|  |
| --- |
| An exponential equation is an equation that contains a variable in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**KEY WORDS**ExponentSame basem = nexponentmultipledivideSome exponential equations can be solved ***WITHOUT TECHNOLOGY*** by writing both sides of the equation as powers of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.***Equality of Powers with a Common Base \*\*Called Equating the Powers\*\****If am = an then \_\_\_\_\_\_\_\_\_\_ for a is greater than 0 (a > 0) , a cannot be 1. For example, since 4x and 43 are both powers of 4, the solution to 4x = 43 is x = 3.You need to be able to express numbers in \_\_\_\_\_\_\_\_\_ form.Ex: 4 = 22 ; 9 = 32 or 32 = 25**HOW TO CONVERT INTO EXPONENT FORM**When you need to convert a number into an exponent form. Follow these steps: **ex**: Convert 125 into an exponent* **Step 1:** Identify if the number is the \_\_\_\_\_\_\_\_\_\_ of 2, 3, 5.etc.
* **Step 2:** Repeatedly \_\_\_\_\_\_\_\_\_\_ the number by the number youidentified in **Step 1** until you have 1 as a remainder.
* **Step 3:** The divisor is the base; the repetition is the exponent.
 |

**TRY:** Convert the following numbers into exponent form:

|  |  |
| --- | --- |
| a) 64  | b) $\frac{1}{81}$ |

***EXAMPLE 1 Finding a Common Base -*** Solve each of the following. (find the numerical values of x)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **a)**  | **b)**  | **c)**  | **d)**  | **e)**  |

**REVIEW**

i) Expand 3(x-2) using the distributive rule.

ii) Solve the following equation

|  |  |  |
| --- | --- | --- |
| 4x + 8 = 2x | 5x + 3 = 2x - 6 | 6(x -2) = 4(2x – 1) |

**EXAMPLE 2 – Finding a common base –** solve each equation

|  |  |
| --- | --- |
| **a)**  | **b)**  |

***EXAMPLE 3***

A cross-country skier forgets a mug of coffee and a muffin in a snow bank. Their temperatures, in degrees Celsius, after t minutes can be modelled by the formulas:  and $T\_{muffin}=27×3^{-t}$. Determine when the coffee cools to the same temperature as the muffin.