Suggestions and/or Directions for Implementing Extended Concept (1) Answers

Students will benefit from pencils with erasers, if possible since revisions are part of learning.
Students should be allowed to start on any page of these activities but try to keep on one page.
Students should use their existing and current textbook(s) as a literacy reference for concepts.
After completing Grouped Computation activities, students should assemble with team mates.
Individuals and teams investigate & collect definitions & examples for concepts, then discuss.
Students may revise their definitions and examples with improvement(s) after team discussion.
As teachers mingle among teams collaborating on definitions & examples, they should facilitate
learning by challenging students to complete their assignments by using textbooks and each other.
Usually, stronger students finish first and they can revise their assignments with little or no help
then as more challenged students finish, team leaders should discuss & revise with team mates.
These collaborative teams should be carefully selected with a strong student as leader and
there should not be more than 2 or 3 students in a collaborative team. Leader & team mates!
Team Leaders should assist challenged students with revising and/or improving assignments.
If not enough students are strong enough to be leaders then challenged work with challenged.
Teachers mingle around classroom, when asked about a concept, suggest team mates answer!
If all of the team mates can not answer the question(s) then back to the textbook for more work.
This will naturally and at first be a challenging and frustrating assignment, however, be persistent!
This creates an atmosphere of students helping students & teachers facilitating concept activities.
Completing, Discussing Activities, Revising Concepts, and Collaborating might need (2) periods.
If any students want to take an assignment home then suggest waiting until team decides on results.
Students may want to do them at home since parents will help or complete definitions & examples
but only allow Parents involvement after the Team together has a chance to complete assignments!

Computational Activities alternate daily with Conceptual Activities. Every other Day!

Learning concepts is traditional attempted with workbook exercises, classroom manipulatives,
WWW exercises and manipulatives! Why not a "**Literacy Approach**" along with all the above?

Beginning Numbers * Extended Concepts 1 A

Definitions should be re-stated or paraphrased textbook definitions not word for word!

After completing Conceptual Activities, Students gather in Teams and Collaborate! Provide or Receive Help!

These Conceptual Activities can be done Individual or in Collaborative Teams! But always supervised!

1. Define and provide an example of a number and a numeral! Augments computation!

   What is a number? What is a numeral? Why are they different?

   A number is an idea or an expression such as the number 3 equals # # # or @ @ @ things.

   A numeral is a symbol to represent an idea such as the numeral 5 is the symbol for # # # # # things.

2. Define and provide an example for proper and improper fractions. Augments computation!

   What is a fraction? What is a numerator? What is a denominator?

   A proper fraction is such that the numerator is less than the denominator. ( 2/5 )

   An improper fraction is such that the numerator is more than the numerator ( 7/3 ).

3. Define and provide an example for simple and mixed decimal. Augments computation!

   What is a decimal? What is a simple decimal? What is a mixed decimal?

   A simple decimal is such that the value is less than one. ( .25 )

   A mixed decimal is such that the value is more than one. ( 3.45 )

4. Define and provide an example(s) for Fraction(s), N&D, P&I, Mixed Number. Augments computation!

   What is a fraction? What is a Numerator & a Denominator?

   What is a Proper & an Improper fraction? What is a mixed number?

   A fraction is part of a whole such as ( 1/2 2/3 4/5… ) Numerator is top & Denominator is bottom.

   A mixed number is a whole & a fraction: ( 2 4/5, 3 5/7, … ) Proper: 2/3, 4/5 Improper: ( 5/2, 7/4, …)

5. Define & provide example of of exponents 0 to 3 as in Beginning Numbers 1 Augments computation!

   An exponent is a small (superscripted number) at the top right of a base number, an exponent indicates how many times the base number is a factor. ( $4^3 = 4 \times 4 \times 4$ ) Think! $B^E = N$ or BEN !

   $4^0 = 1$ $4^1 = 4$ $4^2 = 16$ $4^3 = 64$ Note sequence: 64, 16, 4, 1 helps to define $4^0 = 1$

6. Define & provide an example of any four simple radicals as in Beginning Numbers 1. Augments computation!

   A Radical can be thought of as a uniqure or special division! $\sqrt{\ } 16 = 4 \times 4$ or $\sqrt{\ } 36 = 6 \times 6$

   Radicals in Beginning Numbers are ( Square Roots ): $\sqrt{\ } 9 = 3$ $\sqrt{\ } 25 = 5$ $\sqrt{\ } 49 = 7$ $\sqrt{\ } 81 = 9$

7. Define & provide an example of a ratio and a proportion & apply The Law for Proportions! Augments computation!

   What is a ratio? What does it really mean? How are ratios expressed? 2/3 2 : 3 2 to 3

   A proportion is a statement which represents two equal ratios such as: 3 : 4 = 6 : 8 or 3 to 4 = 6 to 8

   The Law of Proportions: The product of the extremes (outsides) = The product of the means (insides)

   Applying The Law of Proportions: (Extremes or Outsides: 3x8=24) = (Means or Insides: 4x6=24)

8. Define & provide an example of a percentage statement then change to a proportion & solve! Augments computation!

   A percentage is a statement with a percent and two proportional numbers such as: 25% of 16 is 4

   What is a percent? Changing a Percent to a Proportion: 25% of 16 is 4 is 25/100 = 4/16

   Applying The Law of Proportions: (Extremes or Outsides: 25x16=400) = (Means or Insides: 100x4=400)

 

Beginning Numbers * Extended Concepts 1 B

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1. Define and provide an example for the operation of Addition with names included! Use PP to review!

   The operation of Addition can be thought of as combining two ideas or values!

   Such as: Symbolic: 3 + 4 = 7 Ideas or Values: # # # + # # # # = # # # # # # #

   Addition can also be thought of as finding the sum or total! Addend + Addend = Sum

2. Define and provide an example for the operation of Subtraction with names included!! Use PP to review!

   The operation of Subtraction can be thought of as taking away one value from another value!

   Such as: Symbolic: 5 – 2 = 3 Ideas or Values: # # # # # - # # = # # #

   Subtraction can also be thought of as finding a difference! Minuend – Subtrahend = Difference

3. Define and provide an example for the operation of Multiplication with names included! Use PP to review!

   The operation of Multiplication can be thought of as repeated addition of one value!

   Such as: Symbolic: 2 x 3 = 6 Ideas or Values: # # + # # + # # = # # # # # # = 6

   Multiplication can also be thought of as Groups! I want 3 groups of 2!

4. Define and provide an example for the operation of Division with names included!! Use PP to review!

   The operation of Division can be thought of as repeated subtraction of one value from another!

   Such as: Symbolic: 8 / 2 = 4 Ideas or Values: - # # # # - # # # # = 0 None left!

   Division can also be thought of as Groups! How many groups of 4 are in 8!

5. Provide an example of a (6) Digit Number and Identify by Place Value all Digits! Use PP to review!

   Example: 6, 372, 819 Digits alternate between High & Low also Digits do not repeat!

   Defined in words: Place Value provides verbal names for each numeral digit.

   (6) Million, (3) Hundred Thousand, (7) Ten Thousand, (2) Thousand, (8) Hundred, (1) Tens, (9) Ones

6. Provide an example of a (6) Digit Number then Read the Number out loud to team! Use PP to review!

   Example: 6, 372, 819 Notice Digits go Up and Down also Digits do not repeat!

   <u>Reading</u> the Number: Six Million, Three Hundred Seventy-two Thousand, Eight Hundred Nineteen

7. Provide an example of a (6) Digit Number then Write the in words for team to check! Use PP to review!

   Example: Nine Million, Two Hundred Eighty-three Thousand, Six Hundred twenty-five

   <u>Writing</u> the Number: 9, 283, 625 Note: Spelling is Correct and Use of Commas is correct!

8. Provide example of a (6) Digit Number in Expanded Notation then Define in words! Use PP to review!

   Example: 6, 372, 819 Best for Digits to alternate between High & Low also Digits do not repeat!

   Defined in words: Expanded Notation is showing all digits times Place Value.

   Expanded Notation: (6x1,000,000) + (3x100,000) + (7x10,000) + (2x1000) + (8x100) + (1x10) + (9x1)

 

Beginning Numbers * Extended Concepts 1 C

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1. Provide example of a (6) Digit Number in Exponential Notation then Define in words! Use PP to review!

Example: 9, 461, 735 Digits alternate between High & Low <u>also</u> Digits <u>do not</u> repeat!

Defined in words: Expanded Notation is showing all digits times Place Value in Powers of Ten!

Exponential Notation: $( 9x10^6 ) + ( 4x10^5 ) + ( 6x10^4 ) + ( 1x10^3 ) + ( 7x10^2 ) + ( 3x10^1 ) + ( 5x10^0 )$

2. Provide examples of (3) Numbers to be rounded in different ways then define rounding! Use PP to review!

Examples: Round to Hundreds 435 Round to Hundreds 753 Round to Hundreds 682

Defined in words: If the Number to the right of the Digit to be Rounded is

<u>Above</u> 5 then Round UP! <u>Below</u> 5 then remains the same! <u>Exactly</u> 5 then remains the same!

Rounded to Hundreds: 435 => 400 753 => 700 682 => 700

Why does a number remain the same when it is exactly in the Middle?

3. Provide examples of (3) Numbers to be estimated in different ways then define estimating! Use PP to review!

Examples: Estimate the Product of (3,487) x (65,925) => 180,000,000

Defined in words: Estimating is Rounding Numbers for quick answers & predictions!

Suggested Procedure: Round to Single Digit! Multiple Single Digits! Use Zeros from Rounding!

More Examples: Estimate the Product: 74, 592 X 8,639,500 => 630,000,000,000

4. Provide (2) examples of Scientific Notation with Large Numbers then define in words! Use PP to review!

1. Example: 6, 372, 819 Scientific Notation: $6.4 \times 10^6$
2. Example: 4, 825 Scientific Notation: $4.8 \times 10^3$

Definition: Changing Large Numbers into a number between 1 & 10 (times) a power of ten.

5. Provide (3) pairs of examples to Compare Whole Numbers using < = > relation symbols! Use PP to review!

Example: Compare the Numbers: 325 ___ 296 203 ___ 203 309 ___ 415

Less than < Equal = More than >

Solutions: Compare the Numbers: 325 > 296 203 = 203 309 < 415

6. Provide (3) pairs of examples to Compare Fraction Numbers using < = > relation symbols! Use PP to review!

Example: Compare the Numbers: 3/4 ___ 4/6 2/3 ___ 2/3 3/7 ___ 2/9

Less than < Equal = More than >

Solutions: Compare the Numbers: 3/5 < 4/6 2/3 = 2/3 2/7 > 2/9

7. Provide (3) pairs of examples to Compare Decimals Numbers using < = > relation symbols! Use PP to review!

Example: Compare the Numbers: .3 ___ .2 .05 ___ .05 .009 ___ .05

Less than < Equal = More than >

Solutions: Compare the Numbers: .3 > .2 .05 = .05 .009 < .05

8. Provide (3) individual Whole Numbers of different value then Rank Hi to Lo & Lo to Hi! Use PP to review!

Rank Numbers: Increasing Order! 25, 472, 48, 617 => 25, 48, 472, 617

Rank Numbers: Decreasing Order! 32, 509, 17, 308 => 17, 32, 308, 509

Definition: Increasing is from High to Low! Decreasing is from Low to High!

 

Beginning Numbers * Extended Concepts 1 D

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1. Provide (3) individual Fraction Numbers of different value then rank Hi to Lo & Lo to Hi! Use PP to review!
   Rank Numbers: Increasing Order! 2/5, 1/2, 5/8, 3/7 => 2/5, 3/7. 1/2, 5/8
   Rank Numbers: Decreasing Order! 2/5, 1/2, 5/8, 3/7 => 5/8, 1/2, 3/7, 2/5
   Definition: Increasing is from High to Low! Decreasing is from Low to High!

2. Provide (3) individual Decimal Numbers of different value then rank Hi to Lo & Lo to Hi. Use PP to review!
   Rank Numbers: Increasing Order! .25, .09, 408, .6 => .09. .25, .408, .6
   Rank Numbers: Decreasing Order! .25, .09, 408, .6 => .6, .408, .25, .09
   Definition: Increasing is from High to Low! Decreasing is from Low to High!

3. Define Factors then provide an example of a Number such as 24 showing all factors. Use PP to review!
   Definition: A Factor is a divisor that yields a co-factor. All Factors are divisors from 1 to the number itself!
   Determine All Factors of 18 = { 1, 2, 3, 6, 9, 18 } Note the Factors & Co-Factors!
   Determine All Factors of 16 = { 1, 2, 4, 8, 16 } Note the Common Factors of 4!
   Note: Factors are Finite! Multiples are Infinite!

4. Define Multiples then Provide an example of a Number such as 3 showing (6) multiples. Use PP to review!
   Definition: A Multiple is a product of a number times 1,2,3,4... A Multiple divided by a factor yields no remainder.
   All Factors are divisors from 1 to the number itself!
   Determine All Multiples of 3 = { 3, 6, 9, 12, … } Note: 3x1, 3x2, 3x3, 3x4, …
   Determine All Multiples of 6 = { 6, 12, 18, 24, … } Note: 6/2, 12/3, 18/6, …
   Note: Factors are Finite! Multiples are Infinite!

5. Define and provide a few examples of the sets of Counting and Whole Numbers. Use PP to review!
   Counting Numbers are used to determine how many in a group thus: 1,2,3,4,5…
   Whole Numbers are same as Counting numbers but include Zero (0) thus: 0,1,2,3,4…

6. Define and provide a few examples of the sets of Even and Odd Numbers. Use PP to review!
   Definition: Even Numbers have no remainder when divided by 2! Even Numbers: 2,4,6,8,…
   Definition: Odd Numbers have a unique remainder of 1 divided by 2! Odd Numbers: 1,3,5,…
   Note the Set of Even and Odd Numbers are Infinite Sets!

7. Define and provide a few examples of the sets of Prime and Composite Numbers. Use PP to review!
   Definition: Prime Numbers are only divisible by 1 and itself! Prime Numbers: 1,3,5,7,11, …
   Definition: Composite Numbers: No remainder when divided by it's factors! Composite Numbers: 6,12, 28,…
   Note the Set of Prime and Composite Numbers are Infinite Sets!

8. Define and provide a few examples of the sets of Finite and Infinite Numbers. Use PP to review!
   Definition: A Finite Number Set is countable! Finite Number Set: 1,2,4 Factors of 4!
   Definition: A Infinite Number Set is non-countable! Infinite Number Set: 1 ,2, 3, 4, 5,…
   Note the Set of Prime and Composite Numbers are Infinite Sets!