T101 CHAPTER 3 REVIEW **Name**_____

The following is ONLY A SAMPLING of possible exam questions. It **does not** cover all topics, algorithms, or concepts that apply to this chapter. **THE TEXT, NOTES, HOMEWORK, ETC SHOULD BE REVIEWED!**

Last Edit: Spring 2010

1) Name the Models of Addition.

2) Name the Models of Subtraction.

3) Name the Models of Multiplication.

4) Name the Models of Division.

5) What is the Division Algorithm?

6) What is the identity element for:
   a. Multiplication?
   b. Addition?

7) Add: 517 + 86 using:
   a. Base 10 Blocks (Show regrouping)
   b. Using an Expanded Algorithm
   c. Using our Standard Algorithm
   d. Using a Left–to–Right Algorithm
   e. Using Lattice Algorithm
   f. Using Scratch Algorithm

8) Subtract: 234 – 96 using:
   a. Base 10 Blocks (Show regrouping)
   b. Using an Expanded Algorithm
   c. Using our Standard Algorithm
   d. Using Equal Addends Algorithm

9) Multiply: 234 x 96 using:
   a. Using Lattice Algorithm
   b. Using an Expanded Algorithm
   c. Using our Standard Algorithm

10) Divide: 234 ÷ 96 using:
   a. Using Repeated Subtraction (Turbo)
   b. Using Scaffolding
   c. Using our Standard Algorithm

11) Divide: 534 ÷ 4 using Base 10 Blocks (Show Regrouping)

12) Use the number line model to show that:
   13 – 9 = 4. (Know other models as well.)

13) You take your class to the local fast food restaurant. Your students only like chicken nuggets, hot dogs, or cheeseburgers, but the sides they can choose from are french fries or tater tots. Using a tree diagram, list all possible meals that your students could possibly order at the restaurant. Show final list!

14) The little league was originally divided into 8 teams of 9 players each. But then 24 more children signed up, so they had to start all over forming the teams. Now each team has 12 players. How many teams are there now?

15) Determine if each of the following is closed :
   a. {2, 4, 6, 8 }; under addition
   b. {0, 1} ; under multiplication
   c. {0, 5, 10, 15, 20,...}; under addition
   d. The set of even whole numbers with 6 removed; under multiplication

16) Describe IN WORDS ONLY, how a child would take advantage of the *making ten strategy* to help them add: 8 + 3.

17) Identify each of the following properties. Be specific. Spelling counts.
   a. $3 \cdot 1 = 1 \cdot 3 = 3$
   b. $7 \cdot (x - v) = 7 \cdot x - 7 \cdot v$
   c. $5 (x + y) = 5 (y + x)$
   d. $(x + t) + s = x + (t + s)$
   e. $(7 \cdot 6) - (5 \cdot 3) = (6 \cdot 7) - (5 \cdot 3)$

18) Factor:
   a. $ab + 2b$
   b. $4x^3 + 16x$
   c. $25wx - 15wy - 10wz$
   d. $5t^2 - 10t - 25$
   e. $3x(5x + 6) - 4(5x + 6)$

19) Show how to model 3 x 5 using the *area model*. (Know other models as well.)

20) Simplify the following using the distributive property: $*(\bullet - \triangle)$

21) Mary had 11 strings of beads, each having 160 beads. She restrung them such that she had 5 strings, each having the same number of beads again. How many beads did she have on each string?

22) Illustrate the *Set Model of Addition* for : Alex has 4 marbles and his brother Zachary has 5 marbles. How many do they have together? (Know other models as well.)

23) Insert the terms quotient, dividend, remainder and divisor in the correct position in the following division box:

$$\overline{)\qquad\qquad}$$

24) **Answer the following:**

a. Sometimes $x - x = x$. For what value of x does this happen?

b. Sometimes $x \cdot x = x$. For what value(s) of x does this happen?

25) Write **TRUE or FALSE:**

a. $0 \div 43 = 0$
b. $0 \cdot 0 = 0$
c. $11 \div 0 = 0$
d. $0 \div 0 = 0$

26) Place parentheses ( ) in the following equation to make it true:

$2 \times 3 + 4 - 1 = 13$

Add in the indicated base.

27) $221_{four} + 131_{four}$

28) $323_{five} + 40_{five}$

29) $32_{seven} + 35_{seven}$

30) $1011_{two} + 101_{two}$

31) $4432_{five} + 43_{five} + 244_{five}$

Subtract in the indicated base.

32) $231_{five} - 32_{five}$

33) $64_{eight} - 37_{eight}$

34) $11{,}000_{two} - 110_{two}$

35) $8724_{twelve} - 92T_{twelve}$

36) $20003_{five} - 1324_{five}$

Multiply in the indicated base.

37) $235_{seven} \times 6_{seven}$

38) $32_{five} \times 24_{five}$

39) $64_{eight} \times 4_{eight}$

40) $100_{two} \times 101_{two}$

Divide in the indicated base.

41) $1230_{six} \div 2_{six}$

42) $11_{three} \overline{)\,20112_{three}}$

Find the missing numbers.

43)

	(a)	5	4	8
		3	(b)	2
+	4	5	8	(c)
	7	(d)	0	5

44)

		6	( )	5
×			9	2
	1	2	( )	0
5	( )	( )	5	0
5	9	3	4	0

Provide an appropriate response.

45) Is it true that $4_{ten} - 4_{five} = 0$? If false, then explain.

46) Is it true that $43_{ten} - 43_{five} = 0$? If not, then explain.

47) Determine what is wrong with the following:

$$\begin{array}{r} 139 \\ +\ 24 \\ \hline 153 \end{array}$$

Simplify the following. Leave answer as a power.

48) $7^{12} \cdot 7^{15}$

Identify the base used in the computation.

49)
$$\begin{array}{r} 321 \\ +\ 313 \\ \hline 1300 \end{array}$$

50)
$$\begin{array}{r} 2030 \\ -\ 234 \\ \hline 1241 \end{array}$$

Use the method suggested to compute mentally.

51) Use breaking and bridging.

$$\begin{array}{r} 82 \\ +\ 69 \\ \hline \end{array}$$

52) Use trading off.

$$\begin{array}{r} 122 \\ +\ 38 \\ \hline \end{array}$$

53) Use front–end multiplying.

$$\begin{array}{r} 15 \\ \times\ 45 \\ \hline \end{array}$$

54) Use the method of breaking up the dividend.

$13\overline{)143}$

Round the number to the place value indicated.

55) $6\underline{4}7$

56) $\underline{1}833$

Estimate by rounding.

57)
$$\begin{array}{r} 489 \\ -\ 243 \\ \hline \end{array}$$

58) $793 \div 18$

Answer Key
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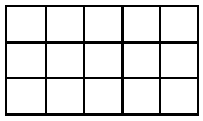
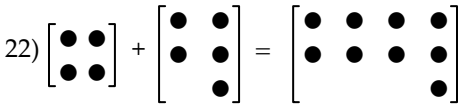
1) Set & Number Line
2) Comparison, Take–Away, Missing Addend & Number Line
3) Repeated Addition, Array, Area, Cartesian–Product, & Number Line
4) Set or Partition, Missing Factor, Repeated Subtraction
5) $bq + r = a$
6) a. 1
   b. 0
7)
8)
9)
10)
11)
12) Start at zero and draw a ray ending at 13. Above this ray draw another ray heading in the other direction ending at 4. Indicate that the answer is 4.
13) DRAW ONE TREE!!!!!
    Final list:
    Nuggets & Fries
    Nuggets & Tots
    Dogs & Fries
    Dogs & Tots
    Cheeseburger & Fries
    Cheeseburger & Tots

14) 8 teams
15) a. no
    b. yes
    c. yes
    d. yes
16) They would start with 8 and add 2 (of the 3) to get 10, then add 1 more (to complete the 3) thus getting 11.
17) a. Identity Property of Multiplication of Whole Numbers
    b. Distributive Property of Multiplication over Subtraction of Whole Numbers
    c. Commutative Property of Addition of Whole Numbers
    d. Associative Property of Addition of Whole Numbers
    e. Commutative Property of Multiplication of Whole Numbers
18) a. $b(a + 2)$
    b. $4x(x^2 + 4)$
    c. $5w(5x - 3y - 2z)$
    d. $5(t^2 - 2t - 5)$
    e. $(3x - 4)(5x + 6)$

19) 

20) $*\bullet - *\triangle$
21) 352 beads
22) 
    quotient remainder
23) divisor)dividend
24) a. 0
    b. 0 and 1
25) a. True
    b. True
    c. False
    d. False
26) $2 \times (3 + 4) - 1 = 13$
27) 1012_{four}
28) 413_{five}
29) 100_{seven}
30) $10{,}000_{two}$
31) 10324_{five}
32) 144_{five}
33) 25_{eight}
34) $10{,}010_{two}$
35) $79E6_{twelve}$
36) 13124_{five}
37) 2112_{seven}
38) 1423_{five}
39) 320_{eight}
40) $10{,}100_{two}$
41) 413_{six}
42) 11212 *three*
43) (a) = 2, (b) = 7, (c) = 5, (d) = 5
44)

			6	(4)	5
×				9	2
		1	2	(9)	0
	5	(8)	(0)	5	0
	5	9	3	4	0

45) Yes, it is true.
46) No. The correct answer is 20_{ten}.
47) Regrouping was not performed in the tens position.
48) 7^{27}
49) Base four
50) Base five

Answer Key
Testname: T101 CHAP3 REVIEW FALL09

51) 82 plus 60 more is 142
142 plus 9 is 151
52) 122 plus the 8 from 38 is 130.
130 plus the 30 is 160.
53) 10 times 40 is 400
10 times 5 is 50 total of 450
5 times 40 is 200 total of 650
5 times 5 is 25 total of 675
54) $13\overline{)130 + 13}$ which is $10 + 1 = 11$
55) 650
56) 2000
57) 500 – 200 is 300
58) 800 divided by 20 is about 40