Diagnostic Quiz

Number: Number and Place Value
Pre-topic Test 1

Year 6

THIRD SPACE LEARNING

Y6 Number and Place Value 1

Name.....

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

School.....Score.....

Please tick your answer to each question, like the example below. You can use any space left below a question for your working out, if you need it.

Example question

3. What fraction of the shape is shaded blue?

Select the equivalent fraction below.

a) ☐ $\frac{2}{5}$ b) ☐ $\frac{6}{4}$ c) ☑ $\frac{3}{5}$ d) ☐ $\frac{3}{2}$

1. Zara and Sam are searching for a new house to buy. They have a budget of £383 008. Match their budget to its correct written form.

a) ☐ Three hundred and eighty-three thousand and eight pounds.

b) ☐ Three thousand eight hundred and thirty-eight pounds.

c) ☐ Thirty eight thousand, three thousand and eight pounds.

d) ☐ Thirty-eight thousand, three hundred and eight pounds

2. What is the total of 3 000 000 + 2 000 + 200 + 2?

a) ☐ 3 222

b) ☐ 3 002 202

c) ☐ 32 202

d) ☐ 302 202

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3. 1 679 802 is 10 000 greater than _____ ?

a) ☐ 1 689 802

b) ☐ 1 678 802

c) ☐ 679 802

d) ☐ 1 669 802

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4. Which number is closest in value to 8 942 001?

a) ☐ 89 421

b) ☐ 9 000 000

c) ☐ 8 000 000

d) ☐ 8 902 001

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5. Which digit is in the hundred thousands place in 1 062 345?

a) ☐ 0

b) ☐ 1

c) ☐ 3

d) ☐ 6

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6. Inma was writing a cheque for a business order. The cost of the order was thirty-three thousand, three hundred and three pounds. Write the cost in numerals.

a) ☐ £33000 300 3

b) ☐ £330 303

c) ☐ £33 303

d) ☐ £3333

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7. The table shows the amount of visitors that attended different concert venues throughout the year. Place the number of visitors in descending order:

Manchester Marquee	999 505
The Operatic Arena	1 000 022
Wiltshire Wonderland	705 011
The Rock Hub	1 300 106

a) ☐ 705 011
999 505
1 000 022
1 300 106

b) ☐ 1 300 106
1 000 022
999 505
705 011

c) ☐ 999 505
705 011
1 300 106
1 000 022

d) ☐ 1 300 106
999 505
1 000 022
705 011

8. Karl had a budget of £13,050 to spend on the launch event for a new magazine. Unfortunately he overspent by £1,075. What amount does his bank balance show?

a) ☐ –£14,125

b) ☐ £14,125

c) ☐ –£1,075

d) ☐ £0

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9. Which digit is worth 90 000?

a) ☐ **9** 999 999

b) ☐ 9 99**9** 999

c) ☐ 9 999 9**9**9

d) ☐ 9 9**9**9 999

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10. What other number can be rounded to the same multiple of 10 000 as 562 500?

a) ☐ 543 200

b) ☐ 559 000

c) ☐ 572 500

d) ☐ 510 000

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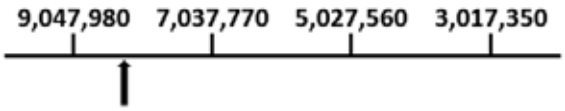
11. Estimate the missing number that the arrow is pointing at on the number line.



a) ☐ 2 010 210

b ☐ 7 500 000

c) ☐ 6 200 000

d) ☐ 8 200 000

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12. What is 672 thousands equivalent to?

a) ☐ 6072

b) ☐ 6720 tens

c) ☐ 6720 hundreds

d) ☐ 600702 ones

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13. A bag contains 500 g of sugar. A sack contains 2.5 kg more sugar than a bag. How much sugar is there in three bags and two sacks altogether? Give your answer in grams. (1 kg = 1000 g)

a) ☐ 502.5 g

b) ☐ 7500 g

c) ☐ 6500 g

d) ☐ 51 500 g

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14. The temperature of the rocket in space was –270°C. As it reached the surface of the Earth its temperature rose by 283°C. What was the temperature on the Earth's surface?

a) ☐ –553°C

b) ☐ 283°C

c) ☐ –13°C

d) ☐ 13°C

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15. Which is the greatest number?

5.005 50 105.1 0.089

a) ☐ 5.005

b) ☐ 50

c) ☐ 105.1

d) ☐ 0.089

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16. What is 1000 less than a quarter of a million?

a) ☐ 250 000

b) ☐ 249 000

c) ☐ 499 000

d) ☐ 999 000

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17. The population of Majorca is 1 000 000 when rounded to the nearest million. What is the greatest possible amount the population could actually be?

a) ☐ 1 499 999

b) ☐ 500 000

c) ☐ 999 999

d) ☐ 1 500 000

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18. What is the difference between –92 500 and 7802?

a) ☐ 84 698

b) ☐ –100 302

c) ☐ 100 302

d) ☐ 1448

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19. Molly weighs 93 pounds, her younger brother weighs 26 pounds less than Molly. Together they weigh 29 pounds less than their dad. How much does their dad weigh?

a) ☐ 241 pounds

b) ☐ 38 pounds

c) ☐ 148 pounds

d) ☐ 189 pounds

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20. Which quantity is the greatest?

Nine hundred and twenty two thousand and ninety-nine
$\frac{1}{4}$ of 8 000 000
2 999 999
Half of four hundred and twenty nine

a) ☐ Nine hundred and twenty two thousand and ninety-nine.

b) ☐ $\frac{1}{4}$ of 8 000 000

c) ☐ 2 999 999

d) ☐ Half of four hundred and twenty nine.

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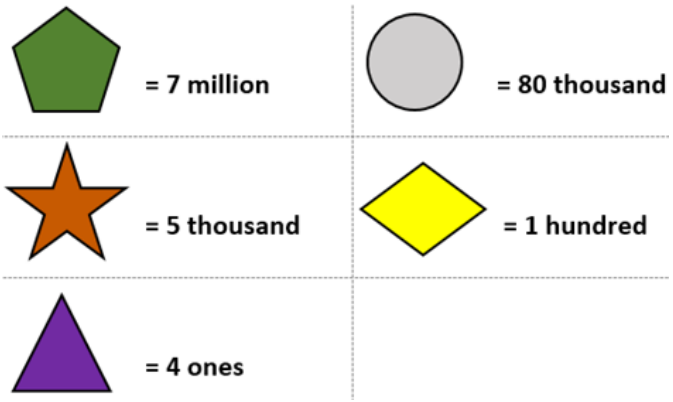
21. If



How much are the following symbols worth altogether?

a) ☐ 7 160 10 104

b) ☐ 7 170 104

c) ☐ 7 805 104

d) ☐ 716 114

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22. The numbers in the sequence below increase by 30 500 each time.
What is the missing number?

−49 564 −19 064 11 436 _____

a) ☐ 41 936

b) ☐ 19 064

c) ☐ 14 936

d) ☐ 30 500

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23. Which number is halfway between 1050 and 3000?

a) ☐ 2025

b) ☐ 1950

c) ☐ 4050

d) ☐ 975

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24. In 2014 the forest rangers counted 540 000 trees in the conservation area. This was six times the amount than in 1994. How many trees existed in the same area in 1994?

a) ☐ 9

b) ☐ 90 000

c) ☐ 538 006

d) ☐ 3 240 000

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25. 7300 people went to the football match. Approximately one fifth of the visitors were children. The rest were adults. The table shows the admission prices:

Adult	£8.90
Child	£4.20

Use rounding to estimate how much money the football stadium took.

a) ☐ £58 400

b) ☐ £94 900

c) ☐ £7313.10

d) ☐ £95 630

Y6 Number and Place Value 1

Answer Sheet

1. Zara and Sam are searching for a new house to buy. They have a budget of £383 008. Match their budget to its correct written form.

Checks ability to convert numbers to words.

a) Correct answer.

b) Pupil has not understood the relevance of zeros as placeholders.

c) Pupil has not grasped how to represent the relationship between the three different thousands columns. May not have knowledge of the hundred thousands column.

d) Has not understood how to convert zeros into words. Can visualise the 300 in the middle of the number. Lacks knowledge of the column value in which each digit is placed.

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2. What is the total of 3 000 000 + 2 000 + 200 + 2?

Checks understanding of numbers in their expanded form.

a) Has discounted all the zeros with no understanding of their value.

b) Correct answer.

c) Lacks knowledge beyond the thousands column.

d) Lacks knowledge of millions.

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3. 1 679 802 is 10 000 greater than _____ ?

Checks ability to find 10 000 less than a number over one million.

a) Has found 10 000 greater than the visible number. Has not understood the order of the question.

b) Has changed the number by 1000. May have read the question incorrectly or lacks knowledge beyond the one thousand column.

c) This is 1 million less. Has found the answer that no longer contains the digit 1. Has not understood the value of this digit. May also lack understanding of subtracting digits from one column within a large number.

d) Correct answer.

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4. Which number is closest in value to 8 942 001?

Checks understanding of the value and order of numbers to 10 million.

a) This number shares the same digits. Lacks understanding of the term 'value'.

b) Has rounded to the next million. Has not understood that d) is closer in its value.

c) 8 million is in the highest valued column in this number. Has not fully understood the question including the significance of the other digits in the number.

d) Correct answer.

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5. Which digit is in the hundred thousands place in 1 062 345?

Checks understanding of column order.

a) Correct answer.

b) Lacks understanding of the thousands column. May have read it as 100 1000 and assumed this to be the correct digit based on its place within the number.

c) This is in the hundreds place. May lack knowledge beyond the hundreds column or has not finished reading the entire question.

d) This is within the thousands family. May not understand that 0 stands as a significant digit within the number.

6. Inma was writing a cheque for a business order. The cost of the order was thirty-three thousand, three hundred and three pounds. Write the cost in numerals.

Checks ability to read and convert words to numbers.

a) Has written each part of the number separately. Lacks understanding of column value within the number system.

b) Has knowledge of the family of three columns in each section of the number system. Has not fully understood the value of each column in the 'thousands family' or how to represent this part of the number.

c) Correct answer.

d) Has not understood how to use zeros as place holders.

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7. The table shows the amount of visitors that attended different concert venues throughout the year. Place the number of visitors in descending order:

Checks understanding of number order up to ten million.

a) Has ordered the numbers from smallest to greatest. May lack understanding of the term 'descending'.

b) Correct answer.

c) Has not recognised the significance of zeros as placeholders and ordered the numbers with the misunderstanding that smaller digits equate to smaller values, regardless of the place in which the digits are located.

d) Lacks understanding of how to compare numbers. Has started comparing from the smallest valued column.

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8. Karl had a budget of £13 050 to spend on the launch event for a new magazine. Unfortunately he overspent by £1 075. What amount does his bank balance show?

Checks ability to count back beyond zero.

a) Has understood that an overspend would result in a negative balance but has used the wrong operation and added the visible numbers.

b) This is the total amount spent. Has misunderstood that an overspend would result in a negative balance.

c) Correct answer.

d) Lacks understanding of negative numbers and has stopped at zero.

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9. Which digit is worth 90 000?

Checks understanding of column value.

a) Lacks understanding of thousands and beyond. Has not understood the relationship between the columns.

b) Has some understanding of thousands. Has chosen the wrong column within the thousands family.

c) This is worth 90. May lack knowledge of thousands or has read the question incorrectly.

d) Correct answer.

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10. What other number can be rounded to the same multiple of 10 000 as 562 500?

Checks understanding of rounding to the nearest 10 000.

a) This number would round to the same multiple of 1000. May lack understanding of rounding beyond this column.

b) Correct answer.

c) Has added 10 000. Has not understood the concept of rounding as this would round to the next 10 000.

d) Has not understood the question or the concept of rounding. Has found a number with 10 000 visible.

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11. Estimate the missing number that the arrow is pointing at on the number line.

Checks ability to estimate based on understanding of number order within 7-digits numbers.

a) Has established the pattern within the number line but has not reviewed what the question is actually asking.

b) Has not recognised that the arrow is approximately halfway between the surrounding numbers.

c) Has counted back from 7 000 000. Has not recognised the direction of the numbers on the number line.

d) Correct answer.

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12. What is 672 thousands equivalent to?

Checks understanding of equivalent values.

a) Has understood that a thousands column exists after hundreds but lacks understanding of the value of the three columns within the 'thousands family'.

b) Lacks understanding of multiplying by 10 and the relationship between multiplying by 10 and moving columns.

c) Correct answer.

d) Has understood that the number would use six digits. Has split 672 into its expanded form changing the value of the whole number.

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13. A bag contains 500 g of sugar. A sack contains 2.5 kg more sugar than a bag. How much sugar is there in three bags and two sacks altogether? Give your answer in grams.

Checks ability to unitise in the context of weight.

a) Has added the visible numbers together with no understanding of their relevance within the question.

b) Correct answer.

c) Has misunderstood that a sack contains 2.5 kg more than a bag and has subsequently added two lots of 2.5 kg to three lots of 500 g bags.

d) Has not understood the relevance of the decimal point. Has considered the sacks to weigh 25 000 g each.

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14. The temperature of the rocket in space was –270C. As it reached the surface of the Earth its temperature rose by 283C. What was the temperature on the Earth's surface?

Checks understanding of the relationship between positive and negative numbers in context.

a) Has continued to count backwards. Has not made a connection that hotter temperatures move in a positive direction.

b) This is how much the temperature rose by. This is not the final temperature. Has not understood the operation needed to find this answer.

c) Has some understanding of counting across positive and negative numbers. Has switched the (–) sign on the numbers before carrying out the operation.

d) Correct answer.

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15. Which is the greatest number?

Checks ability to compare rational numbers.

a) May assume this is the greater number based on the amount of digits. Has not considered the decimal point and directly compared the 5 ones with the 1 hundred in c).

b) Has chosen the only whole number. May have interpreted the other answers as smaller as they contain decimals.

c) Correct answer.

d) Has started to compare from the right column. This may be due to using other operations such as column method addition that starts from the smaller valued columns on the right.

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16. What is 1000 less than a quarter of a million?

Checks ability to apply basic fraction knowledge to very large numbers and to find 1000 less than a number.

a) Has found a quarter of a million without finding 1000 less. May lack understanding of subtraction.

b) Correct answer.

c) Has found 1000 less than half a million. May not be familiar with finding a quarter of a number.

d) Has found 1000 less than a million. Understands how to subtract 1000. May not have read the question properly or does not understand the terminology of a 'quarter'.

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17. The population of Majorca is 1 000 000 when rounded to the nearest million. What is the greatest possible amount the population could actually be?

Checks understanding of the range of numbers that can be rounded to the nearest 1 000 000.

a) Correct answer.

b) This is the least amount that could be rounded to 1 000 000.

c) This is the closest of all answers to 1 000 000 but is not the greatest possible amount that could be rounded to 1 000 000. Lacks understanding of rounding.

d) This number would need to be rounded up. Lacks understanding of rounding when a number is halfway.

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18. What is the difference between –92 500 and 7802?

Checks ability to find the difference between a negative and positive number.

a) Has found the difference between 92 500 and 7802. Lacks knowledge of negative numbers.

b) Has counted further back by 7802. Has not understood how to find the difference between the two numbers.

c) Correct answer.

d) Has taken a zero off –92 500 to match the quantity of digits in each number. May lack understanding of subtracting different sized numbers. Has also disregarded the (–) sign.

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19. Molly weighs 93 pounds, her younger brother weighs 26 pounds less than Molly. Together they weigh 29 pounds less than their dad. How much does their dad weigh?

Checks ability to solve a multi-step problem including using additive operations in the context of weight.

a) The order of the question has been misunderstood. Pupil has assumed that Molly weighs 26 pounds less than the brother.

b) Has subtracted the numbers from 93. Has not worked out the weight of each individual. Lacks comprehension of the question.

c) Has added all visible numbers together with no understanding of their relevance within the question.

d) Correct answer.

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20. Which quantity is the greatest?

Checks ability to compare quantities displayed in a variety of written forms.

a) Has not converted this number correctly. Has not established that b) and c) both feature digits in the millions column. May lack knowledge beyond thousands and assumed the number beginning with 9 would be the greatest.

b) As the original number this is the greatest quantity. Lacks basic fraction knowledge to find a quarter.

c) Correct answer.

d) This is the smallest number. Pupil may have misread the question.

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21. How much are the following symbols worth altogether?

Checks ability to unitise and exchange across columns.

a) Has worked out the total of each symbol separately and linked them together. Has not considered the column value of each digit or symbol.

b) Correct answer.

c) Has written one unit of each symbol correctly as a total. Has not considered the quantity of each symbol.

d) Has worked out the total of each symbol separately and put the digits together. Has not included any zeros as placeholders changing the value of the entire number.

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22. The numbers in the sequence below increase by 30 500 each time. What is the missing number?

Checks ability to count forwards in multiples of 100 and 10 000.

a) Correct answer.

b) Has created a symmetrical pattern without acknowledging the difference between each number.

c) Has added 3500. Has not read the question properly or lacks understanding of the ten thousands column.

d) Has misunderstood the operation needed to find the missing number and has simply matched the pattern of change.

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23. Which number is halfway between 1050 and 3000?

Checks ability to use basic fraction knowledge and number order within 4-digit numbers.

a) Correct answer.

b) This is the difference between the numbers. May not understand the terminology ‘halfway’ or how to find it.

c) Has added both numbers together. Lacks understanding of the terminology within the question.

d) Has understanding of finding halfway as this is the amount needed to reach halfway from each number. However, this answer is lower than both numbers. Has settled on this answer without reviewing what the question is asking.

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24. In 2014 the forest rangers counted 540 000 trees in the conservation area. This was six times the amount than in 1994. How many trees existed in the same area in 1994?

Checks ability to use and apply known multiple facts of 6 to solve a problem with 6-digit numbers.

a) Pupil has taken off the zeros and divided 54 by 6 correctly. Has not replaced the zeros.

b) Correct answer.

c) Has subtracted 1994 from 540 000 with no understanding of the relevance or context in

which 1994 is used.

d) Has understood the multiplicative aspect of the question but has chosen to multiply 540 000 by 6 instead of dividing.

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25. 7300 people went to the football match. Approximately one fifth of the visitors were children. The rest were adults. Use rounding to estimate how much money the football stadium took.

Checks ability to solve a multi-step problem including using the multiplicative operations and estimation.

a) Correct answer.

b) Has rounded the money to the nearest pound and multiplied by the number of people who attended. Has not found a fifth that were children. May lack fraction knowledge.

c) Has added all visible numbers together without understanding their relevance to the question. Has not understood the correct operation to use and lacks understanding of rounding.

d) Has added the exact prices together and multiplied by 7300. Has not understood how to use rounding to estimate. May also lack understanding of fractions.
