty five thousand and twenty one

Fourteen million, one hundred and twenty three thousand, six hundred and fifty seven

Nine million, five hundred and seventy three thousand, two hundred and fifteen

Eight million four hundred and sixty one thousand, four hundred and forty one

One million, two hundred and sixty five thousand, four hundred and eighty eight

Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
	7						1
			6				1
					2		
		2				8	
1	4			3			

- 3** Can you create five 7 digit numbers where the sum of all the digits is 4, the first digit is 2 and the last digit is 1?

- a** What is the largest number you can create?
b What is the smallest number you can create?



Answer a

Answer b

4 Mr Davis has five numbers written down on five whiteboards. They are:

- 49 023
- 45 101
- 49 056
- 50 001
- 54 998

He hands one to a different member of his class and they each read a statement that is true about their number:

- Justine says 'My number is 45 000 when rounded to the nearest thousand.'
- Liam says 'When rounded to the nearest thousand my number is 55 000.'
- Michael says 'If I round my number to the nearest ten I have 46 060.'
- Andrea says 'My number rounded to the nearest ten is 50 000.'
- Chris says 'My number rounded to the nearest hundred is 49 000.'

Using the clues above, can you work out which number each member of the class has?



- Answer Justine
- Liam
- Michael
- Andrea
- Chris

- 5 Look at the table below showing the population of 5 major cities around the world. Can you complete the table by rounding the decimal million given to the nearest whole number and to the nearest tenth?

Name of City	Size of population in millions (2 decimal places)	Rounded to the nearest whole number	Rounded to the nearest tenth
Seoul (Korea)	9.94		
Cairo (Egypt)	9.28		
Madrid (Spain)	3.21		
New York City (USA)	8.05		
London (UK)	8.67		

- 6 Complete the table to find 10 000 and 100 000 more and less than the 'actual number'.

100 000 less	10 000 less	Actual number	10 000 more	100 000 more
		561 481		
212				
				698 759
	661 134			
		105598		

7 Imagine you have 15 counters to represent different numbers using the place value grid shown below.



Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

- a** What is the largest 7 digit number you can make that has at least one counter in each column of the grid?
- b** What is the smallest 7 digit number you can make that has at least one counter in each column of the grid?
- c** What number would fall in the middle of the largest and smallest numbers you found for **a** and **b**?



Answer a

Answer b

Answer c

- 8 Look at the sequence of numbers below. Identify the first two numbers in the sequence that would be less than zero.

450 375 300...



Answer

- 9 Using the digits 4, 7 and 3:

- a What is the largest number you can create?
b What is the smallest number you can create?



Answer a

Answer b

10 The temperature falls by 1°C for every 50 m someone walks up the mountain. Darcy is standing on top of a mountain at 1500 m above sea level (0 m). The temperature at the top is -9°C . He walks down the mountainside to the beach which is at sea level.

What will the temperature be when he gets to the beach?



Answer $^{\circ}\text{C}$

Challenge Question!

Letitia likes visiting new places. However, she has a unique way of travelling. She uses a hot air balloon. One day, as she is flying, she notices a mountain in her way. The balloon is kept at 10 m above ground level by the weights that are attached to it. If any are removed the balloon will rise.

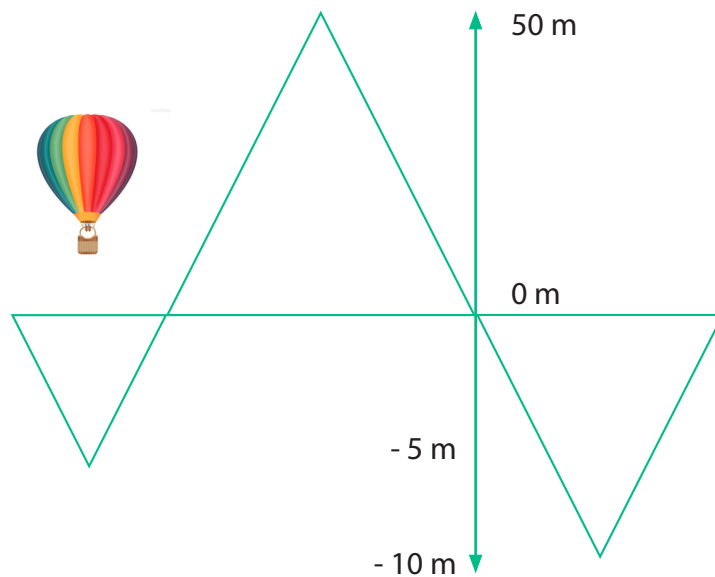
1 small weight removed = 3 m height

1 medium weight removed = 5 m height

1 large weight removed = 8 m height

a How can Letitia get the hot air balloon over the mountain by removing the fewest number of weights?

b What combinations could she add to get to the bottom of the valley on the other side of the mountain once she has got over it?



Not to scale

Answer a

Answer b

Answer Sheet

1

Journey	Distance (km)	Order
A – B	9 001 343	3
A – C	9 246 145	5
A – D	8 156 254	1
B – C	9 961 040	6
B – D	9 061 211	4
C – D	8 179 101	2

Content Domain: Ordering numbers (6N1)

2

Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
	7	2	5	5	0	2	1
	8	4	6	1	4	4	1
	9	5	7	3	2	1	5
	1	2	6	5	4	8	8
1	4	1	2	3	6	5	7

Content Domain: Determining value of digits (6N2)

- 3**
- a. 2 100 001 is the largest number.
 - b. 2 000 011 is the smallest number.
- (The five possible numbers are 2 100 001, 2 010 001, 2 001 001, 2 000 101, 2 000 011)

Content Domains: Ordering and determining value (6N2, 6N3)

- 4**
- Justine has 45 101.
 - Liam 54 998.
 - Michael 49 056.
 - Andrea has 50 001.
 - Chris has 49 023.

Content Domain: Rounding whole numbers (6N4)

5

Name of City	Size of population in millions (2 decimal places)	Rounded to the nearest whole number	Rounded to the nearest tenth
Seoul (Korea)	9.94	10	9.9
Cairo (Egypt)	9.28	9	9.3
Madrid (Spain)	3.21	3	3.2
New York City (USA)	8.05	8	8.1
London (UK)	8.67	9	8.7

Content Domain: Rounding decimals to whole numbers and tenths (6F10)

6

100 000 less	10 000 less	Actual number	10 000 more	100 000 more
461481	551 481	561 481	571 481	661 481
212	90 212	100 212	110 212	200 212
498 759	588 759	598 759	608 759	698 759
571 134	661 134	671 134	681 134	771 134
5598	95 598	105598	115 598	205 598

Content Domain: Comparing numbers (6N2)

7

- 9 111 111 is the largest number.
- 1 111 119 is the smallest number.
- 5 111 115 falls in the middle of 9 111 111 and 1 111 119.

Content Domain: Determining values (6N3)

8

- 75, - 150

Content Domain: Using negative numbers (6N5)

9

- 7.43 is the largest number.
- 3.47 is the lowest number.

Content Domain: Determining values (6N3)

10

21°C

Content Domain: Determining values (6N3)

Challenge Question

- To bump over the mountain she needs to reach 50 m in altitude. 5 large weights = 40 m.
- Any combination of weights available that total 60 m, for example, 20 small weights; 10 small and 6 medium weights; 5 large and 4 medium; 6 large and 4 small weights...

Content Domains: Using negative numbers in context, Solving practical problems (6N5, 6N6)