Y5 End of Year Diagnostic

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. 12,440 is how much more than 12,340?

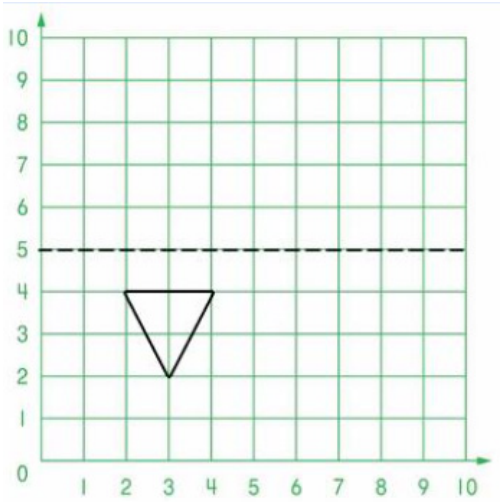
a) ☐ 100

b) ☐ 1,000

c) ☐ 140

d) ☐ 24,780

2. This shape is reflected across the mirror line.
What will the co-ordinates of the new shape be?



a) ☐ (2, 6) (4, 6) and (3, 8)

b) ☐ (2, 8) (4, 8) and (3, 6)

c) ☐ (6, 2) (6, 4) and (8, 3)

d) ☐ (2, 5) (4, 5) and (3, 7)

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3. Here are the populations of three towns:

Hilltop	236,579
Lowview	106,874
Noview	67,597

Calculate the total number of people living in the three towns.

a) ☐ 1,019,423

b) ☐ 304,176

c) ☐ 343,453

d) ☐ 411,050

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4. 6^2 =

a) ☐ 12

b) ☐ 36

c) ☐ 62

d) ☐ 62

5. What are all the factors of 56?

a) ☐ 1, 2, 3, 7, 8, 14, 28

b) ☐ 1, 2, 4, 14, 28

c) ☐ 2, 4, 6, 8, 14, 28

d) ☐ 1, 2, 4, 7, 8, 14, 28, 56

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6. Find the missing numbers to make this equation correct

$$\begin{array}{r} 6\ \_\ 5\ 2\ 3 \\ -\ 2\ 8\ 7\ 1\ 6 \\ \hline 3\ 5\ 8\ \_\ 7 \end{array}$$

a) ☐ 6 **3** 5 2 3 3 5 8 **1** 7

b) ☐ 6 **3** 5 2 3 3 5 8 **0** 7

c) ☐ 6 **4** 5 2 3 3 5 8 **1** 7

d) ☐ 6 **4** 5 2 3 3 5 8 **0** 7

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7. Use the fraction wall here to help you complete this statement:

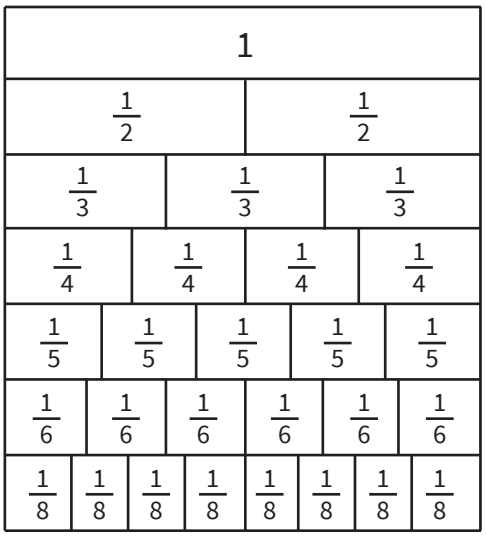
$\frac{3}{4} = \frac{\square}{8}$

a) ☐ $\frac{3}{4} = \frac{\mathbf{3}}{8}$

b) ☐ $\frac{3}{4} = \frac{\mathbf{6}}{8}$

c) ☐ $\frac{3}{4} = \frac{\mathbf{1}}{8}$

d) ☐ $\frac{3}{4} = \frac{\mathbf{2}}{8}$



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8. What is 84 in Roman numerals?

a) ☐ LXXXIV

b) ☐ VIIIIV

c) ☐ DCCCIV

d) ☐ XV

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9. There are twelve children in class 5 and thirteen children in class 6 who have chosen to go on an extra school trip to the theatre. If each ticket costs £9, how much will all their tickets costs all together?

a) ☐ £1,845

b) ☐ £185

c) ☐ £99

d) ☐ £225

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10. Which of the sets of numbers below only contains multiples of 25?

a) ☐ 125, 200, 325, 475, 550, 1025

b) ☐ 125, 175, 275, 315, 325, 545

c) ☐ 400, 850, 900, 1120

d) ☐ 225, 300, 415, 575, 650, 720, 1000

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11. Put these fractions in order from smallest to largest.

$\frac{90}{100}$ $\frac{1}{2}$ $\frac{2}{5}$ $\frac{3}{10}$ $\frac{8}{10}$

a) ☐ $\frac{1}{2}$ $\frac{2}{5}$ $\frac{3}{10}$ $\frac{8}{10}$ $\frac{90}{100}$

b) ☐ $\frac{3}{10}$ $\frac{2}{5}$ $\frac{1}{2}$ $\frac{8}{10}$ $\frac{90}{100}$

c) ☐ $\frac{90}{100}$ $\frac{8}{10}$ $\frac{1}{2}$ $\frac{2}{5}$ $\frac{3}{10}$

d) ☐ $\frac{90}{100}$ $\frac{8}{10}$ $\frac{3}{10}$ $\frac{2}{5}$ $\frac{1}{2}$

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12. Round 29,563 to the nearest 1,000.

a) ☐ 30,563

b) ☐ 29,600

c) ☐ 29,000

d) ☐ 30,000

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13. Round 63.15 to one decimal place.

a) ☐ 63

c) ☐ 60

c) ☐ 63.2

d) ☐ 63.1

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14. What is the value of each digit in the number 405,099?

a) ☐ 40,000 + 5,000 + 90 + 9

b) ☐ 400,000 + 5,000 + 90 + 9

c) ☐ 400 + 5 + 90 + 9

d) ☐ 40 + 50 + 99

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15. What is the total of $\frac{2}{5}$ and $\frac{3}{10}$?

a) ☐ $\frac{5}{15}$

b) ☐ $\frac{7}{10}$

c) ☐ $\frac{5}{5}$

d) ☐ $\frac{5}{10}$

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16. The thermometer read 8°C at the start of the day. By midnight, the temperature had dropped by ten degrees. What was the temperature at midnight?

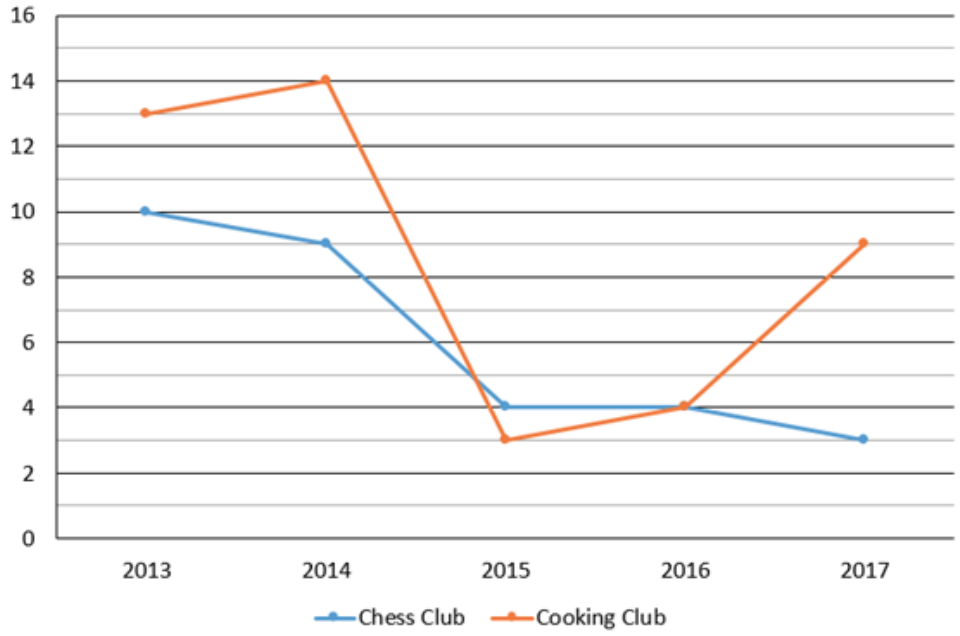
a) ☐ 18°C

b) ☐ -3°C

c) ☐ 2°C

d) ☐ -2°C

17a. In which year did the number of Chess Club members reach their highest amount?



a) ☐ 2014

b) ☐ 2017

c) ☐ 10

d) ☐ 2013

17b. What is the difference between the number of Chess Club members in 2014 and the number of Cooking Club members in 2016?

a) ☐ 5

b) ☐ 10

c) ☐ 13

d) ☐ 6

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18. 143,647 + 50,000 =

a) ☐ 643,647

b) ☐ 193,647

c) ☐ 148,647

d) ☐ 193,000

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19. _____ ÷ 100 = 87.32

a) ☐ 0.8732

b) ☐ 87,300.2

c) ☐ 873.200

d) ☐ 8,732

---

20. Kasia and Jakub both won money on the lottery. Kasia won £516,000. Jakub won £239,000. How much more did Kasia win than Jakub?

a) ☐ £755,000

b) ☐ £323,000

c) ☐ £277,000

d) ☐ £237,000

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21. What is $\frac{550}{1000}$ written as a decimal

a) ☐ 0.55

b) ☐ 550.1000

c) ☐ 0.00550

d) ☐ It is not possible to write a fraction as a decimal because they are two different things.

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22. Which of the following is the answer to $\frac{3}{8}$ x 5?
Use the diagram below to help you.

a) ☐ $\frac{3}{40}$

b) ☐ $\frac{15}{40}$

c) ☐ $1\frac{7}{8}$

d) ☐ 15

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23. 984.43 _____ = 9,844.3

a) ☐ ÷ 10

b) ☐ x 100

c) ☐ ÷ 100

d) ☐ x 10

---

24. Here are the times four runners got in a 100 metres race:

RUNNER:	TIME (seconds)
A	12.382 seconds
B	12.08 seconds
C	12.9 seconds
D	12.385 seconds

Write the order they finished from quickest to slowest

a) ☐ B, C, A, D

b) ☐ C, B, A, D

c) ☐ B, A, D, C

d) ☐ A, D, B, C

---

25. What is 16% written as a decimal?

a) ☐ 0.16

b) ☐ 1.6

c) ☐ It is not possible to write a percentage as a decimal because they are two different things.

d) ☐ 16.00

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26. 5^3 =

a) ☐ 15

b) ☐ 125

c) ☐ 25

d) ☐ 75

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27. A painter and decorator has been left these instructions for painting a living room:

Please paint $\frac{1}{4}$ of the room Olive Green.

Please paint 8% of the room Harvest Yellow.

You can leave the rest of the room as it is.

Which of these calculations shows how to work out the amount of the living room the decorator needs to paint?

a) ☐ 1.4 + 8 = 9.4% of the room.

b) ☐ 4% + 8% = 12% of the room.

c) ☐ $\frac{1}{4}$ of 8 = 2% of the room.

d) ☐ 25% + 8% = 33% of the room.

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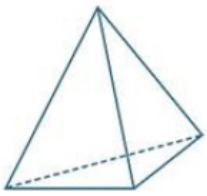
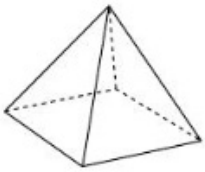
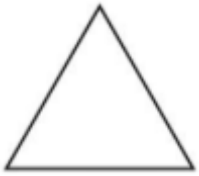
28. Which of these shapes is a triangular-based pyramid?

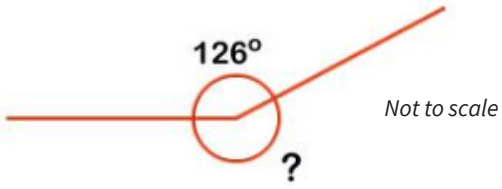
a) ☐ 

b) ☐ 

c) ☐ 

d) ☐ 

29. Which of these answers shows how to calculate the missing angle?



a) ☐ It is impossible to work out the answer without using a protractor.

b) ☐ $360^\circ - 126^\circ = 234^\circ$

c) ☐ $360^\circ + 75^\circ = 486^\circ$

d) ☐ $180^\circ - 126^\circ = 54^\circ$

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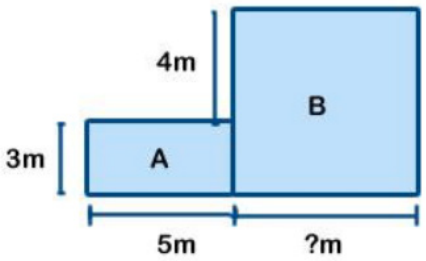
30. Two swimming pools are next to each other. The learners pool (A) is a rectangle. The main pool (B) is a square. Tom swims the width of the main pool (the distance shown by the question mark).
How can he work out the distance he has swum?



a) ☐ He needs to add 4 m and 3 m. A square's sides are all equal, so this length is the same as the main pool's width. Tom swam 7 m.

b) ☐ He needs to add all the distances shown. Tom swam 12 m.

c) ☐ The main pool is a square, so the unknown distance the distance of 4 m that is labelled. Tom swam 4 m.

d) ☐ It is impossible for Tom to work out how far he swam with this information. He needs to be given one more distance.

Y5 End of Year Diagnostic

Answer Sheet

1. 12,440 is how much more than 12,340?

Checks ability to count backwards in powers of 10. (5N1)

a) Correct answer.

b) Has identified a change in one digit but has identified the wrong column.

c) Is unable to visualise the change in only one digit/column.

d) Has found 12,340 more than 12,440.

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2. This shape is reflected across the mirror line. What will the co-ordinates of the new shape be?

Checks whether pupil can describe the position of a shape following a reflection. (5P2)

a) Correct answer

b) Pupil has some understanding that the triangle must be drawn above the mirror line, but has translated, rather than reflected it.

c) Pupil seems to understand how to reflect a shape and represent it on a grid, but has labelled the co-ordinates incorrectly, mixing up the order of the horizontal and vertical values.

d) Pupil shows some understanding of how to reflect a shape and has done so across the mirror line. However, they have not positioned the triangle correctly and taken into account its distance from the mirror line.

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3. Calculate the total number of people living in the three towns.

This checks if the pupil is able to add numbers up to 1 million in context with exchange. (5C2)

a) Pupil has some understanding of addition with renaming as added first two towns correctly, but when adding third number - misaligned the numbers showing lack of place value knowledge.

b) Pupil has only added two of the towns - Hilltop and Noview, forgetting to add Lowview.

c) Pupil has only added two of the towns - Hilltop and Lowview, forgetting to add Noview.

d) Correct answer.

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4. 6^2 = _____

Square numbers. (5C5d)

a) Has interpreted 2 as x 2.

b) Correct answer.

c) Does not understand the meaning of 2 and interprets it as part of the number.

d) Does not identify the squared sign as an operation.

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5. What are all the factors of 56?

Identify all factors of a given number. (5C6a)

a) Does not realise that all non-square numbers have an even number of factors.

b) Has not identified all the factors of 56, has not continued past 4 x 14.

c) Does not identify that 1 and the number itself are factors of any given number.

d) Correct answer.

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6. Find the missing numbers to make the equation correct

Checks if pupil is able to subtract two numbers up to 1 million with exchange using the formal method. (5C2)

a) Pupil lacks understanding of the non-commutative aspect of subtraction and subtracts smaller digits from the larger digits in each column.

b) Pupil has correctly worked out that tens needs to be exchanged, but has not realised the ten thousands, also need exchanging.

c) Pupil has not realised that tens digit has to be exchanged.

d) Correct answer.

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7. Use the fraction wall above to help you complete this statement:
Checks pupil can recognise families of equivalent fractions by using diagrams. (5F2b)

a) Pupil lacks understanding of what an equivalent fraction means (if the denominator changes, the numerator must also change for the fractions to still be equal).

b) Correct answer.

c) Pupil may have some understanding of how to use a fraction wall. However, they have incorrectly read downwards to see a box labelled ⅛ and taken this as the answer, rather than counting along to see how many eighths ¾ is equal to.

d) Pupil may have some understanding of how to use the fraction wall. However, they have incorrectly read the first fraction (quarters) from right to left, before reading the answer (in eighths) from left to right.

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8. What is 84 in Roman numerals?
Checks ability to translate into Roman numerals. (5N3b)

a) Correct answer.

b) Has recognised 8 (VIII) and 4 (IV) but has not understand how to write multiples of 10.

c) Has mistaken 80 for 800 (DCCC) but has understood 4 (IV).

d) Misconception that smaller numbers need less digits. Lacks understanding of how Roman numerals are formed.

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9. There are twelve children in class 5 and thirteen children in class 6 who have chosen to go on an extra school trip to the theatre. If each ticket costs £9, how much will all their tickets costs all together?
Two step problem (addition and multiplication), including multiplying by 25 using a mental method. (5C8a)

a) Has incorrectly used the formal written method for multiplication, and has not identified that 9 x 25 can be carried out mentally.

b) Has incorrectly used the formal written method for multiplication, and has not identified that 9 x 25 can be carried out mentally.

c) Has incorrectly identified the calculation as 5 + 6 = 11, 11 x 9 = £99. This could indicate that children have jumped to using the numbers shown in numerals in the problem, without checking this in the context of the problem.

d) Correct answer.

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10. Which of the sets of numbers below only contains multiples of 25?
Identifying multiples and multiples of 25. (5C5a)

a) Correct answer.

b) Thinks that 315 and 545 are multiples of 25, which may indicate that they believe any number ending in 5 is a multiple of 25.

c) Thinks that 1120 is a multiple of 25, which may indicate that they believe any number ending in 0 is a multiple of 25.

d) Assumes that 415 and 720 are multiples of 25. This may indicate that they assume that all numbers ending in 0 and 5 are multiples of 25.

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11. Put these fractions in order from smallest to largest.
Checks pupil can compare and order fractions whose denominators are all multiples of the same number. (5F8)

a) Pupil has ordered the fractions purely based on either their numerators (1, 2, 3, 8, 90) or denominators (2, 5, 10, 10, 100). They may

believe that the smaller the denominator, the smaller the fraction.

b) Correct answer.

c) Pupil seems to be able to order fractions and has a knowledge of equivalent fractions, but has ordered incorrectly from largest to smallest.

d) Pupil has incorrectly ordered the fractions purely based on either their numerators or denominators and has done so from largest to smallest.

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12. Round 29,563 to the nearest 1000.

Checks ability to apply understanding of exchanging process in the context of rounding. (5N4)

a) Has added 1000 and not understood the concept of rounding.

b) Has rounded to the nearest 100.

c) Many not have understood that 500 – 900 are closer to the next 1000, or has ignored/ not understood the exchange between the thousands and ten thousands columns.

d) Correct answer.

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13. Round 63.15 to one decimal place.

Checks if pupil can round decimals with two decimal places to one decimal place. (5F7)

a) Pupil has rounded to the nearest whole number, rather than to one decimal place.

b) Pupil incorrectly thinks that all rounding results in a multiple of 10 or 100 and has rounded to the nearest ten.

c) Correct answer.

d) Pupil lacks understanding of how to round a number when the digit 5 is involved.

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14. What is the value of each digit in the number 405,099?

Checks understanding of numbers in their expanded form. (5N3a)

a) Can visualise 40 and 5 within the thousands columns. May not have knowledge of sets/ families of three columns within the number system (hundreds, tens, ones).

b) Correct answer.

c) Recognises sets of three columns to include hundreds, tens and ones. May lack understanding of values beyond hundreds.

d) Has split the number into three separate parts with no consideration for each digit's value.

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15. What is the total of $\frac{2}{5}$ and $\frac{3}{10}$?

Checks if pupil can add fractions with denominators that are multiples of the same number. (5F4)

a) Pupil does not understand how to add fractions and has treated the numerators and denominators as whole numbers in their own right, adding them together.

b) Correct answer.

c) Pupil may lack understanding of how equivalence must be used in order to add the two fractions. Pupil may have some understanding of finding a common factor.

d) Pupil has not recognised the need to find a common denominator before adding, choosing instead to just use the larger of the denominators in the answer.

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16. The thermometer read 8°C at the start of the day. By midnight, the temperature had dropped by ten degrees. What was the temperature at midnight?

Checks ability to count backwards through 0. (5N5)

a) Has added 10 degrees.

b) Common mistake - didn't count through the zero.

c) Has not understood the non-commutative

aspect of subtraction and switched the numbers around.

d) Correct answer.

17a. In which year did the number of Chess Club members reach their highest amount?
Checks ability to order data within a complex line graph. (5S1)

a) The Cooking Club had the highest amount in this year. Pupil has not identified the data on the correct line.

b) The Chess Club had the lowest number of members in this year. Pupil has not understood the question.

c) This is the number of members in the Chess Club at its height of popularity, but pupil has not identified the year.

d) Correct answer.

17b. What is the difference between the number of Chess Club members in 2014 and the number of Cooking Club members in 2016?

Checks ability to find the difference between data in a complex line graph. (5S2)

a) Correct answer.

b) Pupil has found the difference but has mixed the dates and lines up in the question.

c) Pupil has found the total of both amounts. Lacks understanding of how to find the difference

d) This is the difference between the amount of both members in 2014. Pupil has not read the question fully.

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18. 143 647 + 50 000 =
Checks pupil can add two numbers up to 1 million without exchanging using counting on as a strategy. (5C1)

a) Pupil is unsure of counting on strategy and lacks place value knowledge, as misaligns digits vertically when adding.

b) Correct answer.

c) Pupil is unable to read larger numbers accurately and has mistaken 50 000 for 5 000.

d) Pupil has correctly added ten thousands, but has not included hundreds, tens and ones in the answer.

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19. _____ ÷ 100 = 87.32
Inverse relationship between multiplying and dividing by 10. (5C6b)

a) Has divided by 100, rather than multiplying, indicating they do not understand the inverse relationship between multiplication and division, and/or how to solve problems where the answer needed is not after the = sign.

b) Has attempted to multiply by 100, but has placed two 0's as a placeholder after the whole number, ignoring the decimals. This is often the case when children think to multiply by 100, they 'add two 0's' to the end of a number.

c) Has 'placed two 0's' onto the end of the number- often a misconception when children think to multiply whole numbers by 100 they 'add a two 0's'.

d) Correct answer.

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20. Kasia and Jakub both won money on the lottery. Kasia won £516 000. Jakub won £239 000. How much more did Kasia win than Jakub?
Checks if pupil is able to subtract numbers up to 1 million in context with exchange. (5C2)

a) Pupil lacks comprehension and has used the wrong operation; pupil has added numbers instead of subtracting.

b) Pupil lacks understanding of the non-commutative aspect of subtraction and subtracts smaller digits from the larger digits in each column.

c) Correct answer.

d) Pupil lacks understanding of subtracting

from zero and has subtracted 3 from zero and written the answer as 0.

21. What is $\frac{550}{1000}$ written as a decimal?
Checks if pupil can write a fraction written as thousandths as its decimal equivalent. (5F6b)

a) Correct answer.

b) Pupil lacks understanding of how fractions relate to decimals, thinking that the decimal point simply replaces the line in between the numerator and denominator.

c) Pupil may have some understanding that the answer will be less than 1. However, they incorrectly think that the number of thousandths *begins* at the thousandths column and the digits are written there.

d) Pupil incorrectly thinks that fractions and decimals are not related.

22. Which of the following is the answer to $\frac{3}{8} \times 5$? Use the above diagram to help you.
Checks whether pupil can multiply proper fractions by whole numbers, supported by a diagram. (5F5)

a) Pupil lacks understanding of how to multiply fractions by whole numbers. They have multiplied the denominator by 5 and probably have not used the diagram to help.

b) Pupil lacks understanding of how to multiply fractions by whole numbers. They have either multiplied both numbers in the fraction by 5 or have counted the shaded parts and total parts in the diagram and formed a fraction from their findings (both methods result in this answer). Lacks understanding that the denominator is the name of each part.

c) Correct answer.

d) Pupil lacks understanding of how to multiply fractions by whole numbers and has simply used the diagram to add the shaded parts.

23. 984.43 _____ = 9844.3
Multiplying and dividing by 10, 100 and 1,000. (5C6b)

a) Has confused the effect of x 10 with ÷ 10.

b) Has confused x 100 with x 10.

c) Has confused ÷ 100 with x 10.

d) Correct answer.

24. Write the order the runners finished from quickest to slowest.
Checks whether pupil can compare and order numbers with up to three decimal places. (5N2)

a) Pupil has a lack of understanding about place-value. They have treated the digits after the decimal point as whole numbers in their own right.

b) Pupil has a lack of understanding about place-value. They think that the more decimal places, the greater the time

c) Correct answer.

d) Pupil has a lack of understanding about place-value and how to compare numbers. They have compared the digits from right to left.

25. What is 16% written as a decimal?
Checks whether pupil can write a percentage as a decimal. (5F11)

a) Correct answer.

b) Pupil lacks understanding of how to express a percentage as a decimal.

c) Pupil incorrectly thinks that percentages and decimals are not related.

d) Pupil lacks understanding of how to express a percentage as a decimal. They have taken their cues from the 00s in the percentage symbol.

26. 5^3 =

Cubed numbers. (5C5d)

a) Has interpreted 3 as x 3.

b) Correct answer.

c) Has squared the number, not cubed.

d) Has squared (5 x 5) but then multiplied by 3.

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27. A painter and decorator has been left instructions for painting a living room. Which of these calculations shows how to work out the amount of the living room the decorator needs to paint?

Checks whether pupil can solve a problem which requires knowing the percentage and decimal equivalents of ½. ¼, ⅕, ⅖, ⅘ and fractions with a denominator of a multiple of 10 or 25. (5F12)

a) Pupil lacks knowledge of the percentage equivalent of ¼ and has simply added 8 to 1.4 instead of to 25. Pupil lacks understanding of the need to convert numbers to a common unit before addition can be used.

b) Pupil lacks knowledge of the percentage equivalent of ¼ and has simply added 8 to the denominator (4) instead of to 25.

c) Pupil has found ¼ of 8%, rather than finding the total of the two amounts. Lacks comprehension of the problem.

d) Correct answer

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28. Which of these shapes is a triangular-based pyramid?
Checks pupil can identify 3-D shapes, including cubes and other cuboids, from 2-D representations. (5G3b)

a) Correct answer.

b) Pupil understands what a pyramid looks like, but has not distinguished between a square-based and triangular-based pyramid.

c) Pupil has chosen a shape that shows a triangular base, but does not recognise what a pyramid looks like.

d) Pupil may recognise that the shape contains triangular faces. However, they lack understanding about the difference between 2-D and 3-D shapes.

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29. Which of these answers shows how to calculate the missing angle?
Checks whether pupil can identify angles at a point and one whole turn (total 360^0). (5G4b)

a) Pupil shows a lack of understanding that they can often calculate angles based on known facts.

b) Correct answer.

c) Pupil recognises that the full-turn of 360^0 is somehow important, but does not understand that they need to subtract 126^0 from 360^0 and has instead added the two together.

d) Pupil has some understanding that they need to subtract, but does not know the value of a whole-turn and has subtracted 126^0 from 180^0, not 360^0.

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30. Two swimming pools are next to each other. The learners' pool (A) is a rectangle. The main pool (B) is a square. Tom swims the width of the main pool (the distance shown by the question mark). How can he work out the distance he has swum?
Checks whether pupil can use the properties of rectangles to find missing lengths. (5G2a)

a) Correct answer

b) Pupil lacks knowledge of how to use the properties of a rectangle to find a missing distance and has simply added all the distances shown on the diagram.

c) Pupil shows some understanding of the properties of squares (that their sides are equal), but has incorrectly applied this in the context.

d) Pupil lacks knowledge of how the properties of squares (specifically, that all their sides are equal) can be applied to solve the problem using the information given.