**Starting the 2020 papers strong …**

The below is a list of high frequency 1- or 2-mark questions. Whilst there is no guarantee that any of these topics will appear in the next sitting, it is essential that our students are confident in these areas to gain as many marks as possible and by being able to swiftly answer these early topics the time gained can be used when answering the tougher 3, 4 or 5 mark questions.

1. Rounding.
2. Place value – putting numbers into size order.
3. Fraction, Decimal and Percentage conversions.
4. Fraction equivalence
5. Simplifying expressions
6. Solving equations
7. Powers, indices, roots and 4 operations
8. Probability Scale (and probability = 1)
9. Metric conversions
10. Types of number (primes, factors, multiples)
11. properties of 2D shapes and 3D forms
12. Area of simple shapes
13. Sequences
14. Forming expressions
15. Coordinates
16. Ratio
17. Percentages
18. Fractions
19. Bar Charts, pictograms
20. Averages
21. Combinations
22. Product of Prime factors
23. Substitution / Expanding and factorising
24. Time (including simple speed/distance/time)
25. Standard Form

**Rounding/Error Intervals**

1. *Do you know the difference between rounding to specific numbers, a given number of decimal places or significant figures?*
2. *Read the question carefully … a common mistake is to round to decimal places when the question asks for significant figures or to the nearest 100 when asked for the nearest thousand.*
3. *Also make sure that you know how to write an error interval – at the extreme end of this topic is something called truncation too!*

**Now have a go:**

|  |  |
| --- | --- |
| Write 56.78 correct to one significant figure. | Write 7.264 51 correct to 3 decimal places. |
| Write 3758 correct to the nearest 1000. | Write 6324 correct to the nearest thousand. |
| Write 1.59 correct to 1 decimal place | Write the number 2538 correct to the nearest 100 |
| Write 7829 to the nearest 1000 | Write 478 to the nearest hundred. |
| Write 4.58 correct to 1 decimal place. | Write the number 8375 correct to the nearest thousand. |

**What about when the question is in context?**

Harley’s house has a value of £160 000 correct to 2 significant figures.

(*a*)Write down the least possible value of the house.

(b) Write down the greatest possible value of the house.

**Error intervals and truncation.**

|  |  |
| --- | --- |
| The length of a pencil is 128 mm correct to the nearest millimetre.  Complete the error interval for the length of the pencil.  .............. mm ⩽ length < .......... mm | Sally used her calculator to work out the value of a number y.  The answer on her calculator display began 8.3  Complete the error interval for y.  .............. ⩽ y < .......... |

**Numbers in size order / Place Value**

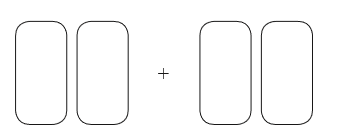
1. *Make sure you know which digit in a given number represents the smallest value.*
2. *A common mistake is not reading the question carefully and writing what you THINK has been asked .. take your time. Just because a question is worth 1 mark it doesn’t mean that you need to rush****.***

**Now have a go:**

|  |  |
| --- | --- |
| Write the following numbers in order of size. Start with the smallest number.  – 6 6 – 5 0 12 | Write the following numbers in order of size. Start with the smallest number.  0.078 0.78 0.87 0.708 |
| Write the following numbers in order of size. Start with the smallest number.  0.4 0.02 0.37 0.152 0.2 | Write the following numbers in order of size. Start with the smallest number.  –3 4 0 –1 2 |
| Write these numbers in order of size.  Start with the smallest number.  8 −4 1 −7 −2 | Write the number two million in figures. |
| Write down the value of the 4 in the number 542.3 | Write down the value of the 7 in the number 1074 |

1. Here are four digits: 5 6 1 9
2. Write down the smallest possible two-digit number that can be made with two of the digits.
3. Write down the three-digit number closest to 200 that can be made with three of the digits.
4. Write down a 6-digit number that has a 4 as its thousands digit. You can only use the digit 4 once.
5. Here are 4 digits: 7 3 4 9

Use three of these digits to write down the largest possible 3 digits number.



1. Here are four digits 8 2 1 6

Put one of these digits in each box to give the smallest

possible answer to the sum.

You must use each digit only once.

**FDP conversions**

1. *Do you know the “key” fraction, decimal and percentage equivalences? For example, = 0.1 = 10%*
2. *You need to have a method to convert between fractions, decimals and percentages! They will come up!!*

**Now have a go:**

|  |  |
| --- | --- |
| Write as a percentage. | Write as a decimal. |
| Write 3% as a fraction. | Write as a percentage |
| Write as a decimal | Write 20% as a fraction |
| Write 0.3 as a percentage | Write 0.6 as a percentage. |
| Write 0.31 as a fraction. | Write 0.73 as a percentage. |
| Write 19% as a fraction. | Write 0.7 as a fraction. |
| Write 0.75 as a fraction. | Write 15% as a decimal. |
| Write 0.23 as a percentage. |  |

**Fraction equivalence**

1. *In general, we use equivalent fractions to decide which is bigger (to arrange them in size order)*
2. *You need to know that equivalent fractions have the same value, even though they may look different. For example, is the same as but also the same as*

**Now have a go:**

|  |
| --- |
| Here are four fractions.  Write these fractions in order of size. Start with the smallest fraction. |
| Here are four fractions.  Write the fractions in order of size. Start with the smallest fraction. |
| Here are four fractions.  Write the fractions in order of size. Start with the smallest fraction. |
| Here is a list of four fractions.  One of these fractions is not equivalent to Write down this fraction. |
| Here are some fractions.  One of these fractions is **not** equivalent to Write down this fraction |
| Here are two fractions:  Work out which of the fractions is closer to 1. You must show all your working. |
| Write the fraction in its simplest form. |

**What about forming a fraction when the question is in context?**

Harry has 20 sweets. He gives 7 of the sweets to Nadia. What fraction of the 20 sweets does Harry have now?

**Simplifying expressions**

1. *You will often be asked to put something "in simplest form". There are several methods involved in simplifying - sometimes this means collecting “Like” terms other times it may mean multiplying variables with constants.*
2. *You should also know how to apply the laws of indices.*

**Now have a go:**

|  |  |
| --- | --- |
| Simplify y + 3 y – 2 y | Simplify 10 + 3c + 5d – 7c + d |
| Simplify 8a – 3a + 2a | Simplify 3*m* – *m* − *m* + 3*m* |
| Simplify m3 + m3 | Simplify 3x + 2y + 5x ̶ y |
| Simplify 4e + 6f + 7e – f |  |
| Simplify 7 × e × f × 8 | Simplify 3 f × 5 g |
| Simplify 3 x 4t | Simplify 2 × *n* × *p* × 4 |
| Simplify a × b × 7 | Simplify 2a x 5b |
| Simplify t × t | Simplify y × y × y |
| Simplify (p2)5 | Simplify |
| *p*3 × *px* = *p*9  Find the value of *x*. | (72)*y* = 710  Find the value of *y*. |
| Simplify 12x7y3 ÷ 6x3y | Simplify fully |

**Solving Equations**

1. *You need to be able to solve simple linear equations. There are several different methods you can use – they are usually introduced using function machines but whichever method you use, make sure you are confident.*
2. *HINT: Make sure you do some questions that involve fractions too!*

**Now have a go:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Here is a number machine.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | input |  | ×5 |  | –2 |  | output |   Work out the **output** when the input is 8 | |
| Here is a number machine.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | input |  | ×5 |  | –2 |  | output |   Work out the **input** when the output is 28 | |
| Here is a number machine.    Work out the output when the input is 6 | |
| Here is a number machine.    When the input is 17, the output is 10. Complete the number machine. | |
| Solve x + x + x = 51 | Solve 2x + 7 = 18 |
| Solve 4(*x* – 5) = 18 | Solve 2*x*2 = 72 |
| Solve x – 2 = 6 | Solve 6w + 2 = 20 |
| Solve t + t + t = 12 | Solve 3(*x* – 4) = 12 |
| Solve 4(x – 6) = 44 | Solve 14n = 11n + 6 |
| Solve 5*x* – 6 = 3(*x* – 1) | Solve = 10.5 |
| Solve | Solve |

**Powers, indices, roots and 4 operations**

1. *You need to be able to carry out calculations with and without a calculator involving the four operations including decimals (and in context) – this is something you will have been doing for years BUT you still need to practice it!*
2. *Additionally, you need to be able to simplify numbers written in index form. A common mistake is to think that 23 = 2 x 3 = 6 and not 2 x 2 x 2 = 8 (which is the correct answer!). You also should know about square numbers, square roots, cube numbers and cube roots.*

**Now have a go:**

|  |  |
| --- | --- |
| Work out the value of 35 | Work out the value of 24 |
| Work out 23 | Work out the cube root of 64 |
| Work out the value of 53 | Write down the value of |
| Work out 3 × 5 + 7 | Work out 10 × (3 + 5) |
| Work out 2 + 7 × 10 | Work out 74 × 58 |
| Work out 54.6 × 4.3 | Work out 31.7 x 100 |
| Work out 23 x 15 | 56.3 + \_\_\_\_\_\_\_\_\_\_ = 100 |
| Write brackets ( ) in this statement to make it correct.  × 2 + 3 = 35 | |
| Here is a list of numbers.  4 6 9 10 15 27 30 40  From the list, write down all the numbers that are powers of 3 | |
| Here are four numbers.   |  |  |  |  | | --- | --- | --- | --- | | –9 | –2 | 2 | 9 |   Write one of these numbers in each box to make a correct calculation.   |  |  |  |  | | --- | --- | --- | --- | | ................ | + | ................ | = –7 | | |

**What about when the “calculation” question is in context?**

There are 30 children in a nursery school.

At least 1 adult is needed for every 8 children in the nursery.

Work out the least number of adults needed in the nursery.

**Probability = 1 and Probability Scale**

1. *It’s important to remember that the sum of probabilities of something happening or not happening = 1*
2. *You are advised to write probability as a fraction (there is no need to write your answer in its simplest form unless asked to do so) or a decimal (Not a ratio or %)*

**Now have a go:**

|  |
| --- |
| The probability that a new fridge has a fault is 0.015.  What is the probability that a new fridge does **not** have a fault? |
| There are only 7 blue pens, 4 green pens and 6 red pens in a box.  One pen is taken at random from the box.  Write down the probability that this pen is blue. |
| Sammy spins a fair 4-sided spinner.  (i) On the probability scale, mark with a cross (×) the probability that the spinner will land on **B**.  (ii) On the probability scale, mark with a cross (×) the probability that the spinner will land on **F**. |
| Here is a probability scale. It shows the probability of each of the events A, B, C and D. A    Write down the letter of the event that is  (a) certain. (b) unlikely |
| An ordinary fair dice is thrown once.  (a) On the probability scale below, mark with a cross (×) the probability that the dice lands on an odd number.     1. Write down the probability that the dice lands on a number greater than 4 |

Page 1/ 2

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| There are only blue cubes, red cubes and yellow cubes in a box.  The table shows the probability of taking at random a blue cube from the box.  The number of red cubes in the box is the same as the number of yellow cubes in the box.  Complete the table.   |  |  |  |  | | --- | --- | --- | --- | | Colour | Blue | Red | Yellow | | Probability | 0.2 |  |  | |
| Here is a list of numbers : 6 4 8 9 4 3  Aisha picks at random one of the numbers.  What is the probability that she picks an odd number? |
| Four biased coins, A, B, C and D are thrown.  The probability that each coin will land on Heads is shown in the table.   |  |  | | --- | --- | | Coin | Probability | | A | 0.33 | | B | 0.033 | | C |  | | D | 30% |   (a) Which coin is least likely to land on Heads?  (b) Which coin is most likely to land on Heads?  Julie says: “The probability that coin C will land on Heads is the same as the probability that  coin C will land on Tails.”   1. Is she correct? Give a reason for your answer.   Coin B is going to be thrown 4000 times.  (d) Work out an estimate for the number of times coin B will land on Heads. |

**Metric conversions**

1. *You need to know how to change between metric units of measurement including*

*mm* <-> *cm* <-> *m* <-> *km*

*millilitres* <-> *litres grams* <-> *kilograms*

**Now have a go:**

|  |  |
| --- | --- |
| Change 365 cm into metres. | Change 2.7 kg into grams. |
| Change 35 cm to mm | Change 7700 millilitres to litres |
| Change 0.32 kilograms to grams | Change 4560 g into kg. |
| Change 7.3 m into mm. | Change 1756 grams to kilograms. |
| Change 1.5 kilometres to metres. | Change 4 kilometres into metres. |

**What about when the “calculation” question is in context?**

Shaun is 1.88 m tall.

David is 6 cm taller than Shaun.

How tall is David?

**Types of number**

1. *You need to know which numbers are classified as prime numbers, square numbers and cube numbers. (1 is not a prime number!)*
2. *When it comes to identifying factors and multiples of numbers students often get these terms mixed up.*

**Now have a go:**

|  |  |
| --- | --- |
| Write down all the factors of 18. | Write down the first even multiple of 7 |
| Write down a multiple of 6 that is between 40 and 50. | Write down all the prime numbers between 20 and 30 |
| Write down all the factors of 30 | Write down two factors of 15 |
| Write down a square number that is also an odd number. | Write down a prime number that is between 20 and 30 |
| Write down two prime numbers that have a sum of 32 | Write down a multiple of 8 that is between 41 and 60 |
| Write down two factors of 12 |  |
| Here is a list of numbers. 7 8 15 16 18 22  Write down the number from the list that is a multiple of 6 | |
| Here is a list of numbers. 3 5 7 12 15 18 20  From the list, write down a factor of 10 | |
| Here is a list of numbers: 21 22 23 24 25 26 27 28 29  (*a*)From the numbers in the list, write down a square number.  (*b*)From the numbers in the list, write down a number that is a multiple of **both** 4 and 6.  (*c*)Write down all the prime numbers in the list. | |

**What about when the question is in context?**

1. Steve says: “There are more prime numbers between 20 and 30 than there are between 10 and 20”. Is Steve right? You must show how you get your answer.
2. Nidah writes down two different prime numbers. She adds together her two numbers.Her answer is a square number less than 30. Find two prime numbers that Nidah could have written down.
3. Margaret is thinking of a number. She says, “My number is odd. It is a factor of 36 and a multiple of 3” There are two possible numbers Margaret can be thinking of. Write down these two numbers.

**Properties of 2 D shapes and 3 D forms.**

1. *As the title really … you need to know the name of 2D shapes and 3D forms which will include things like vertices, edges, faces*

**Now have a go:**

|  |  |
| --- | --- |
| Write down the mathematical  name of quadrilateral **Q**. | Here is a 3-D shape.  Write down the name of this 3-D shape.  Write down the number of edges of this 3-D shape. |
| The centre of this circle is marked with a cross (×).  Write down the mathematical name of the straight line shown in the circle. | |
| Write down the mathematical name of the straight line that is  touching the circle | |
| On the diagram above, draw a diameter of the circle. | On the diagram below, draw a segment of the circle.  Shade the segment. |

**Area of simple shapes**

1. *Make sure you know how to calculate the area of: a rectangle, triangle, circle, parallelogram and always remember to add units to your answer if they aren’t written on the answer line of the exam paper.*
2. *A common mistake when working out area of a triangle is to do: length x width and forgetting to divide the answer by two!*

**Now have a go:**

|  |  |
| --- | --- |
| The diagram shows two shapes drawn on a centimetre grid.  Find the area of shape **P**. | The length of a rectangle is twice as long as the width of the rectangle.  The area of the rectangle is 32 cm2.  Draw the rectangle on the centimetre grid. |
| Here is a rectangle.  Coby has to find the perimeter of this rectangle.  He writes: Perimeter = 7 x 3  What mistake has Coby made? | |
| Here is a triangle.  Iram solves a problem about this triangle to find the value of x.  Her answer is : x = - 2  Explain why Iram’s answer must be wrong. | |

**Sequences**

1. *You need to be able to extend sequences from a picture and work out the number of “Things” needed for a specific position in this sequence.*
2. *You also need to be able to work with sequences without pictures – finding the next term/s or a term in a specific position. In addition, you also need to be able to find the nth term.*

**Now have a go:**

|  |  |
| --- | --- |
| A sequence of patterns is made from circular tiles and square tiles Here are the first three patterns in the sequence.  (*a*)How many square tiles are needed to make pattern number 6?  (*b*)How many circular tiles are needed to make pattern number 20? | |
| Here are the first six terms of an arithmetic sequence: 3 8 13 18 23 28  (*a*)Find an expression, in terms of *n*, for the *n*th term of this sequence.  The *n*th term of a different sequence is 3*n*2 Nathan says that the 4th term of this sequence is 144.  (*b*)Is Nathan right? Show how you get your answer. | |
| Here are the first four terms of a number sequence : 2 5 11 23  The rule to continue this sequence is  multiply the previous term by 2 and then add 1  Work out the 5th term of this sequence. | |
| Here are the first 4 terms of a sequence 2 9 16 23   1. Write down the next term in the sequence. Explain how you got your answer 2. Work out the 10th term of the sequence. | |
| Here are the first five terms of a sequence.  1 3 6 10 15  Write down the next two terms of the sequence. | The *n*th term of a sequence is 3*n* + 4 Explain why 21 is not a term of this sequence. |
| Here are the first five terms of a Fibonacci sequence 3 3 6 9 15  Write down the next two terms of the sequence. | The first three terms of a different Fibonacci sequence are  a a 2a  Find the 6th term of this sequence. |
| Here are the first three terms of a different sequence. 1 2 4  Write down two numbers that could be the 4th term and the 5th term of this sequence.  Give the rule you have used to get your numbers. | |
| The first term of a sequence of numbers is 24 The term-to-term rule of this sequence is ‘add 8’  Josie says: “No number in this sequence is in the 5 times table.”  (a) Give an example to show that Josie is wrong.  (b) Is 85 a number in this sequence? Give a reason for your answer. | |

**Forming equations / expressions**

1. *Sometimes you will be explicitly asked to “write an expression/formula” but you may also find it useful to do this for other questions too.*

**Now have a go:**

|  |  |
| --- | --- |
| Here are five straight rods.    All measurements are in centimetres. The total length of the five rods is *L* cm.  Find a formula for *L* in terms of *a*. Write your formula as simply as possible. | |
| Ben is n years old.  Chloe is twice as old as Ben.  Dan is five years younger than Ben.  The total of Ben’s age, Chloe’s age and Dan’s age is T years.  Find a formula for T in terms of n. | |
| There are y boats on a lake.  There are 7 people in each boat.  Write an expression, in terms of y, for the total number of people in the boats. | The length of a line is x centimetres.  Write down an expression, in terms of x, for the length of the line in millimetres. |
| Cups are sold in packs and in boxes.  There are 12 cups in each pack.  There are 18 cups in each box.  Alison buys *p* packs of cups and *b* boxes of cups.  Write down an expression, in terms of *p* and *b*, for the total number of cups Alison buys. | |
| Kiaria is 7 years older than Jay.  Martha is twice as old as Kiaria.  The sum of their three ages is 77.  Find the ratio of Jay’s age to Kiaria’s age to Martha’s age. | |

**Coordinates**

1. *You need to be able to read and plot coordinates in all four quadrants (basically this means anywhere on a coordinate grid)*

**Now have a go:**

|  |
| --- |
| Write down the coordinates of the point *A*.  Plot the point with coordinates (2, 9).  Label this point *B*. |
| Plot the point with coordinates (3, 2)  Label this point A.  Write down the coordinates of the  midpoint of BC. |

**Ratio**

1. *You need to be able to simplify a ratio in addition to using a ratio to share a given amount.*
2. *Take your time – don’t simply add the numbers in the ratio and then divide the amount you are sharing! Drawing a bar model to illustrate the context will really help!*

**Now have a go:**

|  |  |
| --- | --- |
| Here is a grid of squares.  Write down the ratio of the number of shaded squares  to the number of unshaded squares. | |
| A farmer has 20 boxes of eggs. There are 6 eggs in each box.  Write, as a ratio, the number of eggs in two boxes to the total number of eggs.  Give your answer in its simplest form. | |
| Write the ratio 4.5 : 2.25 in the form n : 1 | |
| Harry, Regan and Kelan share £450 in the ratio 2 : 5 : 3  How much money does Kelan get? | Annie and Lily share some money in the ratio  4 : 3 What fraction of the money does Lily get? |
| Rosie and Dan share some sweets. Dan gets of the sweets.  Write down the ratio of the number of sweets Rosie gets to the number of sweets Dan gets. | |
| Ali, Ben and Cathy share an amount of money in the ratio 6 : 9 : 10  What fraction of the money does Ben get? | |
| A path is made of white tiles and grey tiles. of the tiles are white.  Write down the ratio of white tiles to grey tiles. | |
| A path is made of white tiles and grey tiles. of the tiles are white.  There is a total of 56 tiles. Work out the number of grey tiles. | |
| There are only red buttons, yellow buttons and orange buttons in a jar.  The number of red buttons, the number of yellow buttons and the number of orange buttons are in the ratio 7 : 4 : 9 Work out what percentage of the buttons in the jar are orange. | |

**Sometimes a question can appeared more difficult than it actually is! Have a go:**

Azmol, Ryan and Kim each played a game.

Azmol’s score was four times Ryan’s score.

Kim’s score was half of Azmol’s score.

Write down the ratio of Azmol’s score to Ryan’s score to Kim’s score.

**Percentages**

1. *Make sure you can find key percentages with and without a calculator!*

**Now have a go:**

|  |  |
| --- | --- |
| Work out 60% of 70. | Work out 20% of 80 |
| Azmol is paid £1500 per month.  He is going to get a 3% increase in the amount of money he is paid.  Work out how much money Azmol will be paid per month after the increase. | |
| Jack’s driving school has two offers.   |  |  |  | | --- | --- | --- | | **Offer 1** |  | **Offer 2** | | First driving lesson free |  | All driving lessons | | All other driving lessons normal price |  | 5% off the normal price |   The normal price of a driving lesson is £24.  Douglas is going to have 12 driving lessons.  Which is the cheaper offer for 12 driving lessons, Offer 1 or Offer 2?  You must show how you get your answer. | |

**Fractions**

1. *This is a topic that most of us have done since primary school to varying degrees and yet some people still find it tough to remember the different methods.*
2. *Practice will make a difference … the more you do, the better you will get at it!*

**Now have a go:**

|  |  |
| --- | --- |
| = 1 | Work out of 70 |
| Find of 30 | Find the number that is exactly halfway between and |
| Work out | Work out |
| Work out | Work out |
| Work out | Work out |
| of a number is 32. Find the number. | Jim thinks of a number. of Jim’s number is 48. Work out of Jim’s number. |
| 60 students were asked how they get to school. The table shows the results.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | **Bus** | **Walk** | **Car** | **Bicycle** | | **Number of students** | 15 | 27 | 12 | 6 |   What fraction of the 60 students did **not** walk to school? | |
| The normal price of a bicycle is £120  In a sale, there is off the normal price of the bicycle.  Work out the price of the bicycle in the sale. | |
| There are 495 coins in a bottle.  of the coins are £1 coins. 124 of the coins are 50p coins.  The rest of the coins are 20p coins. Work out the total value of the 495 coins | |
| Sue has 2 cats. Each cat eats of a tin of cat food each day. Sue buys 8 tins of cat food.  Has Sue bought enough cat food to feed her 2 cats for 14 days?  You must show how you get your answer. | |

**Bar Charts and Pictograms**

1. *You need to be able to read information from various types of charts and diagrams and also complete them given information. Just because they are easy questions don’t rush them – many students lose marks not reading the question fully.*

**Now have a go:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The table shows the lengths of five rivers.   |  |  | | --- | --- | | **River** | **Length (km**) | | Trent | 297 | | Don | 112 | | Severn | 354 | | Thames | 346 | | Mersey | 113 |   (*a*)Write down the rivers in order of length. Start with the shortest river.  Ami says: “The River Thames is more than three times as long as the River Don.”  (*b*)Show that Ami is correct. |
| A teacher asks the students in Year 6 what type of transport they use to get to school.  The dual bar chart shows some of the results.  (*a*)What is the most popular type of transport used by the boys?  (*b*)7 girls walk to school. Show this information on the dual bar chart.  (*c*)More of the students get to school by car than by bus. How many more?  The number of students in Year 5 is the same as the number of students in Year 6.  (*d*)What is the total number of students in Years 5 and 6? |
| David sells CDs in a shop. The tally chart shows information about the number of CDs David sold on Monday, on Tuesday and on Wednesday.   |  |  |  | | --- | --- | --- | |  | **Tally** | **Frequency** | | **Monday** |  | 12 | | **Tuesday** |  | 18 | | **Wednesday** |  | 8 |   (*a*)Write down **one** thing that is wrong with the tally chart.  David drew this pictogram to show the information for Tuesday and Wednesday.    (*b*)Write down **one** thing that is wrong with this pictogram. |
| The pictogram shows information about the number of pictures sold in an art shop in each of January, February and March.  (a) Write down the number of pictures sold in January.  12 pictures were sold in April.  (b) Show this information on the pictogram.   1. What was the total number of pictures sold in these four months? |
| The pictogram shows information about the number of vinyl records sold in a shop on  Monday and on Tuesday.    (a) Write down the number of vinyl records sold  (i) on Monday,  (ii) on Tuesday.  On Wednesday and Thursday a total of 36 vinyl records were sold.  The number of records sold on Thursday was 8 times the number of records sold on  Wednesday.   1. Use this information to complete the pictogram. |
| Mrs Brown asked each child in her class which pet they liked best.  Here are her results.  dog rabbit cat dog dog hamster  cat dog rabbit hamster cat cat  dog dog cat dog rabbit dog  (a) Complete the frequency table for this information.     1. On the grid below, draw a bar chart for this information. 2. Write down the most popular pet. |

**Averages**

1. *Whilst there are very few 1 mark “averages” questions, there are lots of 2/3 mark questions and so you need to know the difference between mean, mode and median and also how to calculate the range of a set of numbers.*

**Now have a go:**

|  |
| --- |
| Here is a list of numbers: 6 4 8 9 4 3  Work out the median. |
| Here is a list of numbers: 12 15 14 17 22 19 13  Bridgit says: “To work out the median you find the middle number, so the median of these numbers is 17”  Bridgit’s answer is **not** correct.  (*a*)What is wrong with Bridgit’s method?  (*b*)Work out the range of the numbers in the list.  (*c*)Work out the mean of the numbers in the list. |
| Clara has five cards.    There is a number on each card. Two of the numbers are hidden.  The mode of the five numbers is 3 The mean of the five numbers is 5  Work out the two numbers that are hidden. |
| The stem and leaf diagram below gives information about the ages of people in a social club.    Find the range of these ages. |
| The table shows information about the numbers of points scored by 30 students in a quiz.  Number of points Frequency   |  |  | | --- | --- | | Number of points | Frequency | | 0 | 4 | | 1 | 3 | | 2 | 7 | | 3 | 5 | | 4 | 6 | | 5 | 5 |   (a) Find the modal number of points. (b) Work out the total number of points scored. |

**Combinations.**

1. *Be systematic when listing combinations of items OR events happening and check that you have listed all the possible combinations. Be careful not to list duplicates or any impossible combinations.*

**Now have a go:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Priti is going to have a meal.  She can choose one starter and one main course from the menu.   |  |  | | --- | --- | | **Menu** | | | **Starter** | **Main Course** | | Salad | Pasta | | Fish | Rice | | Melon | Burger |   Write down all the possible combinations Priti can choose. |
| Mason throws a coin 3 times.  The outcome of each throw is either Heads or Tails.  List all the possible outcomes of the 3 throws. |

**Product of prime factors.**

1. *In addition to being able to write numbers as a product of prime factors its also useful to know how to use this for finding HCF and LCM’s of two numbers.*
2. *Remember that product means “x” and NOT “+”*

**Now have a go:**

|  |
| --- |
| Express 56 as the product of its prime factors. |
| Write 36 as a product of its prime factors. |

**What about HCF?**

Find the highest common factor (HCF) of 72 and 90

**Substitution / Expanding & factorising**

1. *In addition to being able to solve equations and simplify expressions there are a couple of other skills that can be tested. Remember:* 
   1. *Substitution means substituting a number for a letter*
   2. *Expanding means to eliminate the brackets and factorising means “taking out” factors in the case of single brackets,*

**Now have a go:**

|  |  |
| --- | --- |
| *T* = 4*v* + 3  Work out the value of *T* when *v* = 2 | w = 4u + 3  Find the value of w when u = 8 |
| v2 = u2 + 2as  u = 12 a = –3 s = 18  Work out a value of v. | P = 7r + 3q  Work out the value of P when r = 5 and q = –4 |
| v = u + at  u = 1, a = -3 and t =  Work out the value of *v*. | |
| You can use this rule to work out the total hire charge, in pounds (£), for hiring a 3D printer for a number of weeks.  Total hire charge (£) = number of weeks x 70 + 50  Mia wants to hire a 3D printer for 4 weeks.  Work out the total hire charge.  Zahir hires a 3D printer. The total hire charge is £680  For how many weeks does Zahir hire the 3D printer? | |
| Expand and simplify (2*x* + 1)(3*x* – 2) | Expand and simplify (x + 5)(x – 9) |
| Expand 5(2*m* – 3) | Factorise fully 9x2 + 6x |
| Factorise fully 9b – 3b2 | Factorise 3n + 12 |

**Time (including simple speed and distance)**

1. *It’s really important to remember 60 minutes = 1 hour. An hour can be split into “parts of an hour” too : (0.25) of an hour = 15 mins. A common mistake is to addition with time as a column method (like normal addition). DON’T DO THIS!*
2. *Whilst you can use the formula it makes a lot of sense for simple speed, distance and time questions, to think of speed as how far you travel in a unit of time. For example, 60 miles/hour is 60 miles in 1 hour. This can then be scaled up or scaled down to find how far you will travel in 30 minutes or 15 minutes or even 20 minutes.*

**Now have a go:**

|  |  |
| --- | --- |
| Write 180 minutes in hours. | Work out the difference, in minutes, between 1 hour 25 minutes and 1 hours. |
| Ruth left her home at 9 am and walked to the library.  She got to the library at 10 30 am.  Ruth walked at a speed of 4 mph.  Work out the distance Ruth walked. | Ruth got to the library at 10 30 am.  She stayed at the library for 50 minutes.  Then she walked home.  Ruth took 1 hours to walk home.  At what time did Ruth get home? |
| Here is part of a train timetable.  Graham gets to the station in Brighton at 07 15   1. Work out how many minutes he has to wait until 07 22 2. Work out how long it will take the 07 22 train to get to London. | |
| Steve drove from his home to his friend’s house.  He stayed at his friend’s house and then drove home.  Here is Steve’s travel graph   1. For how many minutes did Steve stay at his friend’s house? 2. What was Steve’s average speed on his journey home? | |

**Standard Form**

1. *Standard form is a really useful way of writing large or small numbers using powers of 10.*

**Now have a go:**

|  |  |
| --- | --- |
| Write 1.452 × 103 as an ordinary number. | Write 32 460 000 in standard form. |
| Write 3.42 x 104 as an ordinary number. | Write 0.00562 in standard form. |
| Write 4.96 x 10-3 as an ordinary number. | Write the number 0.000 075 47 in standard form. |