**MATH 100:  class discussion**

**4 September 2018**

**If time permits play 2048. Download app on your phone.**

Write the powers of 2 through 212. Can you estimate 220 without using a calculator?

Order of Operations:

1. Parentheses
2. Exponents and roots
3. Multiplication and Division
4. Addition and Subtraction

Basic laws:

1. Associative rule
2. Distributive rule
3. Commutative rule

Verify each of the following examples:

2. + 5

Exercises: Simplify each of the following expressions:

1. ( 5 – 4) – ((2 – 3) + 1)
2. (9 – 11) + 5(1 – 4 ÷2)
3. 1 + 2(3 – 4) + (6 – 7 + 8) (3+1)
4. 3(1+ 2(3 +4 (5 + 6)))
5. 5(x – 3) – 7(6 – x) + 3
6. 24 – 3(8 – x)
7. 7(25 – x) – 2x
8. 2(3x – 25)
9. 5x – 17 + 3x – 5
10. 6x – 7 – 8x + 115
11. x – [3 + {x – 3(3 + x)}]
12. 14x – (5x – 9) – {4 – 3x – (2x – 3)}
13. 1/2 + 9

* **Algebra exercises from Hall & Knight I (continued from last class)**

1. If a = 7, b = 2, c = 0, x = 5, y = 3, find the value of: (A) ab3, (B) a4by, (C) a5c5yx, (D) 1x+3y, (E) abcxy, (F) 2a + 5b + 9c, (G) 3x2 + 1, (H) , (I) 

2. If a = 2, b = 3, c = 1, p = 0, q = 4, r = 6, find the value of: (A) , (B) 3a2bc, (C) , (D) , (E) 

3. If a = 2, b = 3, c = 1, d = 0, find the numerical value of: (A) 3bcd + 5cda – 7dab + abc,

(B) 2a2 + 3b3 – 4c4, (C) a2 + b2 + c2 + d2, (D) a4 + b4 – c4

4. If a = 2, b = 1, c = 3, x = 4, y = 6, z = 0, find the value of:

(A) c2(y – x) – b2(c – a) , (B) (2a – c)(x + 2y – z), (C) ,

(D) , (E) 

5. When *x* has the values 0, 3, 6, 8, 10, find the values of x2 – 9x + 20.

6. Show that, if a = 10 and b = 7, then the following two expressions are equal:

4(a – b) + 3(a + b), 5(a + b) + 2(a – 3b)

Are these expressions equal *for all values of a and b?*

7. When x = 5, show that 4x2 + 4x – 3 is equal to 9(x + 8).

8. Show that 6x3 – 11x2 + 3x is equal to 0 when x = 1/3, and when x = 3/2. Find its value in the form of a decimal when x = 1/10.

*Oral exercises (from Hall & Knight):*

(A) Which is the greater 245 or 2∙4∙5, and by how much?

(B) Write the product of *t* and *u* in three ways.

(C) If 5 first-graders have *p* marbles each, express algebraically how many they have in all. If p = 25, what is the number?

(D) If 6 cakes are to be shared equally among *x* boys, express algebraically how many each will have. If x = 42, what is the number?

(E) If 54 books are divided equally among *c* students, express each student’s share algebraically. What is the arithmetical value if c = 6?

(F) What is the difference between “twice 3” and “3 squared”?

(G) Give the expression for “thrice d,” also that for the “cube of d.” Give the arithmetical values if d = 2.

(H) Distinguish between “four times x” and “x to the fourth.” Give the respective values when x = 3.

(I) The quantity *c* is to be multiplied by the quantity *x*. How is this expressed?

Give the product if c = 7 and x = 3.

(J) If *x* *factors*, each equal to *c*, are to be multiplied together, express this algebraically. What is the value if x = 2 and the factor c = 7?

(K) The quantities *a, b, c* are to be added together. Express this algebraically. What is the answer if a = 5, b = 7, c = 11?

(L) The quantity *r* is to be taken from the quantity *s*. Give the algebraic expression that denotes this. What is the answer if r = 27 and s = 41?

(M) Albertine starts playing with x marbles and wins y. Express the number she then has. If x = 25 and y = 9, what number has she?

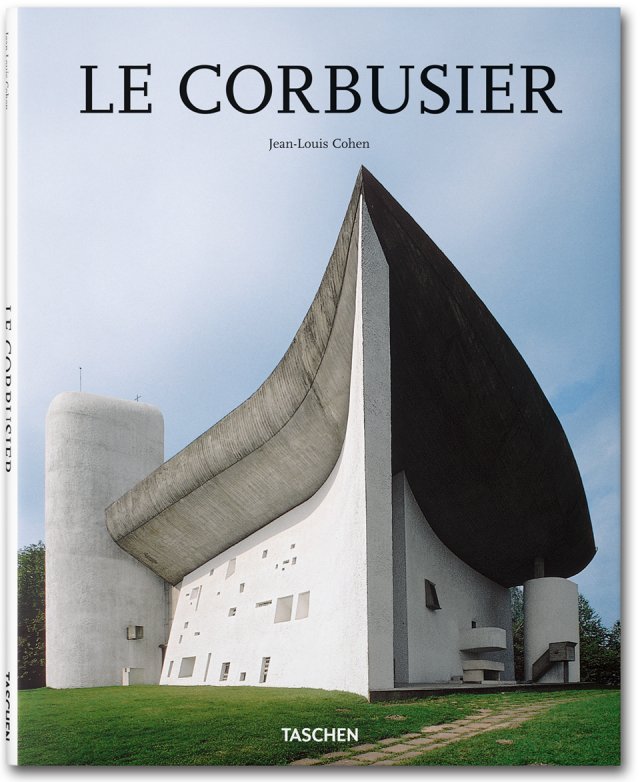
(N) Albertine plays with her increased number and loses *z*. Express the number she then has. If z = 17, how many has she left?

(O) A farmer takes *f* sheep to market and sells *g* of them. How many has she left? What is the *remainder* if f = 64 and g = 48?

(P) Another farmer takes *k* sheep to market and returns with *l* of them. How many has he sold? If *k* = 75 and *l* = 32, what is the number he has sold?

(Q) Give the sum and product of the three quantities *a, b, c*; and if a = 5, b = 7, c = 6, give the arithmetical value of each.

(R) If I walk *y* miles per hour for *y* hours, what is the algebraic expression for the length of my walk? If y = 4, what is the answer?

[](http://www.taschen.com/pages/en/catalogue/architecture/all/41909/facts.le_corbusier.htm)

*The mathematical phenomenon always develops out of simple arithmetic, so useful in everyday life, out of numbers, those weapons of the gods: the gods are there, behind the wall, at play with numbers.*

- [Le Corbusier](http://en.wikipedia.org/wiki/Le_Corbusier) (1887 – 1965)