Name _____ Date _____ Bell warm up

Classwork: Sequences

State whether each sequence is *arithmetic*, *geometric*, or *neither*. If it is arithmetic or geometric, state the common difference or common ratio and write the next three terms of the sequence.

1. 3, 6, 12, 24, ... G 2
2. 1, 3, 5, 7, ... A 2
3. 1, 2, 6, 24, ... N (×2, ×3, ×4)
4. 0, 7, 14, 21, ... A 7
5. 2, 5, 8, 11, ... A 3
6. 5, 15, 45, 135, ... G 3
7. 0.3, 1.5, 7.5, 37.5, ... G 5
8. 1, 10, 100, 1,000, ... G 10
9. 7, 7, 7, 7, ... A 0 (+0, +0) G 1 A 4
10. 0.5, 2, 8, 32, ... G 4
11. 3, 7, 11, 15, ...
12. 9, 18, 36, 72, ... G 2

Name _____ Date _____ Bell _____

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1. 3, 6, 12, 24, ...
2. 1, 3, 5, 7, ...
3. 1, 2, 6, 24, ...
4. 0, 7, 14, 21, ...
5. 2, 5, 8, 11, ...
6. 5, 15, 45, 135, ...
7. 0.3, 1.5, 7.5, 37.5, ...
8. 1, 10, 100, 1,000, ...
9. 7, 7, 7, 7, ...
10. 0.5, 2, 8, 32, ...
11. 3, 7, 11, 15, ...
12. 9, 18, 36, 72, ...

homework

What is Bright and Asks a Lot of Questions?

For each exercise, write a pattern of numbers, then find the LAST number you write in one of the boxes at the bottom of the page. Write the exercise letter in that box.

Write the next three numbers in each pattern.

D. 1, 3, 5, 7, 9, 11, 13

B. $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}, \frac{7}{8}$

U. $2, 3\frac{1}{2}, 5, 6\frac{1}{2}, 8, 9\frac{1}{2}, 11$

A. 100, 81, 64, 49, 36, 25, 16

D. 1000, 100, 10, 1, .1, .01, .001

H. 15, 30, 45, 60, 75, 90, 105

E. $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \frac{1}{32}, \frac{1}{64}, \frac{1}{128}$

A. 1, 3, 6, 10, 15, 21, 28

U. 1, 3, 9, 27, 81, 243, 729

H. $1, \frac{1}{4}, \frac{1}{16}, \frac{1}{64}, \frac{1}{256}, \frac{1}{1024}, \frac{1}{4096}$

The figures shown below are made with toothpicks. Draw the next two figures in each pattern. Then count the number of toothpicks needed for each figure.

T. 5, 9, 13 — 17 (21)

R. 6, 11, 16 — 21 (26)

B. 8, 11, 14 — 17 (20)

Solve.

N. Antonio has $80 in his savings account. He plans to add $32 each month for the next 6 months. How much will Antonio have in his account at the end of each month? 272

L. There was already 14 in. of snow on the ground when the blizzard started. Each hour for the next 8 hours, 2.5 in. of snow fell. How much snow was on the ground at the end of each hour? 34 in

W. Altus is climbing 3000 ft to the top of a mountain. The temperature was 60°F when he started, but he expects it to drop 3.6° with each 1000 ft of elevation gain. Find the expected temperature after each 1000-ft gain. 49.2

A	36 in.	$\frac{1}{4096}$	H	U	N	D	R	E	D		W	H	A	T		R	U	E	S

PROPERTIES OF REAL NUMBERS

In math, properties are statements that are true for any numbers. They justify steps when simplifying expressions and solving equations.

change order

COMMUTATIVE Property

Main Idea: the order in which numbers are added or multiplied does not matter

ADDITION EXAMPLES	MULTIPLICATION EXAMPLES
• $a + b = b + a$	• $a \times b = b \times a$
• $3 + 5 = 5 + 3$	• $3 \times 5 = 5 \times 3$
• $2 + (4 + 6) = 2 + (6 + 4)$	• $2 \times (4 \times 6) = 2 \times (6 \times 4)$
• $3 + (8 + 1) = (8 + 1) + 3$	• $3 \times (8 + 1) = (8 + 1) \times 3$

same order

ASSOCIATIVE Property

Main Idea: the way numbers are grouped when added or multiplied does not matter

ADDITION EXAMPLES	MULTIPLICATION EXAMPLES
• $1+(2+3)=(1+2)+3$	• $1\cdot(2\cdot3)=(1\cdot2)\cdot3$
• $a+(b+c)=(a+b)+c$	• $a\cdot(b\cdot c)=(a\cdot b)\cdot c$
• $(8+5)+2=8+(5+2)$	• $(8\cdot5)\cdot2=8\cdot(5\cdot2)$
• $3+(x+y)=(3+x)+y$	• $3\cdot(x\cdot y)=(3\cdot x)\cdot y$

IDENTITY Property

Main Idea: adding zero or multiplying by one does not change the number

ADDITION EXAMPLES	MULTIPLICATION EXAMPLES
• $a+0=a$	• $a\times1=a$
• $5+0=5$	• $5\times1=5$
• $x\cdot y+0=x\cdot y$	• $x\cdot y\cdot1=x\cdot y$
• $\frac{1}{3}+0=\frac{1}{3}$	• $\frac{1}{3}\cdot1=\frac{1}{3}$

INVERSE Property

Main Idea: Adding the opposite = 0 multiplying the reciprocal is 1.

ADDITION EXAMPLES	MULTIPLICATION EXAMPLES
• $a + -a = 0$	• $a \cdot \frac{1}{a} = 1$
• $5 + -5 = 0$	• $5 \times \frac{1}{5} = 1$
• $\frac{1}{3} + -\frac{1}{3} = 0$	• $\frac{2}{3} \times \frac{3}{2} = 1$
• $x + -x = 0$	• $x \cdot \frac{1}{x} = 1$

PROPERTY OF ZERO

Main Idea: Multiplying by zero = 0

EXAMPLES

- $x \cdot 0 = 0$
- $8 \cdot 0 = 0$

DISTRIBUTIVE Property

Main Idea: multiplying by the sum of two numbers equals the sum of the two products.

EXAMPLES

- $a(b+c) = ab + ac$
- $2(3+4) = 2(3) + 2(4)$
- $3(x+2) = 3x + 6$
- $5(3+x) = 5(3) + 5(x)$

Name That Property!	
1. $4 + (a + b) = (4 + a) + b$	Associative
2. $2(x + 9) = 2x + 2 \cdot 9$	Distributive
3. $(2x) \cdot 1 = 2x$	Identity
4. $(m + n) + 3 = (n + m) + 3$	Commutative
5. $(5 - k) \cdot 0 = 0$	zero
6. $7(w + 3) = (w + 3)7$	Commutative
7. Name the additive inverse of 16.	-16
8. Name the multiplicative inverse of $\frac{3}{7}$.	$\frac{7}{3}$

$$4(2+3) = 4(2) + 4(3)$$

$$4(5) \qquad 8 + 12$$

$$20 \qquad 20$$

$$3(x-3) = 3x - 9$$

$$5(3+2) = 5(3) + (5)(2)$$

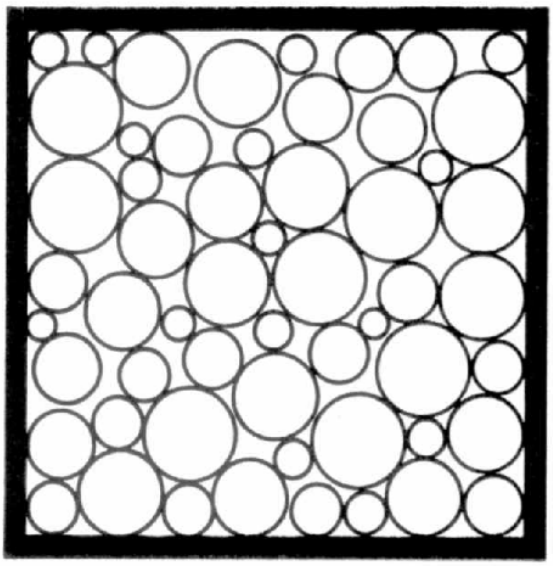
$$5(5) \qquad 15 + 10$$

$$25 = 25$$

What is the Title of This Picture?

TO DECODE THE TITLE OF THIS PICTURE: These equations illustrate the *distributive property.* For each equation, fill in the missing number. Then find your answer in the coded title. Each time the answer appears, write the letter of the exercise above it.

L	$3 \times (6 + 7) = (3 \times 6) + (3 \times \square)$
R	$5 \times (4 + 9) = (5 \times 4) + (5 \times \square)$
I	$8 \times (11 + 2) = (8 \times \square) + (8 \times 2)$
E	$6 \times (8 + 5) = (6 \times 8) + (\square \times 5)$
C	$25 \times (30 + 40) = (\square \times 30) + (25 \times 40)$
N	$70 \times (9 + \square) = (70 \times 9) + (70 \times 12)$
Y	$\square \times (61 + 49) = (3 \times 61) + (3 \times 49)$
F	$(4 \times 6) + (4 \times 8) = \square \times (6 + 8)$
S	$(20 \times 3) + (20 \times 17) = \square \times (3 + 17)$
T	$(9 \times 55) + (9 \times 29) = 9 \times (55 + \square)$
A	$(87 \times 38) + (87 \times \square) = 87 \times (38 + 74)$
X	$(31 \times 99) + (\square \times 56) = 31 \times (99 + 56)$
O	$(\square \times 80) + (5 \times 50) = 5 \times (80 + 50)$
P	$19 \times (33 + 6) = (19 \times \square) + (19 \times 6)$
Z	$(325 \times 7) + (325 \times \square) = 325(7 + 8)$



CODED TITLE:

6	31	33	7	5	20	11	5	12	71	11	12	14	74

33	11	8	8	74	35	4	74	25	29	5	9	3

Why Is The Library Not Adding Any More Fairy Tales?

For each exercise, write the missing number in the blank. Then select the property illustrated. CIRCLE the letter in the appropriate column next to the sentence.

At the bottom of the page, find the box containing the number you wrote in the blank. Write the letter you circled in this box.

		commutative property	associative property	identity property	zero property
1	$5 \times 1 = \square$ (5)	L	K	A	E
2	$12 \times \square = 12$	I	A	O	T
3	$4 \times 9 = 9 \times \square$	E	D	N	G
4	$30 \times \square = 50 \times 30$	F	P	H	B
5	$8 \times \square = 0$	A	O	T	I
6	$(2 \times 3) \times 7 = 2 \times (3 \times \square)$	C	T	Y	S
7	$(9 \times 8) \times 20 = 9 \times (8 \times \square)$	E	A	I	V
8	$(43 \times 21) \times 37 = \square \times (21 \times 37)$	N	F	R	T
9	$35 \times 45 = \square \times 35$	O	I	T	L
10	$\square \times 6 = 6 \times 96$	S	L	R	P
11	$77 \times 1 = \square$	N	F	T	S
12	$5 \times (40 \times 30) = (5 \times \square) \times 30$	T	N	D	G
13	$61 \times (38 \times \square) = (61 \times 38) \times 59$	A	U	R	S
14	$\square \times (3 \times 15) = (87 \times 3) \times 15$	T	C	N	R
15	$900 \times 44 = \square \times 900$	R	M	F	C
16	$\square \times 1 = 161$	I	S	E	R
17	$(22 \times 1) \times 9 = \square \times (1 \times 9)$	L	P	X	T
18	$75 + (6 \times 0) = \square + 0$	N	Q	R	L

0	77	44	5 (A)	40	45	59	7	1	43	161	75	50	96	22	20	87	4

What Did Pinocchio Say to His Barber?

Each equation is either (1) true because of the commutative property, (2) true because of the associative property, or (3) false. Mark the correct choice, then write the corresponding letter in the box containing the exercise number.

1 $n + 5 = 5 + n$
- **E** - TRUE (commutative property)
- **V** - TRUE (associative property)
- **P** - FALSE

2 $n \cdot 5 = 5 \cdot n$
- **T** - TRUE (commutative property)
- **U** - TRUE (associative property)
- **Q** - FALSE

3 $n - 5 = 5 - n$
- **A** - TRUE (commutative property)
- **K** - TRUE (associative property)
- **O** - FALSE

4 $n \div 5 = 5 \div n$
- **C** - TRUE (commutative property)
- **W** - TRUE (associative property)
- **H** - FALSE

5 $3 + (8 + x) = (3 + 8) + x$
- **G** - TRUE (commutative property)
- **F** - TRUE (associative property)
- **B** - FALSE

6 $3 \cdot (8x) = (3 \cdot 8)x$
- **N** - TRUE (commutative property)
- **T** - TRUE (associative property)
- **Y** - FALSE

7 $3 - (8 - x) = (3 - 8) - x$
- **R** - TRUE (commutative property)
- **U** - TRUE (associative property)
- **H** - FALSE

8 $3 \div (8 \div x) = (3 \div 8) \div x$
- **H** - TRUE (commutative property)
- **U** - TRUE (associative property)
- **A** - FALSE

9 $3 + (8x) = (3 + 8)x$
- **E** - TRUE (commutative property)
- **P** - TRUE (associative property)
- **U** - FALSE

10 $4 + (a + b) = (a + b) + 4$
- **T** - TRUE (commutative property)
- **G** - TRUE (associative property)
- **S** - FALSE

11 $4 + (a + b) = (4 + a) + b$
- **A** - TRUE (commutative property)
- **I** - TRUE (associative property)
- **O** - FALSE

12 $4 + (a + b) = 4 + (b + a)$
- **O** - TRUE (commutative property)
- **R** - TRUE (associative property)
- **L** - FALSE

13 $7(2w) = (2w)7$
- **E** - TRUE (commutative property)
- **A** - TRUE (associative property)
- **R** - FALSE

14 $7(2w) = (7 \cdot 2)w$
- **C** - TRUE (commutative property)
- **J** - TRUE (associative property)
- **B** - FALSE

15 $7(2w) = 7(w \cdot 2)$
- **T** - TRUE (commutative property)
- **I** - TRUE (associative property)
- **M** - FALSE

16 $15 + (6y) = 15 + (y \cdot 6)$
- **P** - TRUE (commutative property)
- **N** - TRUE (associative property)
- **D** - FALSE

17 $15 + (6y) = (6y) + 15$
- **S** - TRUE (commutative property)
- **L** - TRUE (associative property)
- **T** - FALSE

18 $15 + (6y) = (15 + 6)y$
- **M** - TRUE (commutative property)
- **P** - TRUE (associative property)
- **T** - FALSE

19 $p(9q) = (p \cdot 9)q$
- **A** - TRUE (commutative property)
- **F** - TRUE (associative property)
- **I** - FALSE

20 $p + (9 + q) = (p + 9) + q$
- **E** - TRUE (commutative property)
- **L** - TRUE (associative property)
- **R** - FALSE

21 $p - (9 + q) = (p - 9) + q$
- **N** - TRUE (commutative property)
- **T** - TRUE (associative property)
- **W** - FALSE

14	9	17	2	8	21	4	11	6	15	20	1	12	5	19	10	7	13	18	3	16

8th grade V11

7th grade R.10

Properties

Q.1
Q.4

Sequences

IXL

6th Grade

R.1 R.2

Ratios

7th Grade

Q.1 Q.4

Sequences