

Year 7 Maths

Knowledge Organiser

Term 2

| | |
|--------------|---------------|
| Name: | Class: |
|--------------|---------------|

| Keyword | Definition |
|-------------------|-------------------------------------------------------------------------------------------------|
| Numerator | The top number in a fraction. |
| Denominator | The bottom number in a fraction. |
| Improper Fraction | A fraction where the numerator is not smaller than the denominator. |
| Mixed Number | A combination of a whole number and a fraction. |
| Product | The result of multiplication. |
| Percent | Out of 100 |
| Simplify | To make simpler or easier to understand by reducing the size of numbers or the number of terms. |
| Reciprocal | The result of dividing 1 by the number. |

| | |
|------------------------|--|
| Homework 1 due: | |
| Homework 2 due: | |
| Homework 3 due: | |



Term 2 Overview

Big Questions for the term

Measures

- What are the metric units for length?
- What are the metric units for volume and mass?
- How do we convert time?

Fractions, Decimals and Percentages

- How do we represent fractions?
- What do we need to do to compare and order fractions?
- How do we convert between mixed number and improper fractions?
- How do I work out fraction of amounts?
- How do we add and subtract fractions?
- How do we multiply fractions by another fraction?
- How do we divide fractions by fractions?
- Where can we see fractions in other topics?
- What is a percentage?
- How can we use chunking to solve percentage problems?
- How can we convert numbers between fractions, decimals and percentages?

Knowledge Retrieval Questions – From Term 1

Unit 1 – Calculations and Accuracy

| # | Question | Answer |
|----|-------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1 | What does the word sum mean? | The result of addition. |
| 2 | What does consecutive mean? | Following each other continuously. |
| 3 | How do you find the difference between two numbers? | Subtract the smaller number from the larger one. |
| 4 | What should your answer be if the question tells you to calculate? | A number |
| 5 | What should your answer be if the question tells you to evaluate? | A number |
| 6 | How do you divide a number by 10? | Move all the digits 1 place to the right |
| 7 | How do you multiply a number by 10? | Move all the digits 1 place to the left |
| 8 | What is subtracting a negative number equivalent to? | Adding a positive number |
| 9 | What is adding a negative number equivalent to? | Subtracting a positive number |
| 10 | What is a term-to-term rule? | A rule telling you how to get from one term to the next in a sequence |
| 11 | In a sequence, what is meant by a term? | One of the numbers in the sequence |
| 12 | What is the first step when trying to find the next term in a sequence? | Identify the pattern. |
| 13 | What is a linear sequence? | A number pattern which increases or decreases by the same amount each time. |
| 14 | How do you work out the value of a digit in a long number? | Ignore every other digit (make them zeroes) |
| 15 | How do you add decimals? | Same method as usual, lining up the decimal points |
| 16 | How do you subtract decimals? | Same method as usual, lining up the decimal points |

Unit 2 – Integers, Powers and Roots

| # | Question | Answer |
|----|------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 1 | What does the word product mean? | The result of a multiplication. |
| 2 | What sign would the product of 2 negative numbers have? | Positive |
| 3 | What sign would the product of a positive and a negative number have? | Negative |
| 4 | What sign would the answer to a negative number divided by a positive number have? | Negative |
| 5 | What is the definition of a square number? | The product of a number and itself |
| 6 | List the first 15 square numbers. | 1,4,9,16,25,36,49,64,81,100,121,144,169,196,225 |
| 7 | What is the definition of a factor? | A number which divides another number exactly. |
| 8 | What is the definition of a multiple? | A number in another number's times table. |
| 9 | What is the definition of a prime number? | A number with only 2 factors. |
| 10 | Why do we use BIDMAS? | Order of operations |
| 11 | How do you convert a mixed number to an improper fraction? | Multiply the whole number by the denominator and add it to the numerator |
| 12 | What does HCF stand for? | Highest Common Factor |
| 13 | What does LCM stand for? | Lowest Common Multiple |
| 14 | What is a cube number? | The product of 3 equal numbers. |
| 15 | How do you divide by a fraction? | Multiply by its reciprocal (the fraction flipped over) |

Knowledge Retrieval Questions – Term 2

Unit 3 - Measures

| # | Question | Answer |
|---|-------------------------------------------|------------------|
| 1 | How do you convert millimetres to metres? | Divide by 1000 |
| 2 | How do you convert metres to centimetres? | Multiply by 100 |
| 3 | How do you convert metres to kilometres? | Divide by 1000 |
| 4 | How do you convert hours into minutes? | Multiply by 60 |
| 5 | How do you convert seconds into minutes? | Divide by 60 |
| 6 | How do you convert kilograms into grams? | Multiply by 1000 |
| 7 | How do you convert kilograms into tonnes? | Divide by 1000 |
| 8 | How do you convert litres to millilitres? | Multiply by 1000 |

Unit 4 – Fractions, Decimals and percentages

| # | Question | Answer |
|----|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 1 | What is a numerator? | Top number in a fraction |
| 2 | What is a denominator? | Bottom number in a fraction |
| 3 | What operation does a fraction represent? | Division |
| 4 | Which operation do we use for the word 'of'? | Multiplication |
| 5 | What's the first step when adding or subtracting fractions? | Write the fractions with a common denominator |
| 6 | How do you multiply fractions? | Multiply the numerators and multiply the denominators. |
| 7 | How do you convert a decimal to a percentage? | Multiply by 100 (%) |
| 8 | How do you simplify fractions? | Divide both the numerator and denominator by a common factor. |
| 9 | How do you find an equivalent fraction? | Multiply or divide the numerator and denominator by the same number. |
| 10 | How do you find a fraction of an amount? | Divide the amount by the denominator and multiply by the numerator. |
| 11 | What does percent mean? | Out of 100 |
| 12 | How do you convert a fraction to a decimal if the denominator is a factor of 100? | Write the equivalent fraction with a denominator of 100 (then divide by 100) |
| 13 | How do you convert a decimal to a fraction? | The numerator is the same digits without the decimal point, the denominator is the place value of the last digit. |
| 14 | How do you convert a percentage to a decimal? | Divide by 100 (%) |

Term 2 - Homework 1

| # | Type | Question | Answer |
|---|---------------|---------------------------------------|--------|
| 1 | Knowledge | What is the definition of a multiple? | |
| | Application 1 | Give an example of a multiple of 10 | |
| | Application 2 | Give an example of a multiple of 19 | |

| | | | |
|---|---------------|-------------------------------------|--|
| 2 | Knowledge | What is the definition of a factor? | |
| | Application 1 | Give an example of a factor of 27 | |
| | Application 2 | Give an example of a factor of 91 | |

| | | | |
|---|---------------|------------------------------------------------------------|--|
| 3 | Knowledge | How do you convert a mixed number to an improper fraction? | |
| | Application 1 | Convert 9 and $\frac{8}{9}$ into an improper fraction. | |
| | Application 2 | Convert 13 and $\frac{15}{16}$ into an improper fraction. | |

| | | | |
|---|---------------|----------------------------------|--|
| 4 | Knowledge | What does the word product mean? | |
| | Application 1 | What is the product of 8 and 10? | |
| | Application 2 | What is the product of 9 and 19? | |

| | | | |
|---|---------------|------------------------|--|
| 5 | Knowledge | What is a cube number? | |
| | Application 1 | What is 2 cubed? | |
| | Application 2 | What is 7 cubed? | |

| # | Type | Question | Answer |
|---|---------------|-----------------------------------------------------------------------|--------|
| 6 | Knowledge | What sign would the product of a positive and a negative number have? | |
| | Application 1 | What is the product of 8 and -10? | |
| | Application 2 | What is the product of 15 and -10? | |

| | | | |
|---|---------------|--------------------------------|--|
| 7 | Knowledge | Why do we use BIDMAS? | |
| | Application 1 | Calculate $51 + 2 \times 8$ | |
| | Application 2 | Calculate $188 + 15 \times 17$ | |

| | | | |
|---|---------------|---------------------------------------------------------|--|
| 8 | Knowledge | What sign would the product of 2 negative numbers have? | |
| | Application 1 | What is the product of -10 and -10? | |
| | Application 2 | What is the product of -19 and -8? | |

| | | | |
|---|---------------|-------------------------------|--|
| 9 | Knowledge | What does HCF stand for? | |
| | Application 1 | What is the HCF of 12 and 6? | |
| | Application 2 | What is the HCF of 72 and 80? | |

| | | | |
|----|---------------|--------------------------------------------|--|
| 10 | Knowledge | What is the definition of a square number? | |
| | Application 1 | What is the 10th square number? | |
| | Application 2 | What is the 16th square number? | |

| # | Type | Question | Answer |
|----|---------------|--------------------------------------|--------|
| 11 | Knowledge | How do you divide by a fraction? | |
| | Application 1 | Calculate 2 divided by $\frac{1}{7}$ | |
| | Application 2 | Calculate 2 divided by $\frac{2}{5}$ | |

| | | | |
|----|---------------|------------------------------------------------------------------------------------|--|
| 12 | Knowledge | What sign would the answer to a negative number divided by a positive number have? | |
| | Application 1 | Calculate -80 divided by 10 | |
| | Application 2 | Calculate -255 divided by 17 | |

| | | | |
|----|---------------|-----------------------------------|--|
| 13 | Knowledge | List the first 15 square numbers. | |
| | Application 1 | What is the 9th square number? | |
| | Application 2 | What is the 20th square number? | |

| | | | |
|----|---------------|-------------------------------------------|--|
| 14 | Knowledge | What is the definition of a prime number? | |
| | Application 1 | Is the number 9 prime? | |
| | Application 2 | Is the number 13 prime? | |

| | | | |
|----|---------------|-----------------------------|--|
| 15 | Knowledge | What does LCM stand for? | |
| | Application 1 | What is the LCM of 8 and 2? | |
| | Application 2 | What is the LCM of 9 and 9? | |

Workings Space

Term 2 - Homework 2

| # | Type | Question | Answer |
|---|---------------|-------------------------------------|--------|
| 1 | Knowledge | What is the definition of a factor? | |
| | Application 1 | Give an example of a factor of 15 | |
| | Application 2 | Give an example of a factor of 126 | |

| | | | |
|---|---------------|---------------------------------------------------------|--|
| 2 | Knowledge | What sign would the product of 2 negative numbers have? | |
| | Application 1 | What is the product of -8 and -7? | |
| | Application 2 | What is the product of -14 and -3? | |

| | | | |
|---|---------------|------------------------|--|
| 3 | Knowledge | What is a cube number? | |
| | Application 1 | What is 2 cubed? | |
| | Application 2 | What is 7 cubed? | |

| | | | |
|---|---------------|-----------------------------------------------------------------------|--|
| 4 | Knowledge | What sign would the product of a positive and a negative number have? | |
| | Application 1 | What is the product of 3 and -7? | |
| | Application 2 | What is the product of 17 and -7? | |

| | | | |
|---|---------------|-------------------------------|--|
| 5 | Knowledge | What does HCF stand for? | |
| | Application 1 | What is the HCF of 7 and 8? | |
| | Application 2 | What is the HCF of 42 and 42? | |

| # | Type | Question | Answer |
|---|---------------|---------------------------------------|--------|
| 6 | Knowledge | What is the definition of a multiple? | |
| | Application 1 | Give an example of a multiple of 8 | |
| | Application 2 | Give an example of a multiple of 14 | |

| | | | |
|---|---------------|------------------------------------------------------------|--|
| 7 | Knowledge | How do you convert a mixed number to an improper fraction? | |
| | Application 1 | Convert 5 and $\frac{3}{4}$ into an improper fraction. | |
| | Application 2 | Convert 18 and $\frac{17}{18}$ into an improper fraction. | |

| | | | |
|---|---------------|-------------------------------------------|--|
| 8 | Knowledge | What is the definition of a prime number? | |
| | Application 1 | Is the number 5 prime? | |
| | Application 2 | Is the number 18 prime? | |

| | | | |
|---|---------------|--------------------------------------|--|
| 9 | Knowledge | How do you divide by a fraction? | |
| | Application 1 | Calculate 5 divided by $\frac{1}{6}$ | |
| | Application 2 | Calculate 5 divided by $\frac{2}{4}$ | |

| | | | |
|----|---------------|--------------------------------------------|--|
| 10 | Knowledge | What is the definition of a square number? | |
| | Application 1 | What is the 4th square number? | |
| | Application 2 | What is the 20th square number? | |

| # | Type | Question | Answer |
|----|---------------|------------------------------|--------|
| 11 | Knowledge | What does LCM stand for? | |
| | Application 1 | What is the LCM of 7 and 5? | |
| | Application 2 | What is the LCM of 15 and 8? | |

| | | | |
|----|---------------|----------------------------------|--|
| 12 | Knowledge | What does the word product mean? | |
| | Application 1 | What is the product of 3 and 8? | |
| | Application 2 | What is the product of 5 and 14? | |

| | | | |
|----|---------------|-----------------------------------|--|
| 13 | Knowledge | List the first 15 square numbers. | |
| | Application 1 | What is the 7th square number? | |
| | Application 2 | What is the 17th square number? | |

| | | | |
|----|---------------|------------------------------------------------------------------------------------|--|
| 14 | Knowledge | What sign would the answer to a negative number divided by a positive number have? | |
| | Application 1 | Calculate -21 divided by 7 | |
| | Application 2 | Calculate -187 divided by 11 | |

| | | | |
|----|---------------|--------------------------------|--|
| 15 | Knowledge | Why do we use BIDMAS? | |
| | Application 1 | Calculate $75 + 1 \times 7$ | |
| | Application 2 | Calculate $150 + 20 \times 16$ | |

Workings Space

Term 2 - Homework 3

| # | Type | Question | Answer |
|---|---------------|------------------------------------------|--------|
| 1 | Knowledge | How do you find a fraction of an amount? | |
| | Application 1 | Find $\frac{9}{11}$ of 77 | |
| | Application 2 | Find $\frac{20}{32}$ of 544 | |

| | | | |
|---|---------------|------------------------------------------|--|
| 2 | Knowledge | How do you convert metres to kilometres? | |
| | Application 1 | Convert 3000m into km | |
| | Application 2 | Convert 16000m into km | |

| | | | |
|---|---------------|----------------------------------------------------------|--|
| 3 | Knowledge | How do you find an equivalent fraction? | |
| | Application 1 | State a fraction which is equivalent to $\frac{6}{89}$ | |
| | Application 2 | State a fraction which is equivalent to $\frac{15}{173}$ | |

| | | | |
|---|---------------|-------------------------------------------|--|
| 4 | Knowledge | How do you convert litres to millilitres? | |
| | Application 1 | Convert 8.7 litres into millilitres | |
| | Application 2 | Convert 13.7 litres into millilitres | |

| | | | |
|---|---------------|-----------------------------------------------|--|
| 5 | Knowledge | How do you convert a decimal to a percentage? | |
| | Application 1 | Convert 0.85 into a percentage. | |
| | Application 2 | Convert 0.154 into a percentage. | |

| # | Type | Question | Answer |
|---|---------------|---------------------------------------------|--------|
| 6 | Knowledge | How do you convert a decimal to a fraction? | |
| | Application 1 | Write 0.30 as a fraction. | |
| | Application 2 | Write 0.160 as a fraction. | |

| | | | |
|---|---------------|----------------------------------------------------------------|--|
| 7 | Knowledge | What operation does a fraction represent? | |
| | Application 1 | What calculation would you do to write 7 tenths as a decimal? | |
| | Application 2 | What calculation would you do to write 12 ninths as a decimal? | |

| | | | |
|---|---------------|-------------------------------------------|--|
| 8 | Knowledge | How do you convert millimetres to metres? | |
| | Application 1 | Convert 8700mm into metres | |
| | Application 2 | Convert 13700mm into metres | |

| | | | |
|---|---------------|---------------------------------|--|
| 9 | Knowledge | How do you simplify fractions? | |
| | Application 1 | Fully simplify $\frac{10}{24}$ | |
| | Application 2 | Fully simplify $\frac{72}{108}$ | |

| | | | |
|----|---------------|---------------------------|--|
| 10 | Knowledge | What does percent mean? | |
| | Application 1 | Write 30% as a fraction. | |
| | Application 2 | Write 160% as a fraction. | |

| # | Type | Question | Answer |
|----|---------------|-----------------------------------------------------------------------------------|--------|
| 11 | Knowledge | How do you convert a fraction to a decimal if the denominator is a factor of 100? | |
| | Application 1 | What is $\frac{1}{25}$ as a decimal? | |
| | Application 2 | What is $\frac{7}{250}$ as a decimal? | |

| | | | |
|----|---------------|------------------------------------------|--|
| 12 | Knowledge | How do you convert seconds into minutes? | |
| | Application 1 | Convert 240 seconds into minutes | |
| | Application 2 | Convert 840 seconds into minutes | |

| | | | |
|----|---------------|---------------------------------------------------|--|
| 13 | Knowledge | Which operation do we use for the word 'of'? | |
| | Application 1 | Write the calculation for 'Two thirds of 36' | |
| | Application 2 | Write the calculation for 'Seven twelfths of 180' | |

| | | | |
|----|---------------|----------------------------------------|--|
| 14 | Knowledge | How do you convert hours into minutes? | |
| | Application 1 | Convert 8 hours into minutes | |
| | Application 2 | Convert 13 hours into minutes | |

| | | | |
|----|---------------|-------------------------------------------|--|
| 15 | Knowledge | How do you convert kilograms into tonnes? | |
| | Application 1 | Convert 8900kg into tonnes | |
| | Application 2 | Convert 17300kg into tonnes | |

Workings Space