UNIT 2: Numeration

Understanding Meaning of Operations & Number Theory

Note: All key terms are based on the Math Standards for Alaska and reflect terms vital to academic achievement in math.

INTRODUCTION OF MATH VOCABULARY

Process Skills

Concrete Introduction of Key Vocabulary
Note: *A vocabulary graphic is provided in this unit for each of the key words. Definitions for all of the key words can be found in the glossary at the back of this program.*

inverse operations

Hand out short lengths of string to each student. Tell them to tie a knot and to pass it to their neighbor. Now have them try to untie the knots. Explain that this undoing of the knot is the inverse of having done it in the first place! In math, the inverse operation undoes another operation.

order of operations

Put on a wig or a mask and act in a funny manner in front of the class. Tell the students that your name is Sally and you're their long lost Aunt. Explain that the phrase "Please Excuse My Dear Aunt Sally" stands for a set of rules or "order of operations" used to solve mathematical problems. Let the students create their own Aunt Sally scenarios!

prime factorization

Have the students draw several generations of their family tree on a piece of paper, in tree format with the student at the top and ancestors below. Explain that prime factorization also utilizes a tree, breaking a number into smaller and smaller prime units. In the family tree (drawn upside down), each ancestral generation makes up a smaller portion of the students DNA!

Process Skills

Concrete Introduction of Key Vocabulary
Note: *A vocabulary graphic is provided in this unit for each of the key words. Definitions for all of the key words can be found in the glossary at the back of this program.*

commutative property

Place three carrots then three beans in a row. Ask the students how many pieces of food there are with the two types combined (added). Now rearrange them so that they are alternating. Ask again how many pieces of food there are. It's the same no matter what order they are in! This is the commutative property.

identity property

Show the students a potted plant and explain that it is unique. It would not be the same exact plant if you forgot to water it, if you cut off its leaves or if you put it out in the snow. Explain that the identity property preserves the uniqueness of a number. If you multiply any number by 1, you get that number. If you add zero to any number, you still have that number!

associative property

Put three m&ms, three peanut butter cups and three cheese goldfish in a row. Ask the students to count the food items added together in that order. Now rearrange the food items and ask them to count the total food items in the new order. Explain that the associative property allows numbers to be added or multiplied in any order and still yield the same value.

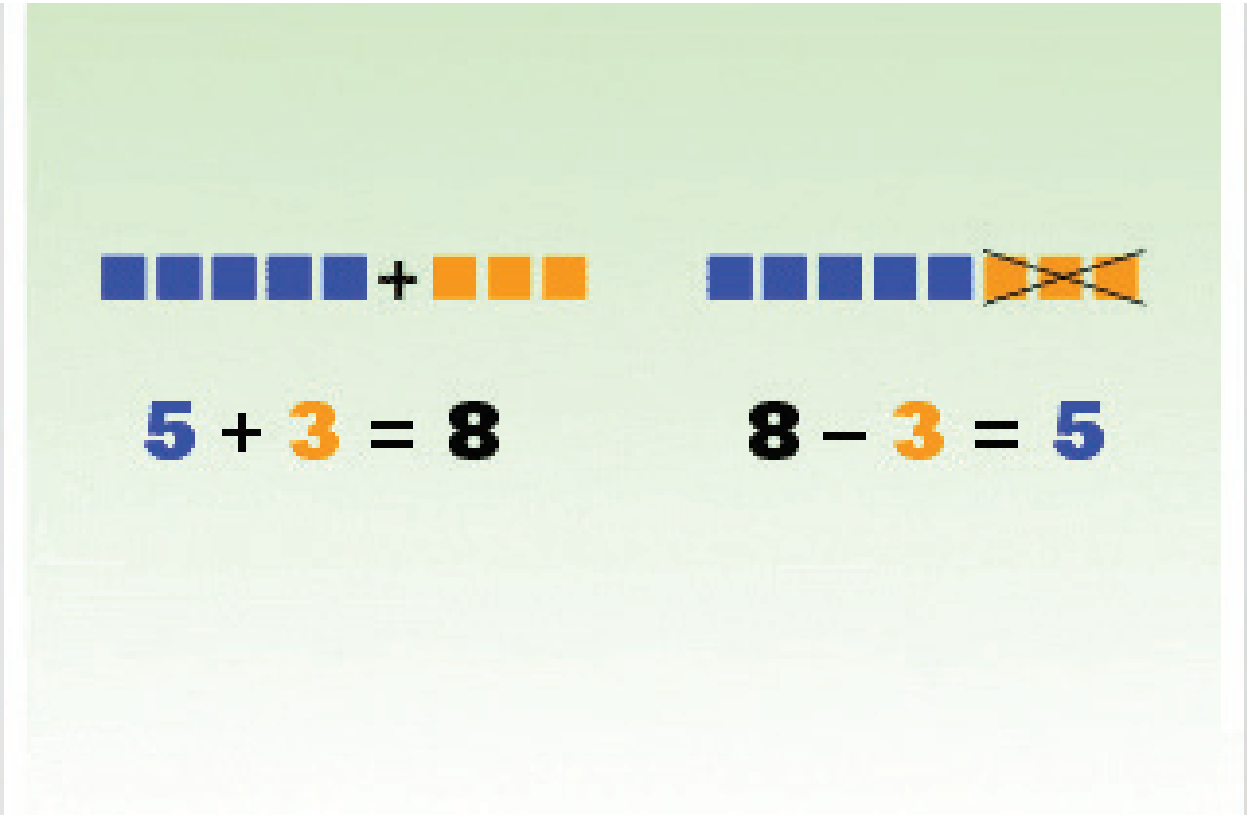
Process Skills

Concrete Introduction of Key Vocabulary
Note: *A vocabulary graphic is provided in this unit for each of the key words. Definitions for all of the key words can be found in the glossary at the back of this program.*

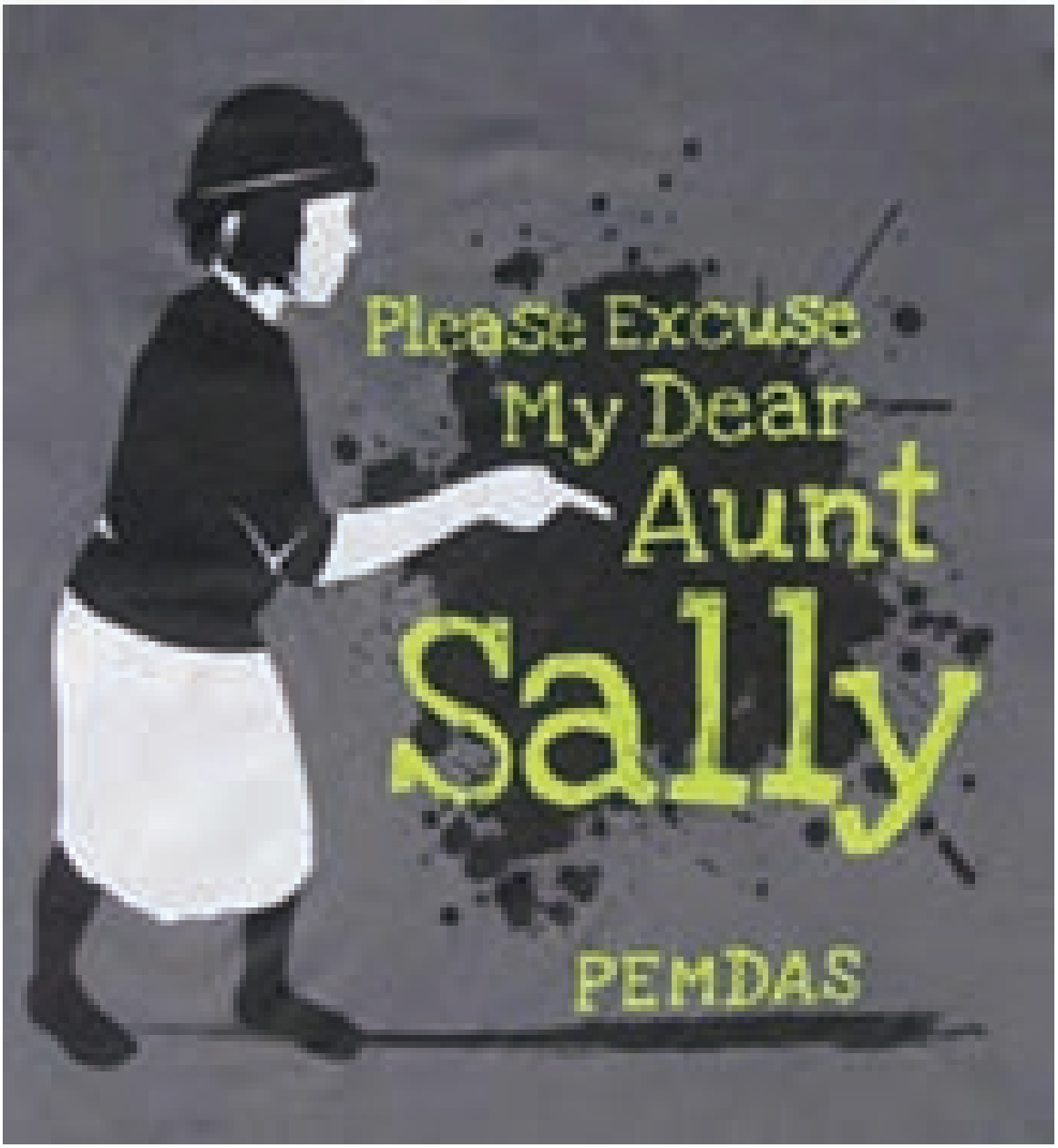
distributive property

Put 10 cheese goldfish on a table in three groups (2, 3 and 5). Ask the students to add the first two groups then multiply by the third. Place an equal sign on the table and put the resulting number of goldfish on the other side (25). Now below that row duplicate the original piles of gold fish (2, 3, 5). Ask the students to multiply the last group by the first then the last group by the second followed by adding these two numbers together (25). Place an equal sign on the table and the resulting number of goldfish. Explain that these two methods resulted in the same number of gold fish and is the concept behind the distributive property.

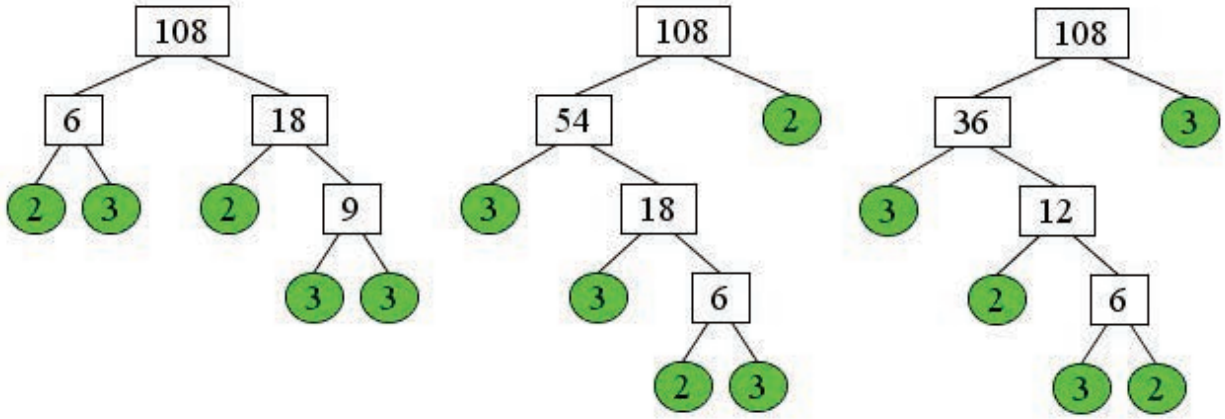
VOCABULARY PICTURES


5 + 3 = 8
8 – 3 = 5

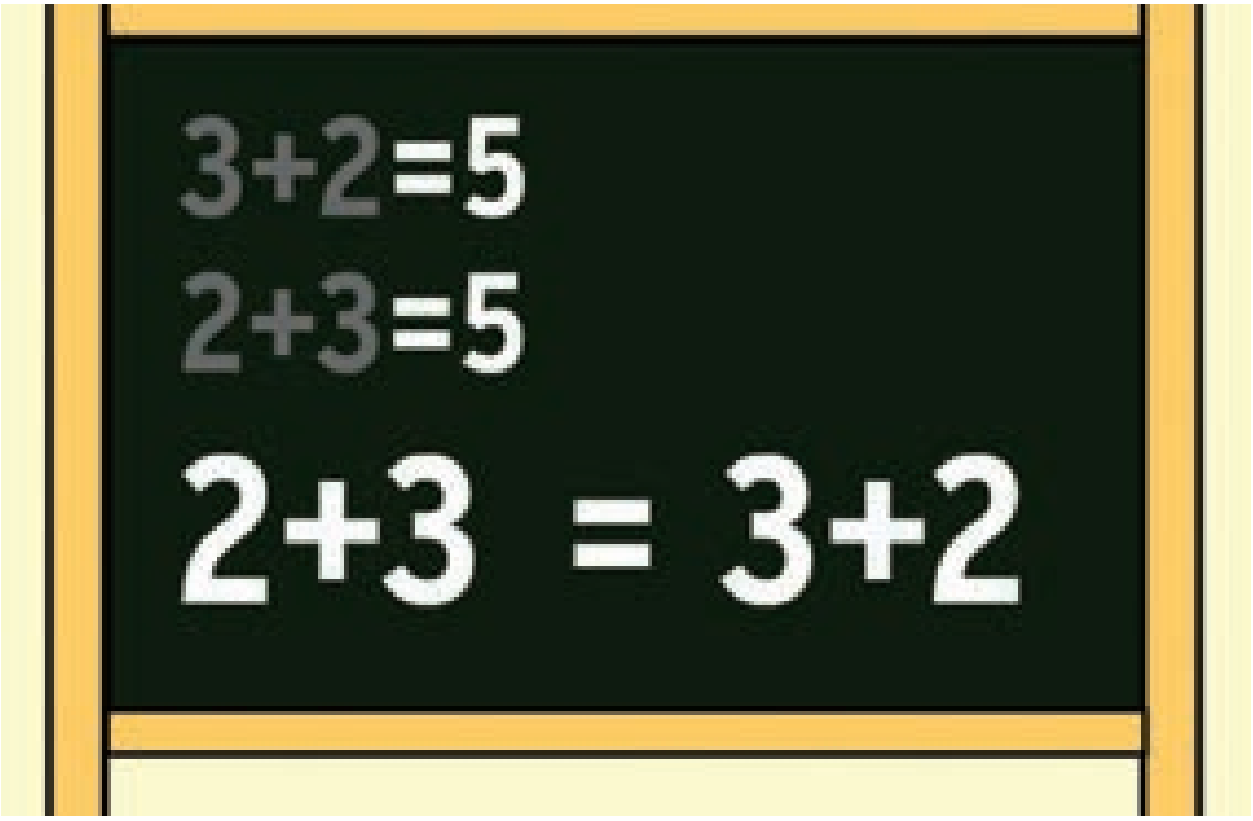
INVERSE OPERATIONS


Please Excuse
My Dear
Aunt
Sally
PEMDAS

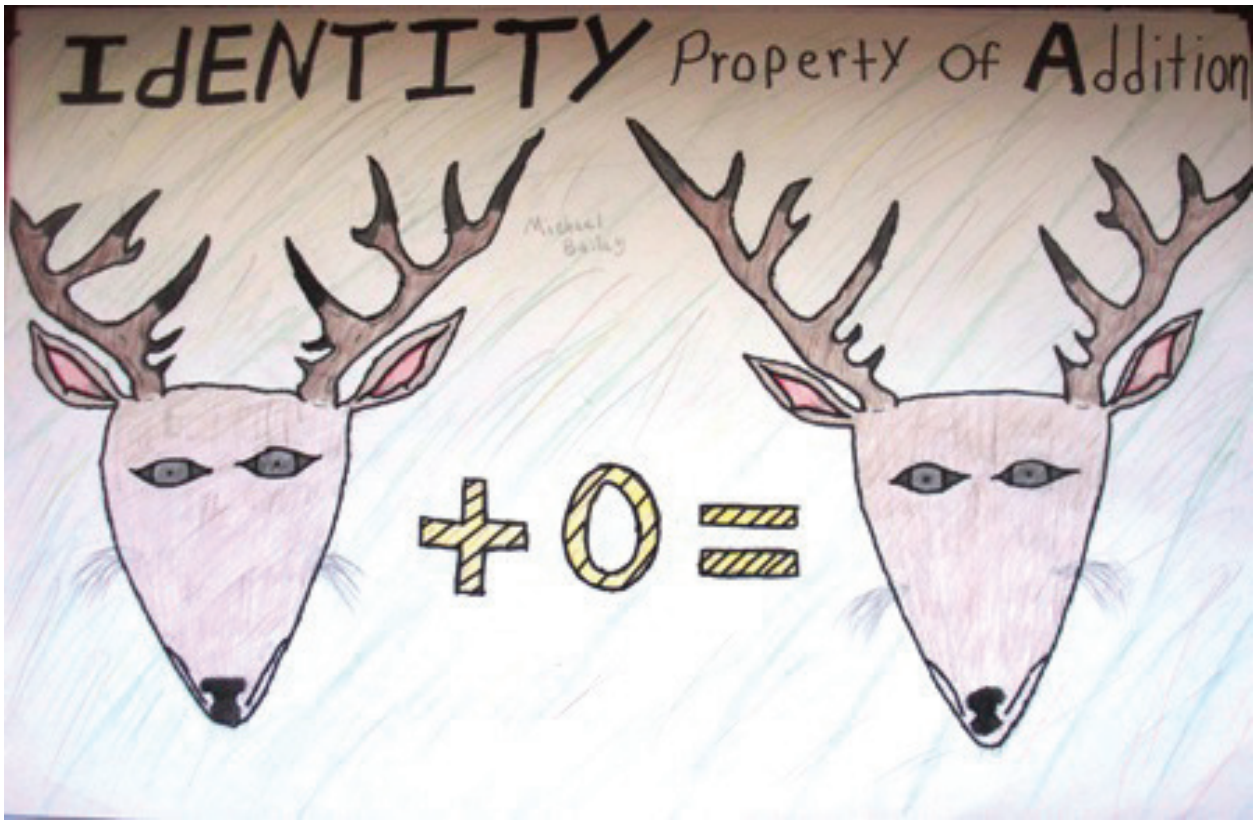
ORDER OF OPERATIONS


108
6
18
2
3
2
9
3
3
108
54
2
3
18
3
6
2
3
108
36
3
3
12
2
6
3
2

PRIME FACTORIZATION

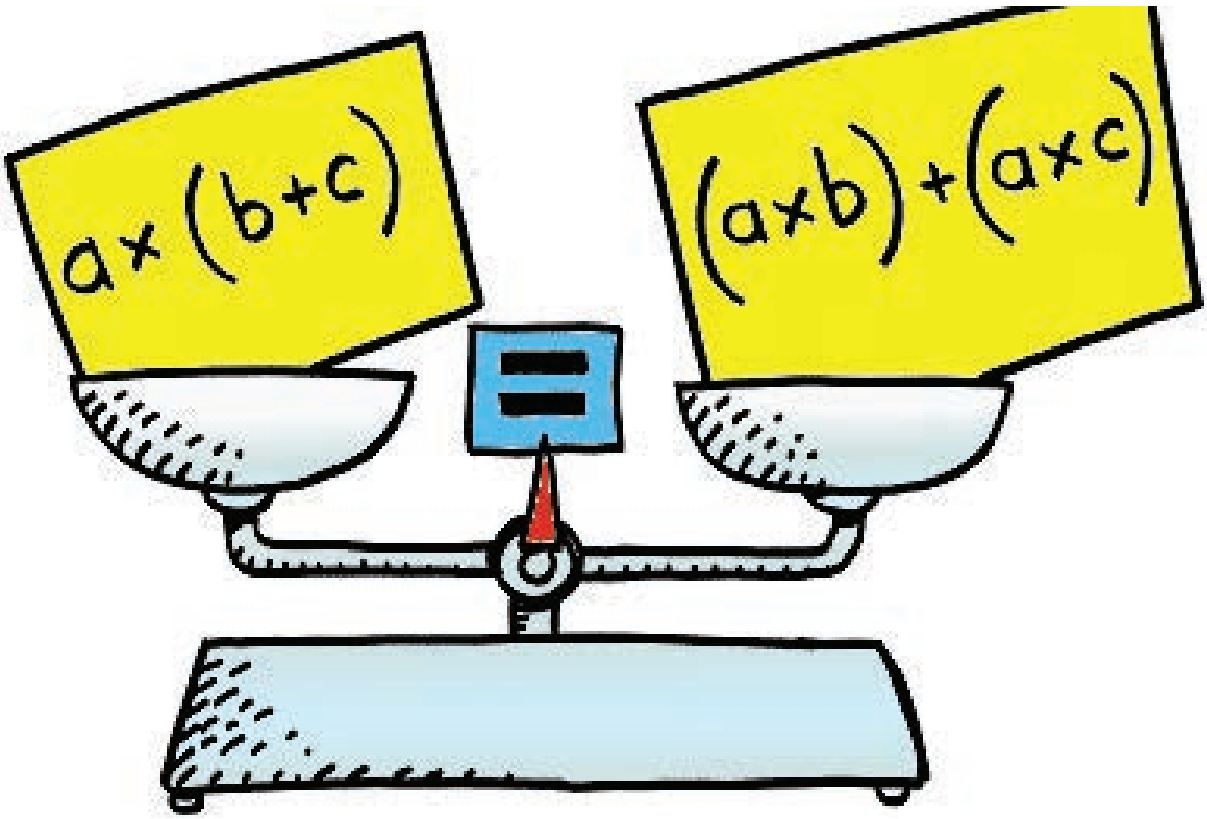

3+2=5
2+3=5
2+3 = 3+2

COMMUTATIVE PROPERTY


IdENTITY Property of Addition
+0=

IDENTITY PROPERTY

ASSOCIATIVE PROPERTY


a x (b+c)
(a x b) + (a x c)

DISTRIBUTIVE PROPERTY

LANGUAGE ACTIVITIES

Language and Skills Development

LISTENING

Review the key math words introduced in this unit. If the vocabulary pictures were not presented during the introduction, show them to the students at this time.

Mini Pictures

Provide each student with a copy of the mini-pictures page from the Student Support Materials. When you say the key words, the students must find the pictures for them. Then, have the students cut out the pictures. Say the keywords and the students should hold up the pictures for them.

Locomotive

Have the students stand in a straight line in the center of the room. Each student should place his hands on the shoulders of the student in front of him/her. Mount a picture on each of the four walls in the classroom. Tell the students that when they hear one of the four vocabulary words (for the four pictures on the walls), they should step in that direction while still holding onto the shoulders of the players in front of them. Say the four words a number of times; the students should step toward the pictures as they are named.

Funnel Vision

Before the activity begins, collect a large funnel. Have a student stand at the front of the classroom with his/her back to the other students. Give the student the funnel. Give the vocabulary pictures to the other students in the class. The students should hold their pictures up, facing the front of the classroom. Say a vocabulary word. When you say "Go," the student with the funnel should place the funnel over his/her eyes and turn to face the other students. The student must then look through the funnel to find the picture for the vocabulary word you said. This activity may be conducted with two players (each player having a funnel). The winner of each round is the student who locates the correct picture first. Have the students in the class exchange pictures for each new round of the activity. Repeat.

Student Support Materials

Have the students work on the activity pages from the Student Support Materials from this unit. Afterward, review their work.

Language and Skills Development

SPEAKING

Flip of the Coin

Provide each student with a penny. Keep one penny for yourself. Mount the vocabulary pictures on the board. Have the students (gently) toss their pennies into the air. Each student should look to see which side of his/her penny is face-up. Toss your penny into the air in the same way. Call the side of your penny that is face-up. The students who have the same side of coin face up must then identify (orally) a vocabulary picture you point to. For example, if the heads side of your coin is face up, the students who have heads showing on their coins must then orally identify the vocabulary picture you point to. Repeat this process a number of times.

High Roller

Give a die to each of two students. When you say "Go," the students should roll their dice. The student who rolls the highest number on his/her die must then say a complete sentence about a vocabulary picture that you show. Repeat this process until many students have responded with sentences of their own.

Language and Skills Development

READING

Introduce the math sight words to the students — match the sight words with the vocabulary graphics. The sight words are included in the Student Support Materials, attached to these lesson plans.

What's Your Sequence?

Provide each student with four blank flashcards. Write four sight words on the board. Each student should write the same sight words on each of his cards (one word per card). When the students' cards are ready, have them arrange their sight word cards in a specific sequence on their desks (each student should determine his/her own sequence of words). Then, say a sequence of the four words. Any student or students who have their sight words in the same sequence as you said win the round. The winner or winners of this activity are those students who collect the greatest number of wins. The students may change the sequence of their sight word cards after each round of the activity.

Word Length

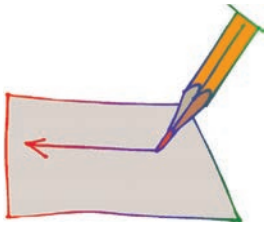
Before the activity begins, cut a number of sight word cards into different lengths (e.g., 5 in., 15 cm., etc.). Place the sight word cards on the floor at one end of the classroom. Group the students into two teams at the other end of the classroom. Place two rulers on the floor beside the sight words. Say a different measurement to the first player in each team. When you say "Go," the first player in each team must rush to the sight word cards. Each player must then use the ruler to locate a sight word card that is the same length as the measurement you said. When a player has done this successfully, he/she should read the sight word on that card. Repeat until all players in each team have participated.

Letter Encode

Give each student his/her envelope that contains the alphabet letters. Show a picture from this unit. The students must use the cut-out letters to spell the word for the picture. Review the students' work. Repeat, until all of the words have been spelled.

Language and Skills Development

WRITING



Back Writing

Group the students into two teams. Have the first player from each team stand in front of the board. Use the index finger of your writing hand to "write" the first letter of a sight word on the two players' backs. When you have done this, say "Go." Each of the players should then write a sight word on the board that begins with that letter. Repeat with other pairs of players until all players in each team have played and until all sight words have been written a number of times.

Word Completion

Before the activity begins, prepare clozure cards for the sight words; omit letters and syllables. Provide each student with a clozure card. Call upon the students to complete their words on the clozure cards by writing in the missing parts. Afterward, review the students' responses.

Student Support Materials

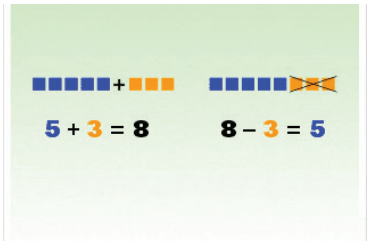
Have the students complete the sight recognition and encoding activities in the Student Support Materials. When finished, review their work.

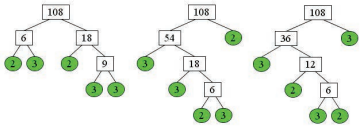
STUDENT SUPPORT MATERIALS

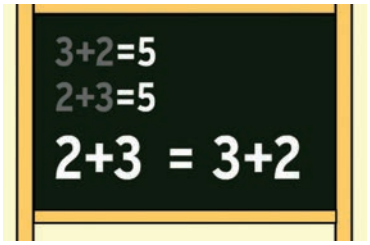
Listening • Mini Pictures

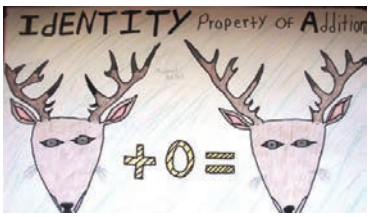
Listening: Mini Pictures

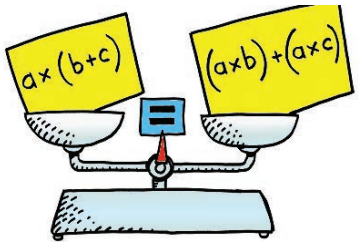
Have the students cut out the pictures. Say the key math words from this unit, and the students should hold up the pictures for them.





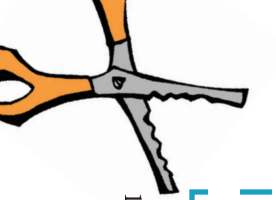






STUDENT SUPPORT MATERIALS

Sight Words



inverse operations

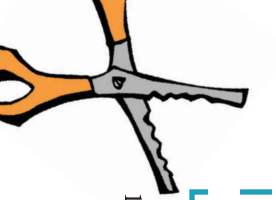
order of operations

prime factorization

commutative property

identity property

associative property



distributive property

STUDENT SUPPORT MATERIALS

Reading • Sight Recognition

Sight Words Activity Page

Have the students circle the word for each picture.

inverse operations

order of operations

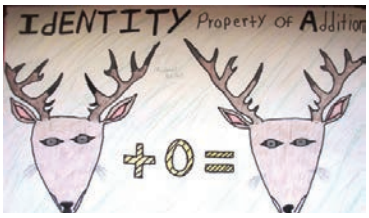
prime factorization

commutative property

identity property

associative property

distributive property



inverse operations

order of operations

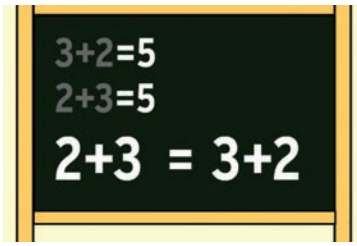
prime factorization

commutative property

identity property

associative property

distributive property



inverse operations

order of operations

prime factorization

commutative property

identity property

associative property

distributive property

inverse operations

order of operations

prime factorization

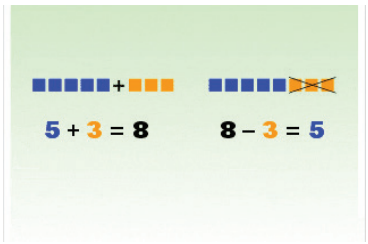
commutative property

identity property

associative property

distributive property

Sight Words Activity Page



inverse operations

order of operations

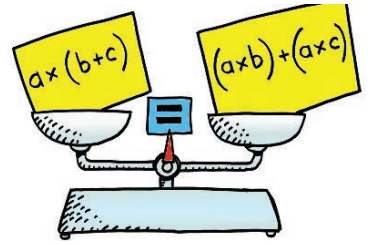
prime factorization

commutative property

identity property

associative property

distributive property



inverse operations

order of operations

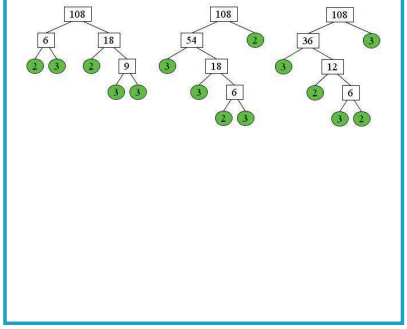
prime factorization

commutative property

identity property

associative property

distributive property



inverse operations

order of operations

prime factorization

commutative property

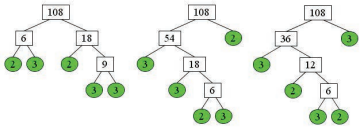
identity property

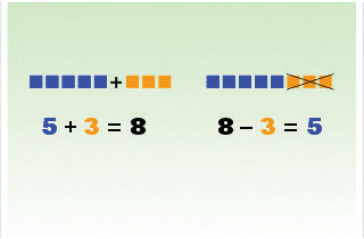
associative property

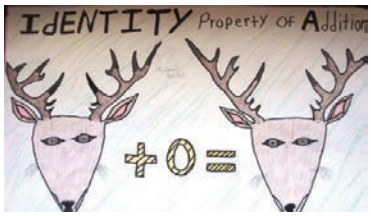
distributive property

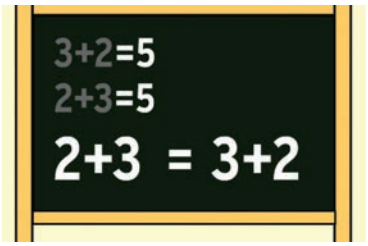
Sight Words Activity Page

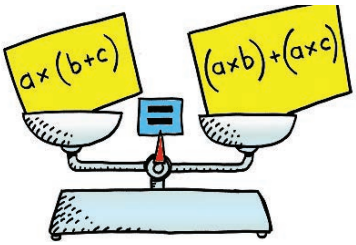
Write the numbers on their correct vocabulary graphics.











1. **inverse operations**
2. **order of operations**
3. **prime factorization**
4. **commutative property**
5. **identity property**
6. **associative property**
7. **distributive property**

Sight Words Activity Page

Write the key words from this unit horizontally in the boxes (more than one copy of each word can be written). Fill in all other boxes with any letters. Exchange page with another student. Find key words and circle.

Sight Words Activity Page

Highlight or circle the words in this word find.

commutative property
order of operations
distributive property
prime factorization
associative property
identity property
inverse operations

o f i e t t c r p c o m m u t a t i v e p r o p e
n o s m d t u o p a r i p m v c m c p r a o t o p
d i e t e n e p o n o m p p r p e r s r p i p d r
n e n t o c o i b a i o t r d f e o d t f y e d r
i e t e e r r e r v r r r t u p r a c d o o m a e
o b i i d p p e t v p p e p o r e v p d p c s i r
s f t n s o a s e s e c o o t e s v r s a s n s m
i p r i m e f a c t o r i z a t i o o i r t s o c
e o p n o n r y c y i r p i e e r i t i y s e f s
t i n v e r s e o p e r a t i o n i r p e o r y c
r d i s t r i b u t i v e p r o p e r t y e e t a
o p e a r v i a s s o c i a t i v e p r o p e r p
b v t i d e n t i t y p r o p e r t y v r f a r e
s p r i m e f a c t o r i z a t i o n s z t i i c
r m r f e e p n i n v e r s e o p e r a t i o n s
r s v r a s s o c i a t i v e p r o p e r t y e d
i p t e f b d i s t r i b u t i v e p r o p e r t
y v u n i c r v t r p t c t p p m e o a p t f i m
i u n t c o m m u t a t i v e p r o p e r t y c i
e n m u r r r a b p r r p r o t f t c r t r a i o
a r o o e o t r c y y a i a t e i r n r d p p r e
s v i o e i p i d e p a r e i v d t i i p r y b a
i e e s i n e z s t r i r t i p o a y v p r r e r
o p t o u n p e p o a i p t r o e r i c i e e c d
c s o e i t t r o r d e r o f o p e r a t i o o a
r i d e n t i t y p r o p e r d m p s y i e o t i
e b d n d t a o o r d e r o f o p e r a t i o n s
m f a p p e z e o o t e r t o o p p m o r r r r r
t y e c p z o r e t r t z o v r i b v t o e i r r

Sight Words Activity Page

ANSWER KEY

commutative property
order of operations
distributive property
prime factorization
associative property
identity property
inverse operations

o f i e t t c r p c o m m u t a t i v e p r o p e
n o s m d t u o p a r i p m v c m c p r a o t o p
d i e t e n e p o n o m p p r p e r s r p i p d r
n e n t o c o i b a i o t r d f e o d t f y e d r
i e t e e r r e r v r r r t u p r a c d o o m a e
o b i i d p p e t v p p e p o r e v p d p c s i r
s f t n s o a s e s e c o o t e s v r s a s n s m
i p r i m e f a c t o r i z a t i o o i r t s o c
e o p n o n r y c y i r p i e e r i t i y s e f s
t i n v e r s e o p e r a t i o n i r p e o r y c
r **d i s t r i b u t i v e p r o p e r t y** e e t a
o p e a r v i a s s o c i a t i v e p r o p e r p
b v t **i d e n t i t y p r o p e r t y** v r f a r e
s **p r i m e f a c t o r i z a t i o n** s z t i i c
r m r f e e p n **i n v e r s e o p e r a t i o n s**
r s v r **a s s o c i a t i v e p r o p e r t y** e d
i p t e f b d i s t r i b u t i v e p r o p e r t
y v u n i c r v t r p t c t p p m e o a p t f i m
i u n t **c o m m u t a t i v e p r o p e r t y** c i
e n m u r r r a b p r r p r o t f t c r t r a i o
a r o o e o t r c y y a i a t e i r n r d p p r e
s v i o e i p i d e p a r e i v d t i i p r y b a
i e e s i n e z s t r i r t i p o a y v p r r e r
o p t o u n p e p o a i p t r o e r i c i e e c d
c s o e i t t r o r d e r o f o p e r a t i o o a
r i d e n t i t y p r o p e r d m p s y i e o t i
e b d n d t a o **o r d e r o f o p e r a t i o n s**
m f a p p e z e o o t e r t o o p p m o r r r r r
t y e c p z o r e t r t z o v r i b v t o e i r r

STUDENT SUPPORT MATERIALS

Reading • Encoding

Encoding Activity Page

Have the students cut out the word parts and glue them into their correct words.

i_____e operations

order of o_____ions

prime f_____ization

co_____ative property

i_____ity property

ssocia	nvers	mmut
dent	perat	

Encoding Activity Page

a_____tive property

dis_____tive property

actor **tribu**

Encoding Activity Page

Have the students cut out the word halves and glue them together to create the key words for this unit.

inve	**utative property**
order of op	**rse operations**
prime fac	**torization**
comm	**erations**
iden	**perty**

Encoding Activity Page

assoc	**tity property**
distributive pro	**iative property**

Encoding Activity Page

Cut out and encode the syllables of the words OR number the syllables in their correct sequence.

verse in

_____ _____

pe o tions ra

_____ _____ _____ _____

der or of

_____ _____ _____

o pe tions ra

_____ _____ _____ _____

Encoding Activity Page

prime

_____

tor	za	tions	i	fac
_____	_____	_____	_____	_____

ta	com	mu	tive
_____	_____	_____	_____

per	pro	ty
_____	_____	_____

Encoding Activity Page

den	i	ty	ti

ty	pro	per

so	as	a	ci	tive

ty	per	pro

Encoding Activity Page

bu	dis	tri	tive

per	pro	ty

STUDENT SUPPORT MATERIALS

Reading Comprehension

What's the Answer?

Read the text and then select the correct answer for it. Fill in the bullet beside the answer of your choice.

1. Inverse operations are those that _____ another operation.
   - ❍ Support
   - ❍ Enhance
   - ❍ Expand
   - ❍ Undo

2. The acronym for the correct order of operations is
   - ❍ PENDAS
   - ❍ PEMMAS
   - ❍ PEMDAS
   - ❍ DEMPAS

3. Prime factorization is the breaking down of a composite number into _____ non-trivial divisors.
   - ❍ Smaller
   - ❍ Larger
   - ❍ Medium
   - ❍ Average

4. The _____ property applies when the order of numbers in a calculation does not affect the result.
   - ❍ Commutative
   - ❍ Identity
   - ❍ Associative
   - ❍ Distributive

5. The _____ property applies when an equality remains true regardless of the values of any variable that appears within it.
   - ❍ Commutative
   - ❍ Identity
   - ❍ Associative
   - ❍ Distributive

What's the Answer?

6 The _____ property applies when numbers can be added or multiplied in any order and still yield the same value.

- ❍ Distributive
- ❍ Associative
- ❍ Identity
- ❍ Commutative

7 The _____ property applies when adding two numbers and then multiplying by another yields the same result as multiplying each one by the number and then adding the products.

- ❍ Associative
- ❍ Commutative
- ❍ Identity
- ❍ Distributive

What's the Answer?

ANSWER KEY

1. Inverse operations are those that _____ another operation.
   - ❍ Support
   - ❍ Enhance
   - ❍ Expand
   - ● Undo

2. The acronym for the correct order of operations is
   - ❍ PENDAS
   - ● PEMMAS
   - ❍ PEMDAS
   - ❍ DEMPAS

3. Prime factorization is the breaking down of a composite number into _____ non-trivial divisors.
   - ● Smaller
   - ❍ Larger
   - ❍ Medium
   - ❍ Average

4. The _____ property applies when the order of numbers in a calculation does not affect the result.
   - ● Commutative
   - ❍ Identity
   - ❍ Associative
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5. The _____ property applies when an equality remains true regardless of the values of any variable that appears within it.
   - ❍ Commutative
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   - ❍ Distributive

What's the Answer?

6 The _____ property applies when numbers can be added or multiplied in any order and still yield the same value.

- ❍ Distributive
- ● Associative
- ❍ Identity
- ❍ Commutative

7 The _____ property applies when adding two numbers and then multiplying by another yields the same result as multiplying each one by the number and then adding the products.

- ❍ Associative
- ❍ Commutative
- ❍ Identity
- ● Distributive

Reading Comprehension Activity Page

Write the numbers/letters for sentence halves that match.

1	An inverse operation	A	remembering the order of operations.
2	PEMDAS in the correct acronym for	B	into smaller non-trivial divisors.
3	Prime factorization breaks down a composite number	C	and still yield the same value is the associative property.
4	In the commutative property, the	D	regardless of the values of any variables that appear in it.
5	In the identity property, an equality remains true	E	undoes another operation.
6	The property by which numbers can be added or multiplied in any order	F	order of numbers in a calculation does not affect the result.
7	In the distributive property, adding two numbers and then multiplying	G	by another yields the same result as multiplying each one by the tnumber then adding the products.

1→_____ 2→ _____ 3→ _____ 4→ _____

5→ _____ 6→ _____ 7→ _____

Reading Comprehension Activity Page

ANSWER KEY

1	An inverse operation	A	remembering the order of operations.
2	PEMDAS in the correct acronym for	B	into smaller non-trivial divisors.
3	Prime factorization breaks down a composite number	C	and still yield the same value is the associative property.
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6	The property by which numbers can be added or multiplied in any order	F	order of numbers in a calculation does not affect the result.
7	In the distributive property, adding two numbers and then multiplying	G	by another yields the same result as multiplying each one by the tnumber then adding the products.

1→ E 2→ A 3→ B 4→ F

5→ D 6→ C 7→ G

Reading Comprehension Activity Page

Cut out the words and glue them under their definitions.

Numbers added or multiplied in any order yield same value	**PEMDAS**	**Order of numbers does not affect the result**
Breaking down a composite number into smaller divisors	**Undoes another operation**	**a(b+c)=ab+ac**
Equality remains true regardless of variable values		

inverse operations | **order of operations** | **prime factorization** | **commutative property**

identity property | **associative property** | **distributive property**

Reading Comprehension Activity Page

ANSWER KEY

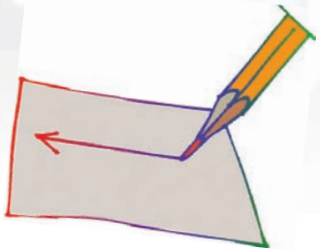
Numbers added or multiplied in any order yield same value associative property	**PEMDAS** order of operations	**Order of numbers does not affect the result** commutative property
Breaking down a composite number into smaller divisors prime factorization	**Undoes another operation** inverse operations	**a(b+c)=ab+ac** distributive property
Equality remains true regardless of variable values identity property		

STUDENT SUPPORT MATERIALS

Writing

Writing Activity Page

Have the students complete the writing of the key math words.



inv_____e oper_____ns

or_____ of operat_____s

pri____e factor_____tion

com_____tive pro_____ty

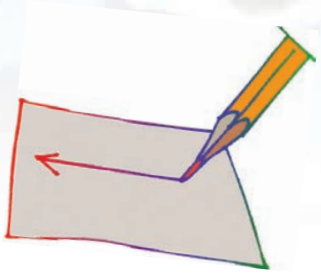
ide_____ty pr_____rty

assoc_____ive pro_____ty

distrib_____tive pro_____ty

Writing Activity Page

Have the students complete the writing of the key math words.



i_____ o_____s

o_____ of _____s

p_____ f_____n

c_____ p_____y

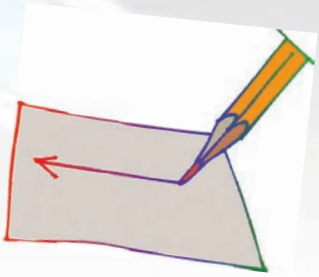
i_____ p_____y

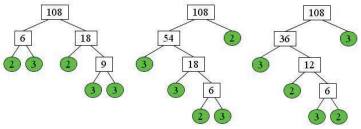
a_____ p_____y

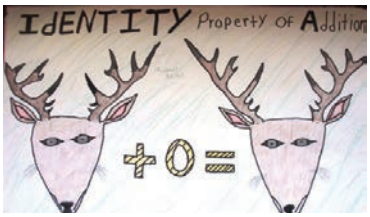
d_____ p_____y

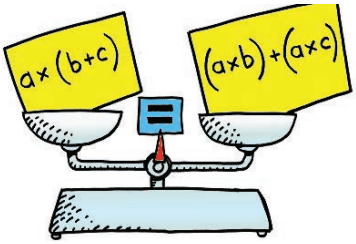
Basic Writing Activity Page

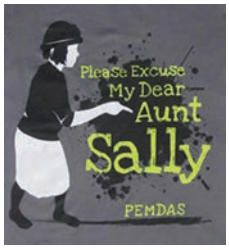
Have the students write the word for each picture.

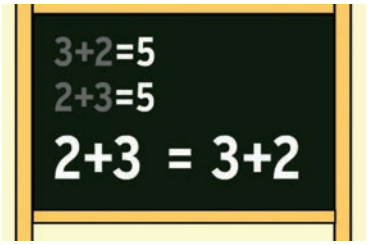


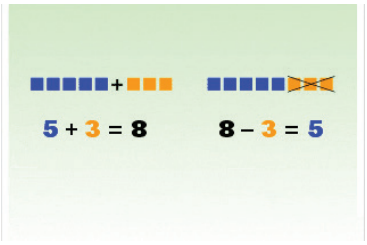




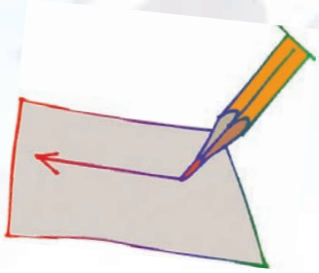


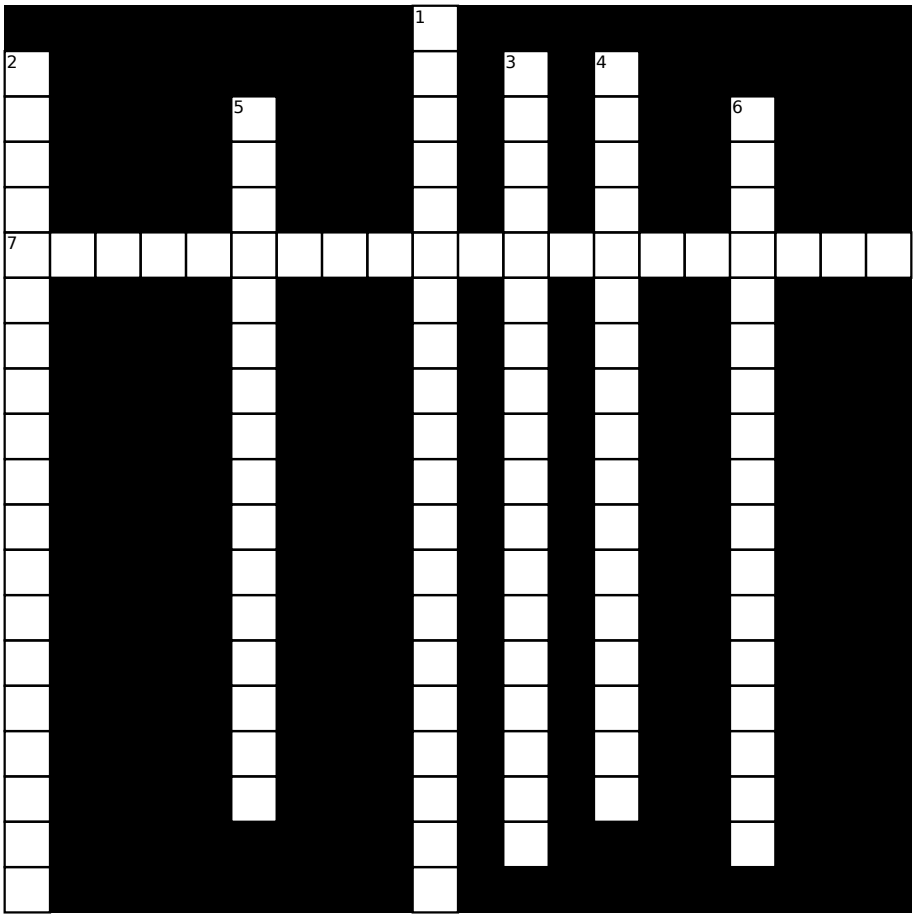






Crossword Puzzle





Across

7 Order of numbers does not affect the result (2 Words)

Down

1 a(b+c)=ab+ac (2 Words)

2 Numbers added or multiplied in any order yield same value (2 Words)

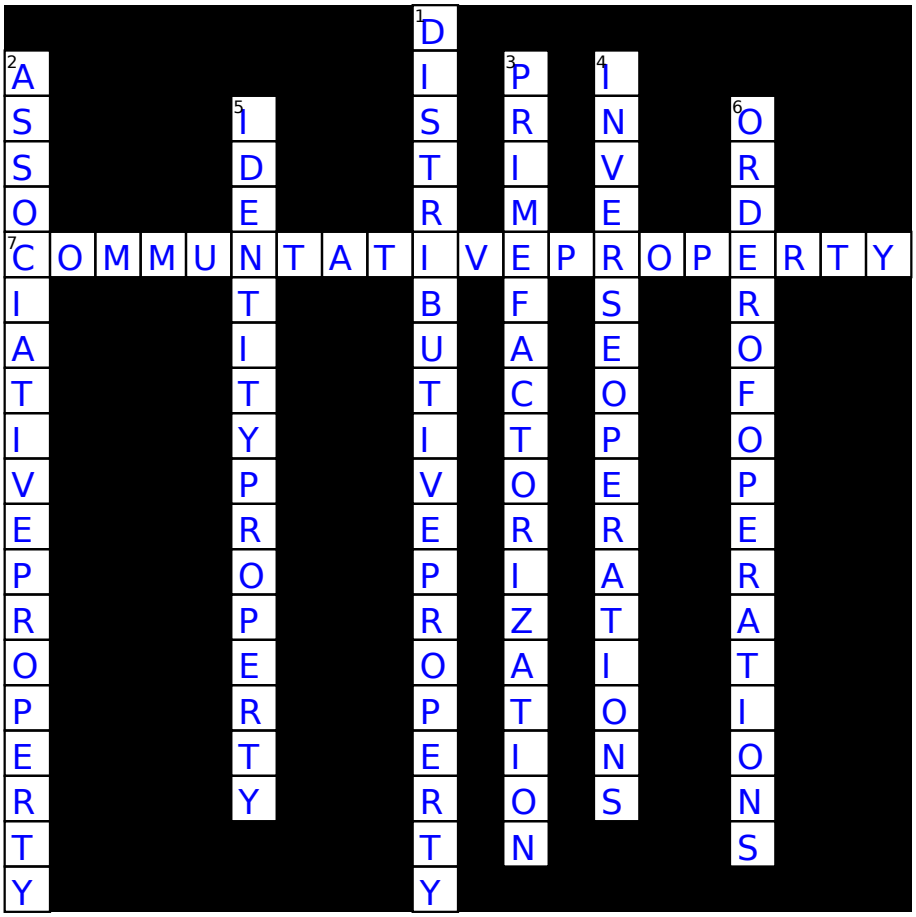
3 Breaking down a composit number into smaller divsors (2 Words)

4 Undoes another operation (2 Words)

5 Equality remains true regardless of variable values (2 Words)

6 PEMDAS (3 Words)

Crossword Puzzle Answers



Across

7 Order of numbers does not affect the result (2 Words)

Down

1 a(b+c)=ab+ac (2 Words)
2 Numbers added or multiplied in any order yield same value (2 Words)
3 Breaking down a composit number into smaller divsors (2 Words)
4 Undoes another operation (2 Words)
5 Equality remains true regardless of variable values (2 Words)
6 PEMDAS (3 Words)

UNIT ASSESSMENT

Understanding Meaning of Operations & Number Theory

Unit Assessment Teacher's Notes
Grade 8 • Unit 2

Date:_____

Unit Assessment

Provide each student with a copy of the students' pages. Read the following instructions aloud. The students should answer the questions on their copies of the assessment.

BASIC LISTENING

Turn to page 1 in your test. Look at the pictures in the boxes.

1. Write the number 1 by the picture for **INVERSE OPERATIONS**.
2. Write the number 2 by the picture for **ORDER OF OPERATIONS**.
3. Write the number 3 by the picture for **PRIME FACTORIZATION**.
4. Write the number 4 by the picture for **COMMUTATIVE PROPERTY**.
5. Write the number 5 by the picture for **IDENTITY PROPERTY**.
6. Write the number 6 by the picture for **ASSOCIATIVE PROPERTY**.
7. Write the number 7 by the picture for **DISTRIBUTIVE PROPERTY**.

SIGHT RECOGNITION

Turn to page 2 in your test. Look at the pictures in the boxes. Circle the word for each picture.

DECODING/ENCODING

Turn to page 3 in your test. Look at the word parts in the boxes. Circle the other half or part of each word.

READING COMPREHENSION

Turn to page 4 in your test. Write each word under its definition.
Refer to Student Support Materials for answer key.

BASIC WRITING

Turn to page 5 in your test. Look at the pictures in the boxes. Write the word for each picture.

Teacher: To get a percentage for this student's assessment, divide the total number of questions correct by the total number of questions, then multiply this answer by 100 to determine the percentage of questions answered correctly.

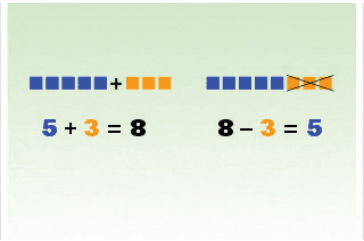
MATH PROGRAM

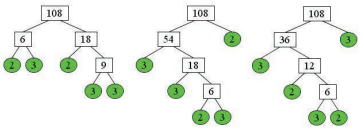
Unit Assessment Student Pages
Grade 8 • Unit 2

Date:_____ Student's Name:_____

Number Correct:_____ Percent Correct:_____


Please Excuse
My Dear
Aunt
Sally
PEMDAS


5 + 3 = 8
8 – 3 = 5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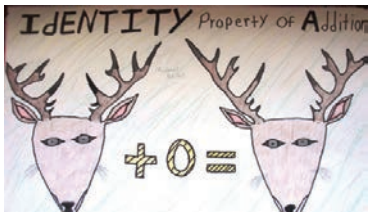
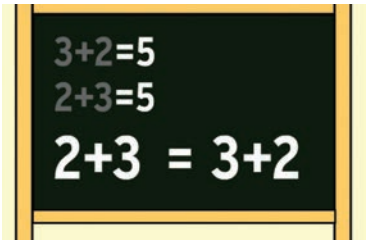
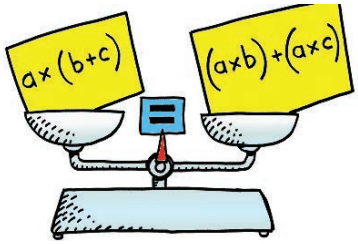
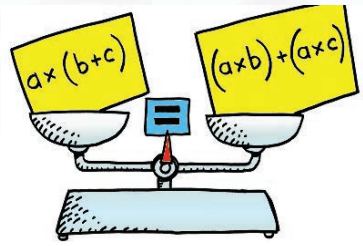

IdENTITY Property of Addition
+0=


3+2=5
2+3=5
2+3 = 3+2


a x (b+c)
(a x b) + (a x c)

inverse operations
order of operations
prime factorization
commutative property
identity property
associative property
distributive property



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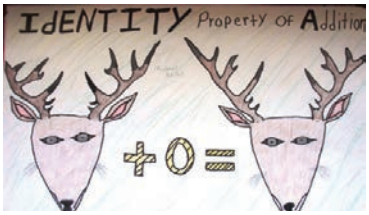

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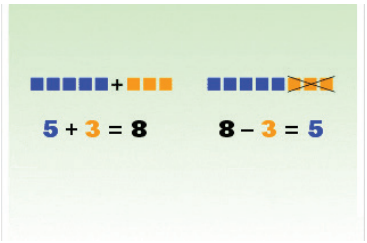

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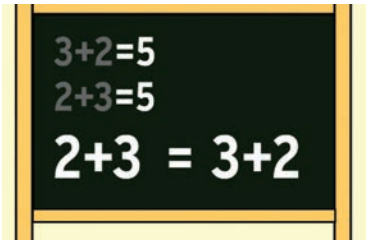

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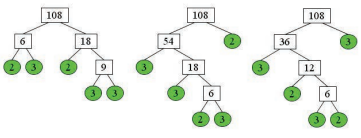

inverse operations
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distributive property

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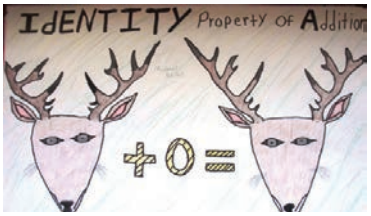
Numbers added or multiplied in any order yield same value	PEMDAS	Order of numbers does not affect the result
Breaking down a composite number into smaller divisors	Undoes another operation	a(b+c)=ab+ac
Equality remains true regardless of variable values		

inverse operations	order of operations	prime factorization	commutative property
identity property	associative property	distributive property	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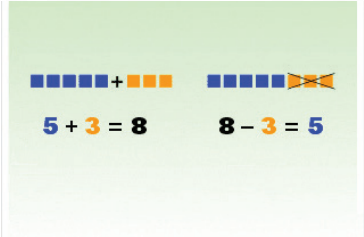
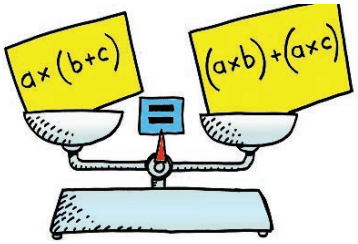
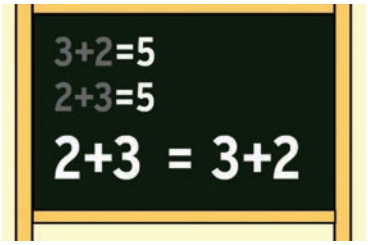

5 + 3 = 8
8 – 3 = 5


Please Excuse
My Dear
Aunt
Sally
PEMDAS


a x (b+c)
(a x b)+(a x c)


3+2=5
2+3=5
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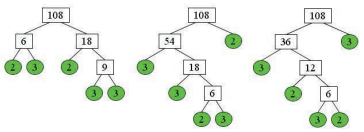
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