

Order of Operations Agreement

Date _____

- 1) Parenthesis () or [] or { } or —
(Do operations inside grouping symbols AND above or below a division bar)
(Do innermost grouping symbols first.)

$$2^3 = 2 \cdot 2 \cdot 2 = 8$$

- 2) Exponents $4^2 = 4 \cdot 4 = 16$

- 3) Multiply and Divide from left to right

- 4) Add or Subtract from left to right

Math 7 Notes Pre-chapter 3

Find the value of this numerical expression.

$$5 + 5 \cdot 5 - 5 \div 5 + 5 \cdot 5 \div 5$$

$$5 + 25 - 5 \div 5 + 5 \cdot 5 \div 5$$

$$5 + 25 - 1 + 5 \cdot 5 \div 5$$

$$5 + 25 - 1 + 25 \div 5$$

$$5 + 25 - 1 + 5$$

$$30 - 1 + 5$$

$$29 + 5$$

$$34$$

Remember there are many ways to show multiplication:

- * 3×2
- * $3(2)$
- * $3 \cdot 2$
- * $(3)(2)$
- * $(2)3$
- * ab
- * $3a$

Do innermost grouping symbols first:

$$100 \times [24 \div (6 \times 2)]$$

$$100 \times [24 \div 12]$$

$$100 \times [2]$$

$$200$$

$$100 \times 2$$

$$100[2]$$

Show work like this:

$$28 \div (3-1)^2$$

$$28 \div (2)^2$$

$$28 \div 4$$

$$7$$

$$15 + 5(3) - 2$$

$$15 + 15 - 2$$

$$30 - 2$$

$$28$$

$$12(3) - 2^2$$

$$12(3) - 4$$

$$36 - 4$$

$$32$$



Note the differences!

$48 \div 8 \cdot 3$ $6 \cdot 3$ <u>18</u>	$48 \div (8 \cdot 3)$ $48 \div 24$ <u>2</u>
$2 \cdot 8^2$ $2 \cdot 64$ <u>128</u>	$(2 \cdot 8)^2$ $(16)^2$ <u>256</u>
$8 + 2^3$ $8 + 8$ <u>16</u>	$(8 + 2)^3$ $(10)^3$ <u>1000</u>

64
24

16
x16

10 · 10 · 10
100 · 10
1000

2 · 2 · 2
4 · 2

Evaluate. Show steps.

$$\frac{4 + 6 \times 2}{3^2 - 2 - 3}$$

$$\frac{4 + 12}{9 - 2 - 3}$$

$$\frac{16}{7 - 3}$$

$$\frac{16}{4}$$

$$4$$

$$8 + 2[18 \div (3 + 6) + 2^3]$$

$$8 + 2[18 \div 9 + 2^3]$$

$$8 + 2[18 \div 9 + 8]$$

$$8 + 2[2 + 8]$$

$$8 + 2[10]$$

$$8 + 20$$

$$28$$

$$8 + 2 \cdot 10$$

Find the errors!



$$(2)3^2 + 12 + 4 \times 3$$

$$(2)9 + 12 \div 4 \times 3$$
~~$$6^2 + 12 + 4 \times 3$$~~

$$18 + 12 \div 4 \times 3$$
~~$$36 + 12 + 12$$~~

$$18 + 3 \times 3$$
~~$$36 + 1$$~~

$$18 + 9$$
~~$$37$$~~

$$27$$

$$2 + 8(5 - 2)^2$$

$$2 + 8(3)^2$$
~~$$10(5 - 2)^2$$~~

$$2 + 8 \cdot 9$$
~~$$10(3)^2$$~~

$$2 + 72$$
~~$$10(9)$$~~
~~$$90$$~~

$$74$$

What characteristic determines on which side of the T-chart a number belongs?

"Perfect Squares" | Not "Perfect Squares"

25

81

9

400

1

7 2

46

18