Home-School Learning Collaboration – Mathematics

Topics in this cycle:	Taught: Spring 2	Year Group: 7

Key knowledge/concepts to be learnt ('Tell me about….')	Websites/blogs/YouTube links and further reading to deepen and consolidate learning
Operations and equations with directed numbers • Ordering of directed numbers • Add/subtract directed numbers • Multiply/divide directed numbers • Roots of positive numbers	https://vimeo.com/518994953 https://vimeo.com/510353138 https://vimeo.com/510353138 https://vimeo.com/516391970 https://vimeo.com/518995446
Addition and subtraction of fractions • Converting between fractions and mixed numbers • Add/subtract unit fraction (same denominator) • Add/subtract fractions from an integer • Add/subtract fractions (different denominator)	https://vimeo.com/519458046 https://vimeo.com/519458698 https://vimeo.com/523798712 https://vimeo.com/523798712

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Key Vocabulary and Definitions To Be Learnt		What Will The Assessment Look Like?
Equivalence	The same in value	The table shows the temperature in Warsaw at different times during the day.
Inverse operation	Inverse of addition is subtraction; inverse of division is multiplication…	
Index	It tells you how many times a number (base) needs to be multiplied by itself	
Power	Another word for index	
Exponent	Another word for index	

6am	10am	2pm	6pm	10pm
−5°C	−3°C	0°C	1°C	2°C

What is the difference in temperature between 10am and 10pm?

_____ °C

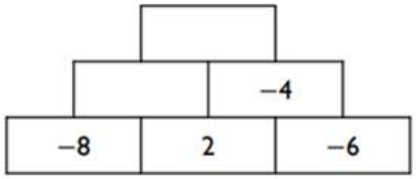
The temperature drops 6°C between 10pm and 6am the next day.
What is the temperature at 6am the next day?

Calculate:

$-5 - 8 =$ _____

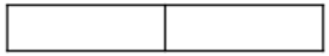
$3 - (-2) =$ _____

Here is an addition pyramid.
The number in each box is the sum of the two numbers below it.
Complete the addition pyramid.



Work out the calculations.
You may use the bar models to help you.

$\frac{1}{2}$ of 60



$\frac{3}{5}$ of 25

Match the cards of equal value.

$\frac{3}{5}$ of 20	25% of 300
$\frac{9}{10}$ of 20	50% of 36
$\frac{3}{4}$ of 100	$66\frac{2}{3}$% of 90
$\frac{5}{6}$ of 72	30% of 40

Teddy works out 4% of £23.89 on his calculator.
The calculator shows:

0.9556

Write down the value of 4% of £23.89 correct to the nearest penny.

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Commutative	Means that numbers in calculation can be swapped around and the answer will be the same	**Family Learning Opportunities**
Numerator	Tells you how many parts we are interested in	
Denominator	Tells you how many equal parts a value was split into	
Fraction	A part of a whole	
Directed numbers	Positive and negative numbers	
Expression	A combination of at least two algebraic terms and at least one operation	
Evaluate	Find numerical value	
		Support your child at completing their homework and to boost SparxMaths XP level. **Discuss the following questions:** **Operations and equations with directed numbers:** • **Representations of directed number:** How far is -3 from zero? How far is 3 from 0? How are they different? What does this tell us about positive and negative numbers? (If using bead strings, they can be moved to emphasise the reflection about 0) • **Order directed numbers:** Is ordering temperatures from hottest to coldest, putting them in ascending or descending order?

		Where would + $\frac{1}{4}$ be on the number line? Is it closer to 0 or 1? How does this help us to put − $\frac{1}{4}$ on the number line? Between which two consecutive integers does −1.5 lie? • **Perform calculations that cross zero:** How could you use the number line to help perform 4-8? What is 4 − 4? What is −4 + 4? What do you notice? How is $-3m + 5m$ different from −3 + 5? How are they the same? • **Add directed numbers:** Why is adding a negative the same as subtracting? Why is 100 + − 102 an easy calculation despite the large numbers? How does partitioning help? Give an example to show the statement "Two negatives make a positive" is wrong • **Subtracting directed numbers:** Using the manipulatives, what happens to the total when I take away 2 negatives? What happens when the lowest score is removed? Does the total increase or decrease? What happens when you subtract a negative number from a positive total? How can you represent this visually? • **Multiplication with directed numbers:** How could we use the number line to answer the question 3 x -2? If 3 × −2 = −6, what is −3 × −2? How do you know? Why is $-3 \times 5a$ equal to $3 \times -5a$? What other calculations give the same answer? • **Using a calculator for directed numbers:** Explain how to use the + - on a calculator. How is it different from the − button? What is the difference between -2.3^2 and $(-2.3)^2$? If there is no sign written in front of a number, is it positive or negative?

		• **<u>Evaluate algebraic expressions:</u>** How do we substitute values into an expression? What is the correct order of operations? Why is it useful to put negative numbers in brackets when substituting? • **<u>Introduction to two-step equations:</u>** How do you know if an equation can be solved in one step or more than one step? Can the solution to an equation be a negative number? How does a bar model help you to decide what step to take first when solving a multi-step equation? • **<u>Solve two-step equations:</u>** What is the same and what is different about these questions and answers? When is it most useful to use a bar model for a two-step equation? How do you know the order of steps to take to solve an equation? • **<u>Using order of operations:</u>** What does it mean when there is a number directly in front of a bracket e.g. 3(6 + 4)? What's the difference between -6^2 and $(-6)^2$? Does a negative number change the order of operations? **<u>Addition and subtraction of fractions:</u>** • **<u>Adding and subtracting algebraic fractions:</u>** What is the same and different about $\frac{1}{2}\mathbf{a}$ **and** $\frac{\mathbf{a}}{2}$**?** What does 'in terms of m' mean? Is it possibly to get a numeric answer?