**Unit 1**

Algebraic Expression

Comparison of Numbers

Comparison of Numbers – 2

Definitions

Definitions – 2

Kinds of Numbers

Order of Operations

Order of Operations – 2

Ordering Numbers

Property Identification

Property Identification – 2

Sequencing Numbers

Vocabulary

**Assessment Anchor: A1.1.1 Operations with Real Numbers and Expressions**

**Anchor Descriptor/ Eligible Content**

**A1.1.1.1** Represent and/or use numbers in equivalent form (e.g., integers, fractions, decimals, percents, square roots, and exponents)

**A1.1.1.1.1** Compare and/or order any real numbers. Note: Rational and Irrational may be mixed

**A1.1.1.1.2** Simplify square roots (e.g., $\sqrt{24}$ = 2$\sqrt{6}$ )

Keystone Practice Set

Algebraic Expression

1. State the algebraic expression for each sequence

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 |
| 11 | 23 | 35 | 47 | 59 |

1. 12x -1
2. 12x + 11
3. 12x
4. State the algebraic expression for each sequence

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 |
| 7 | 13 | 19 | 25 | 31 |

1. 6x
2. 6x + 7
3. 6x + 1
4. State the Algebraic Expression for each Sequence

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 |
| 0 | 15 | 30 | 45 | 60 |

1. 15x
2. x + 15
3. x – 15

4. Which Number below is the least?

1. $\sqrt{12}$
2. 3$\frac{4}{9}$
3. 3.67
4. 3$\frac{5}{8}$

5. Which is true?

A. $\frac{4}{9}$ = .40

B. $\frac{π}{2}$ < 2

C. - $\sqrt{3}$ > 3

D. 2.51 < $\sqrt{5}$

6. What list of numbers is in the order from least to greatest?

 A. $\frac{π}{3}$, $\frac{8}{9}$ , $\sqrt{5}$ , 1.75

 B. $\frac{8}{9}$, $\frac{π}{3}$, 1.75,$ \sqrt{5}$

 C. $\sqrt{5, }\frac{8}{9}$, $\frac{π}{3 }$ , 1.75

 D. $\frac{π}{3}$, $\frac{8}{9}$ , 1.75, $\sqrt{5 }$

7. Which correctly completes the number sentence below?

 $\frac{5}{3}< ? <$ $\frac{5}{2}$

1. $\sqrt{2}$
2. $\sqrt{8}$
3. 1.73737373…..
4. $\frac{π}{4}$

8. Which of the following does not belong to the set of real numbers?

 A. $\sqrt{7}$

 B. $\sqrt{-8}$

 C. ($\frac{1}{4})$2

9. Which number below is the least?

 A. - $\sqrt{5}$

 B. - $\sqrt{0.16}$

 C. 0

 D. - $\frac{1}{5}$

10. Which is true?

 A. $\frac{8}{15}$ = .533333…..

 B. 2π > 10

 C. $\sqrt{3}$ > 3

 D. $\sqrt{24}$ < $\sqrt{5}$

11. What list of numbers is in the order from least to greatest?

 A. $\frac{π}{6}$ , $\frac{5}{9}$ , 0.575, $\sqrt{0.37}$

 B. 0.575, $\frac{π}{6}$ , $\sqrt{0.37}$ ,$ \frac{5}{9}$

 C. $\sqrt{0.37}$ , $\frac{π}{6}$ , $\frac{5}{9}$ , 0.575

 D. $\frac{π}{6}$ , $\frac{5}{9}$ , $\sqrt{0.37}$ , 0.575

12. Which correctly completes the number sentence below?

 $\frac{1}{4}$ < ? < $\frac{7}{8}$

1. $\sqrt{\frac{1}{25}}$
2. $\sqrt{3}$
3. 0.1325
4. $\frac{π}{5}$

13. 32 +2 (6 ÷ 3) is a(n):

 A. Algebraic Expression

 B. Equation

 C. Inequality

 D. Numeric Expression

14. (4 + 5 ∙ 2x2) ÷ (2x ∙ 3) is a(n):

 A. Algebraic Expression

 B. Equation

 C. Inequality

 D. Numeric Expression

15. 12x + 4 = 2 – 6x is a(n):

 A. Algebraic Expression

 B. Equation

 C. Inequality

 D. Numeric Expression

16. 32 -16x > - 12x – 24 is a(n):

 A. Algebraic Expression

 B. Equation

 C. Inequality

 D. Numeric Expression

17. 4 + 3 ( 2 + 6) – 42 is a(n):

 A. Algebraic Expression

 B. Equation

 C. Inequality

 D. Numeric Expression

18. a2 + 6a +5 is a(n):

 A. Algebraic Expression

 B. Equation

 C. Inequality

 D. Numeric Expression

19. 4x + 6 < 36 is a(n):

 A. Algebraic Expression

 B. Equation

 C. Inequality

 D. Numeric Expression

20. 24 = 3x + 9y is a(n):

 A. Algebraic Expression

 B. Equation

 C. Inequality

 D. Numeric Expression

21. An equation contains

 A. a ≥, ≤ , < , ≠ , < symbol

 B. an = symbol

 C. only numbers

 D. contains variables

22. An algebraic expression contains:

 A. a ≥, ≤ , < , ≠ , < symbol

 B. an = symbol

 C. only numbers

 D. contains variables

23. An numeric expression contains:

 A. a ≥, ≤ , < , ≠ , < symbol

 B. an = symbol

 C. only numbers

 D. contains variables

24. An inequality contains

 A. a ≥, ≤ , < , ≠ , < symbol

 B. an = symbol

 C. only numbers

 D. contains variables

25. Which of the following does not belong to the set of real numbers?

 A. $\sqrt{5}$

 B. $\sqrt{-25}$

 C. ($\frac{1}{3})$2

 D. – 6.13333333…

26. Which of the following does not belong to the set of integers?

 A. $\sqrt{16}$

 B. - $\sqrt{25}$

 C. 42

 D. $\sqrt{0.016}$

27. Which of the following belongs to the set of irrational numbers?

 A. 50

 B. – 64

 C. $\sqrt{21}$

 D. $\frac{2}{3}$

28. Which of the following belongs to the set of counting numbers?

 A. 26

 B. – 15

 C. 0

 D. 0.75

29. Which of the following belongs to the set of integers numbers?

 A. $\frac{2}{5}$

 B. 3.5

 C. $\sqrt{-9}$

 D. -5

30. Evaluate the expression using Order of Operations

 32 + 2 (6 ÷ 3)

1. 68
2. 36
3. 34

31. Evaluate the expression using Order of Operations

 ( 4 + 5 ∙ 22) ÷ (2 ∙ 3)

1. 6
2. 4
3. 54

32. Evaluate the expression using Order of Operations

 12 + 4 ÷ 2 - 6 + 3

1. 11
2. 5
3. 14

33. Evaluate the expression using Order of Operations

32 ÷ 8 ∙ 3 + 12

1. 20
2. 24
3. 19

34. Evaluate the expression using Order of Operations

 $\frac{(2\*5)^{2}+ 4}{3^{2}-5}$

1. 26
2. 51
3. 104

35. Evaluate the expression if a = 3, b = 9 and c = 4

 a2 + b – c2

1. -1
2. 1
3. 2

36. Evaluate the expression if a =12, b = 9 and c = 4

 $\frac{b^{2}-2c^{2}}{a+c-b}$

1. 7
2. $\frac{8}{25}$
3. 324.57

37. Evaluate the expression using Order of Operations

 62 – 32 ∙ 8 + 11

1. 435
2. 79
3. 1

38. Evaluate the expression using Order of Operations

 42 ÷ 8

1. 5.25
2. 8
3. 2

39. Evaluate the expression using Order of Operations

 12 + 4 ÷ 2 – 6 + 3

1. 11
2. 5
3. 14

40. Evaluate the expression using Order of Operations

 $\frac{2}{3}$[30 ÷ (10 – 8)]

1. 10
2. 30
3. 15

41. Evaluate the expression using Order of Operations

 2[12 + (5 - 2)2]

1. 34
2. 36
3. 42

42. Evaluate the expression using if x = 6, y = 8 , and z =3

 x2 + y2 – 10z

1. 0
2. 54
3. 70

43. Evaluate the expression if x =6, y = 8, and z = 3

 $\frac{3y+ x^{2} }{z}$

1. 12
2. 20
3. 43

44. Order the following numbers from least to greatest.

 $\sqrt{40}$, 6.75, $\frac{28}{5}$, 6$\frac{1}{8}$

1. $\sqrt{40}$, $\frac{28}{5}$, 6.75, 6$\frac{1}{8}$
2. $\sqrt{40}$, 6$\frac{1}{8}$, 6.75, $\frac{28}{5}$
3. $\frac{28}{5}$, 6$\frac{1}{8}$, $\sqrt{40}$, 6.75

45. Order the following numbers from least of greatest

 8.4, $\frac{25}{3}$, $\sqrt{72}$, $\frac{25}{4}$

1. 8.4, $\frac{25}{3}$, $\sqrt{72}$ , $\frac{25}{4}$
2. $\frac{25}{4},\frac{25}{3}$, 8.4,$ \sqrt{72}$
3. 8.4,$ \sqrt{72}$ , $\frac{25}{4}$, $\frac{25}{3}$

46. What list of numbers is in the order from least to greatest?

1. 2, $\sqrt{5}$, $\sqrt{32}$, 3
2. $\sqrt{32}$ , 3, $\sqrt{5}$ , 2
3. 2, $\sqrt{5 }$, 3, $\sqrt{32}$
4. 2, 3, $\sqrt{5} $, $\sqrt{32}$

47. What list of numbers is in the order of least to greatest?

1. 4$\frac{5}{8}$, 4.83, 4$\frac{1}{3}$, $\sqrt{18}$
2. 4.83, 4$\frac{5}{8}$, $\sqrt{18}$, 4$\frac{1}{3}$
3. 4$\frac{1}{3}$, 4$\frac{5}{8}$, 4.83,$ \sqrt{18}$
4. $\sqrt{18}$, 4$\frac{1}{3}$, 4$\frac{5}{8}$, 4.83

48. Identify the property

 a + 3 = 3 + a

1. Associative property
2. Commutative property
3. Distributive property
4. Identity property

49. Identify the property

 2 + (c + d) = ( 2 + c) + d

1. Commutative Property of Addition
2. Commutative Property of Multiplication
3. Associative Property of Addition
4. Associative Property of Multiplication

50. Identify the property

 (a + e) 3 = 3a + 3e

1. Distributive Property of Multiplication over Addition
2. Distributive Property of Addition over Multiplication
3. Associative Property of Addition
4. Associative Property of Multiplication

51. Identify the property

 a + 0 = a

1. Associative Property
2. Commutative Property
3. Distributive Property
4. Identity Property

52. Identify the property

 a x 1 = a

1. Associative Property
2. Commutative Property
3. Distributive Property
4. Identity Property

53. Which property of real numbers is illustrated by the equation: - $\sqrt{3}$ = - $\frac{1}{\sqrt{3}}$

1. Additive Identity
2. Commutative property of addition
3. Multiplicative inverse

54. Which equation is illustrated the Distributive property of multiplication over addition?

1. x + y = y + x
2. 3(x + 2) = 3x + 6
3. (x + x) + y = 3 + (x + y)
4. 3 + x = 0

55. Which expression is an example of the Associative property?

1. (x + y) + z = x + (y + z)
2. x + y + z = z + y + x
3. x ∙ 1 = x
4. x + y = y + x

56. State the next three terms in the sequence of numbers

 6, 9, 12, 15, 18, 21, ………..

1. 23, 39, 44
2. 24, 27, 30
3. 24, 30, 36

57. State the next three terms in the sequence of numbers

 0, 15, 30, 45, 60, ………

1. 75, 90, 105
2. 85, 90, 95
3. 65, 70, 75

58. State the next three terms in the sequence of numbers

 1, 1, 2, 3, 5, 8, ……..

1. 12, 17, 23
2. 13, 19, 31
3. 13, 21, 34

59. State the next three terms in the sequence of numbers

 1, 4, 9, 16, 25, 36, ……..

1. 49, 64, 81
2. 42, 64, 81
3. 49, 56, 381

60. Any number from the set represented by (….., -3, -2, -1, 0, 1, 2, 3, …….) chose the best answer

1. Integer
2. Irrational
3. Rational
4. Whole Number

61. A part of an algebraic expression separated by either an addition or subtraction symbol

1. Coefficient
2. Term
3. Variable

62. A part of an algebraic expression that represents a number

1. Coefficient
2. Term
3. Variable

63. A part of an algebraic expression that multiplies the variable

1. Coefficient
2. Term
3. Variable

64. A number that can be expressed as a fraction

1. Integer
2. Irrational
3. Rational
4. Whole Number