EXPONENT

A DEFINITIONS

A.1 WRITING REPEATED MULTIPLICATION IN EXPONENT FORM

Ex 1: Write in exponent form:

$$2 \times 2 \times 2 = \square$$

Ex 2: Write in exponent form:

$$3 \times 3 \times 3 \times 3 = \square$$

Ex 3: Write in exponent form:

$$5 \times 5 = \square$$

Ex 4: Write in exponent form:

$$7 \times 7 \times 7 = \square$$

Ex 5: Write in exponent form:

$$10 \times 10 \times 10 \times 10 \times 10 = \square$$

A.2 WRITING IN EXPONENT FORM FROM VERBAL EXPRESSIONS

Ex 6: Write in exponent form:

$$\text{2 raised to the power 3} = \square$$

Ex 7: Write in exponent form:

$$\text{5 raised to the power 2} = \square$$

Ex 8: Write in exponent form:

$$\text{7 raised to the power 4} = \square$$

Ex 9: Write in exponent form:

$$\text{10 raised to the power 5} = \square$$

A.3 CALCULATING POWERS

Ex 10: Evaluate the power:

$$2^3 = \square$$

Ex 11: Evaluate the power:

$$5^2 = \square$$

Ex 12: Evaluate the power:

$$3^4 = \square$$

Ex 13: Evaluate the power:

$$10^3 = \square$$

A.4 EXPRESSING NUMBERS IN EXPONENT FORM

Ex 14: Write in exponent form:

$$8 = \square$$

Ex 15: Write in exponent form:

$$27 = \square$$

Ex 16: Write in exponent form:

$$16 = \square$$

Ex 17: Write in exponent form:

$$100 = \square$$

A.5 INTERPRETING POWERS

MCQ 18: Determine if the following statement is True or False:

$$2^3 = 2 + 2 + 2$$

☐ True

☐ False

MCQ 19: Determine if the following statement is True or False:

$$3^2 = 2 \times 2 \times 2$$

☐ True

☐ False

MCQ 20: Determine if the following statement is True or False:

$$4^3 = 4 \times 4 \times 4$$

☐ True

☐ False

MCQ 21: Determine if the following statement is True or False:

$$3 \times 4 = 4 + 4 + 4$$

☐ True

☐ False

MCQ 22: Determine if the following statement is True or False:

$$3^2 = 2 \times 2 \times 2$$

☐ True

☐ False

A.6 EVALUATING EXPRESSIONS WITH POWERS

Ex 23: Evaluate the expression:

$$2^3 \times 3^2 = \square$$

Ex 24: Evaluate the expression:

$$3^2 \times 10^2 = \square$$

Ex 25: Evaluate the expression:

$$6 \times 10^3 = \square$$

Ex 26: Evaluate the expression:

$$2.5 \times 10^2 = \square$$

A.7 CHECKING EQUALITY BETWEEN PRODUCTS AND POWERS

MCQ 27: Determine if the following statement is True or False:

$$2 \times 2 \times 3 \times 3 = 2^4$$

☐ True

☐ False

MCQ 28: Determine if the following statement is True or False:

$$2 \times 2 \times 2 = 3^2$$

☐ True

☐ False

MCQ 29: Determine if the following statement is True or False:

$$2 \times 3 \times 2 \times 3 = 2^2 \times 3^2$$

☐ True

☐ False

MCQ 30: Determine if the following statement is True or False:

$$5 \times 5 \times 5 \times 4 = 5^3 \times 2^2$$

☐ True

☐ False

A.8 WRITING REPEATED MULTIPLICATION OF AN ALGEBRAIC EXPRESSION IN EXPONENT FORM

Ex 31: Write in exponent form:

$$x \times x \times x = \square$$

Ex 32: Write in exponent form:

$$x \times x = \square$$

MCQ 33: Which expressions are equal to x?
Choose all answers that apply:

☐ x^2

☐ x^1

☐ 1

Ex 34: Write in exponent form:

$$x \times x \times x \times x = \square$$

A.9 WRITING ALGEBRAIC EXPRESSIONS IN EXPONENT FORM FROM VERBAL DESCRIPTIONS

Ex 35: Write in exponent form:

$$x \text{ squared} = \square$$

Ex 36: Write in exponent form:

$$x \text{ to the power of } 4 = \square$$

Ex 37: Write in exponent form:

$$x \text{ cubed} = \square$$

Ex 38: Write in exponent form:

$$x \text{ to the power of } 5 = \square$$

B EXPONENT LAW

B.1 SIMPLIFYING PRODUCTS OF POWERS

Ex 39: Simplify:

$$7^3 \times 7^2 = \square$$

Ex 40: Simplify:

$$2^4 \times 2^3 = \square$$

Ex 41: Simplify:

$$3^5 \times 3^2 = \square$$

Ex 42: Simplify:

$$10^6 \times 10^2 = \square$$

Ex 43: Simplify:

$$2^3 \times 2 = \square$$

Ex 44: Simplify:

$$3 \times 3^4 = \square$$

B.2 SIMPLIFYING PRODUCTS OF ALGEBRAIC POWERS

Ex 45: Simplify:

$$x^2 \times x^3 = \square$$

Ex 46: Simplify:

$$x \times x^2 = \square$$

Ex 47: Simplify:

$$x^2 \times x^2 = \square$$

Ex 48: Simplify:

$$x^3 \times x = \square$$

B.3 IDENTIFYING CORRECT EXPONENTIAL EXPRESSIONS

MCQ 49: Which expressions are equal to $2^2 + 2^1$?

Choose all answers that apply:

- ☐ 6
- ☐ 2^3
- ☐ 4^3

MCQ 50: Which expressions are equal to $5^2 \times 5^1$?

Choose all answers that apply:

- ☐ 25
- ☐ 125
- ☐ 5^3

MCQ 51: Which expressions are equal to $3^2 + 3^1$?

Choose all answers that apply:

- ☐ 12
- ☐ 3^3
- ☐ 9^3

MCQ 52: Which expressions are equal to $4^3 \times 4^2$?

Choose all answers that apply:

- ☐ 4^5
- ☐ 64
- ☐ 1024

C ORDER OF OPERATIONS

C.1 EVALUATING EXPRESSIONS WITH EXPONENTS IN 2 STEPS

Ex 53: Evaluate this expression:

$$2 \times 5^2 = \square$$

Ex 54: Evaluate this expression:

$$2^3 - 1 = \square$$

Ex 55: Evaluate this expression:

$$(2 + 1)^2 = \square$$

Ex 56: Evaluate this expression:

$$2^3 \div 4 = \square$$

Ex 57: Evaluate this expression:

$$(5 - 2)^2 = \square$$

C.2 EVALUATING EXPRESSIONS WITH EXPONENTS IN 3 STEPS

Ex 58: Evaluate this expression:

$$2^3 \times (8 - 6) = \square$$

Ex 59: Evaluate this expression:

$$(2 + 1)^2 - 1 = \square$$

Ex 60: Evaluate this expression:

$$(3^2 - 1) \times 4 = \square$$

Ex 61: Evaluate this expression:

$$\frac{3^2 - 1}{2} = \square$$

C.3 FINDING THE OPERATORS

Ex 62:

$$3^3 \ \square \ 2^2 = 23$$

☐ +
☐ −
☐ ×
☐ ÷

Ex 63:

$$2^4 \ \square \ 3^2 = 144$$

☐ +
☐ −
☐ ×
☐ ÷

Ex 64: 

$$2^3 \begin{matrix} \square + \\ \square - \\ \square \times \\ \square \div \end{matrix} 4 = 2$$

Ex 65: 

$$(2+1)^2 \begin{matrix} \square + \\ \square - \\ \square \times \\ \square \div \end{matrix} 1 = 10$$

C.4 SIMPLIFYING ALGEBRAIC EXPRESSIONS

Ex 66: Simplify the expression:

$$2x^2 + 3x^2 = \square$$

Ex 67: Simplify the expression:

$$3x^2 - x^2 = \square$$

Ex 68: Simplify the expression:

$$2x^2 + 3x + x = \square$$

Ex 69: Simplify the expression:

$$x^2 + 2x + x^2 + 5x + 1 = \square$$

Ex 70: Simplify the expression:

$$3x^2 + 4 + 2x + x^2 + 6x + 1 = \square$$

Ex 71: Simplify the expression:

$$(2x - x)^2 = \square$$