End-of-Year Test - Grade 3

This test is quite long, so I do not recommend having your child/student do it in one sitting. Break it into parts and administer them either on consecutive days, or perhaps on morning/evening/morning. This is to be used as a diagnostic test. You may even skip those areas that you already know for sure your student has mastered.

The test does not cover every single concept that is covered in the *Math Mammoth Grade 3 Curriculum*, but all the major concepts and ideas are tested here. This test is evaluating the child's ability in the following content areas:

- multiplication tables and basic division facts
- mental math
- regrouping in addition and subtraction; checking subtraction with addition
- rounding to the nearest ten
- basic word problems
- writing an equation for a word problem
- estimating
- multiplication and related concepts
- clock to the minute and elapsed time calculations
- reading a bar graph; making a pictograph
- basic money calculations (finding totals and change)
- place value with four-digit numbers
- adding and subtracting four-digit numbers
- division and related concepts (division by 1 or 0, word problems)
- measuring lines in inches and centimeters
- basic usage of measuring units
- attributes of shapes
- area and perimeter of rectangles
- the concept of a fraction, fractions on a number line
- equivalent fractions
- comparing fractions

Note 1: problems #2 and #3 are done orally and timed. Let the student see the problems. Read each problem aloud, and wait a maximum of 5-6 seconds for an answer. Mark the problem as right or wrong according to the student's (oral) answer. Mark it wrong if there is no answer. Then you can move on to the next problem.

You do not have to mention to the student that the problems are timed or that they will have 5-6 seconds per answer, because the idea here is not to create extra pressure by the fact it is timed, but simply to check if the student has the facts memorized (quick recall). You can say for example (vary as needed):

"*I will ask you some multiplication and division questions. Try to answer me as quickly as possible. In each question, I will only wait a little while for you to answer, and if you do not say anything, I will move on to the next problem. So just try your best to answer the questions as quickly as you can.*"

In order to continue with the Math Mammoth Grade 4 Complete Curriculum, I recommend that the child gain a minimum score of 80% on this test, and that the teacher or parent review with him any content areas that are found weak. Children scoring between 70 and 80% may also continue with grade 4, depending on the types of errors (careless errors or not remembering something, vs. lack of understanding). The most important content areas to master are the multiplication tables and the word problems, because of the level of logical reasoning needed in them. Use your judgment.

Instructions to the student: Answer each question in the space provided.

Instructions to the teacher: My suggestion for grading is below. The total is 219 points. A score of 175 points is 80%.

Grading on question 1 (the multiplication tables grid): There are 144 empty squares to fill in the table, and the completed table is worth 14 points. Count how many of the answers the student gets right, divide that by 10, and round to the nearest whole point. For example: a student gets 24 right. 24/ 10 = 2.4, which rounded becomes 2 points. Or, a student gets 85 right. 85/10 = 8.5, which rounds to 9 points.

Grading on question 2: Each question is worth 1/2 point.

Question	Max. points	Student score
Multiplication Tables and Basic Division Facts		
1	14 points	
2	8 points	
3	8 points	
subtotal		/ 30
Addition and Subtraction		
4	6 points	
5	6 points	
6	3 points	
7	2 points	
8	3 points	
subtotal		/ 20
Regrouping and Rounding		
9	3 points	
10	2 points	
11	4 points	
12	3 points	
13	4 points	
14	3 points	
subtotal		/ 19

Question	Max. points	Student score
Multiplication and Related Concepts		
15	1 point	
16	1 point	
17	3 points	
18	3 points	
19	3 points	
20a	2 points	
20b	2 points	
20c	2 points	
20d	2 points	
subtotal		/ 19
Time		
21	6 points	
22	2 points	
23	4 points	
24	4 points	
subtotal		/ 16
Graphs		
25	4 points	
26	3 points	
subtotal		/ 7

Question	Max. points	Student score
Money		
27	4 points	
28	3 points	
29	3 points	
subtotal		/ 10
Four-Digit Numbers		
30	2 points	
31	2 points	
32	5 points	
33	4 points	
34	4 points	
subtotal		/ 17
Division and Related Concepts		
35	2 points	
36	9 points	
37	6 points	
38	6 points	
subtotal		/ 23
Measuring		
39	2 point	
40	1 point	
41	1 point	
42	1 point	
43	6 points	
subtotal		/ 11

Question	Max. points	Student score
Geometry		
44	6 points	
45	3 points	
46	2 points	
47	3 points	
48	2 points	
49	2 points	
50	2 points	
subtotal		/ 20
Fractions		
51	5 points	
52	5 points	
53	4 points	
54	3 points	
55	2 points	
56	5 points	
57	3 points	
subtotal		/ 27
TOTAL		**/ 219**

Math Mammoth Grade 3 End-of-Year Test

Multiplication Tables and Basic Division Facts

1. Your first task is to fill in the complete multiplication table (as much as you can).
   You have 12 minutes to fill in, as much as you can, of it.

×	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

In problems 2 and 3, your teacher will read you multiplication and division questions. Try to answer them as quickly as possible. In each question, he/she will only wait a little while for you to answer, and if you do not say anything, your teacher will move on to the next problem. So just try your best to answer the questions as quickly as you can.

2. Multiply.

a.	**b.**	**c.**	**d.**
2 × 7 = _____	7 × 4 = _____	3 × 3 = _____	7 × 8 = _____
8 × 3 = _____	5 × 8 = _____	4 × 4 = _____	6 × 5 = _____
5 × 5 = _____	3 × 9 = _____	7 × 7 = _____	8 × 6 = _____
9 × 4 = _____	5 × 7 = _____	4 × 8 = _____	6 × 9 = _____

3. Divide.

a.	**b.**	**c.**	**d.**
21 ÷ 3 = _____	32 ÷ 4 = _____	45 ÷ 5 = _____	50 ÷ 5 = _____
35 ÷ 7 = _____	40 ÷ 8 = _____	28 ÷ 4 = _____	72 ÷ 9 = _____
48 ÷ 6 = _____	66 ÷ 6 = _____	36 ÷ 9 = _____	18 ÷ 6 = _____
49 ÷ 7 = _____	56 ÷ 8 = _____	63 ÷ 7 = _____	27 ÷ 9 = _____

Addition and Subtraction

4. Add in your head and write the answers.

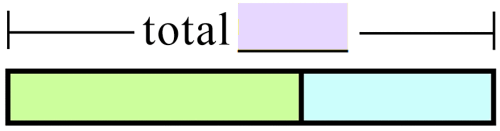
a. 240 + 70 = _____ 99 + 50 = _____	**b.** 540 + 80 = _____ 335 + 9 = _____	**c.** 59 + 89 = _____ 46 + 34 = _____

5. Subtract in your head and write the answers.

a. 100 – 67 = _____ 73 – 68 = _____	**b.** 651 – 8 = _____ 54 – 9 = _____	**c.** 52 – 37 = _____ 400 – 22 = _____

6. Write one addition and two subtraction equations to match the bar model.

   Write the numbers in the bar model, also.



_____ + _____ = _____

900 − _____ = 440

_____ − _____ = _____

7. A family is driving 300 miles from their hometown to Grandma's place.
   10 miles before the half-way point they stopped to have lunch.
   How many miles do they still have to go?

8. Write an equation (or several) for the problem. Use a letter for the unknown.

A store owner had a fridge with a price of $400. Then he doubled the price.
A customer came, and he told the customer, "I will take some money off the price."
So, the customer paid $600. How much did the dealer take off the price?

Equation: _____

Solution: _____

Regrouping and Rounding

9. Round these numbers to the nearest ten.

a. 93 ≈ _____	**b.** 607 ≈ _____	**c.** 455 ≈ _____

10. Eric earns $78 each week. He wants to purchase a phone for $459.
Round the numbers, and then estimate in how many weeks he could buy the phone.

11. Solve what number goes in place of the triangle.

a. 414 + △ = 708

△ is _____

b. △ – 339 = 485

△ is _____

12. Solve. Check that your final answer is reasonable.

Jason wants to buy a $545 camera and a $52 camera bag. Right now, he has saved $310. Your task is to find out how much more money he needs.

a. Write an equation for this problem that uses a letter for the unknown.

_____

b. Estimate the final answer: Jason needs about $_____more.

c. Now calculate the exact answer. Jason needs $_____ more.

13. Subtract. Then check your answer.

a.	Check:	**b.**	Check:
$\begin{array}{r} 962 \\ -\ 383 \\ \hline \end{array}$		$\begin{array}{r} 703 \\ -\ 546 \\ \hline \end{array}$	

14. The calculation on the right shows how Joe added 82 + 539 + 154 + 8.

$$\begin{array}{r} {\scriptstyle 2} \\ 82 \\ 539 \\ 154 \\ +\ \ 8 \\ \hline 855 \end{array}$$

a. *Estimate* the result of 82 + 539 + 154 + 8.

b. How could Joe see that his answer is not reasonable?

c. Correct the error Joe made.

Multiplication and Related Concepts

15. Draw a picture to illustrate the multiplication 3 × 4 = 12.

16. Solve: 3 × 25 = _____

17. Solve.

a. 80 × 3 = _____	**b.** 7 × 70 = _____	**c.** 6 × 50 = _____

18. Write a multiplication equation (NOT just the answer) to solve how many legs these animals have in total.

a. seven horses _____

b. five ducks _____

c. eight horses and six ducks _____

19. Solve.

a. $24 + 8 \times 3$	**b.** $2 + (5 + 4) \times 2$	**c.** $66 - 5 \times 5$

20. Solve. Write an equation for each problem.

a. Pat wants to have three rolls for each of her 12 guests. How many rolls does she need?

Equation: _____ She needs _____ rolls.

b. Each table in a restaurant seats four people. How many tables do you need to reserve for a party of 32 people?

Equation: _____ You need _____ tables.

c. A cafeteria menu had spaghetti with meatballs for $8 and bean soup for $6. How much would it cost to buy three plates of spaghetti with meatballs and three bowls of bean soup?

Equation: _____ It would cost $_____.

d. Anna is bagging hair clips she made. She will put four hair clips in each bag. She has 28 hair clips to bag. How many bags will she need?

Equation: _____ She will need _____ bags.

Time

21. Write the time the clock shows. Below, write the time 10 minutes later.

	a.	**b.**	**c.**
			
The time now →	_____ : _____	_____ : _____	_____ : _____
10 min. later →	_____ : _____	_____ : _____	_____ : _____

22. How many minutes is it from the time on the clock face till the given time?

	
till 1:00	till 5:55
a. _____ minutes	**b.** _____ minutes

23. How much time passes? You can draw a number line for each question to help you.

a. from 2:49 AM to 3:12 AM

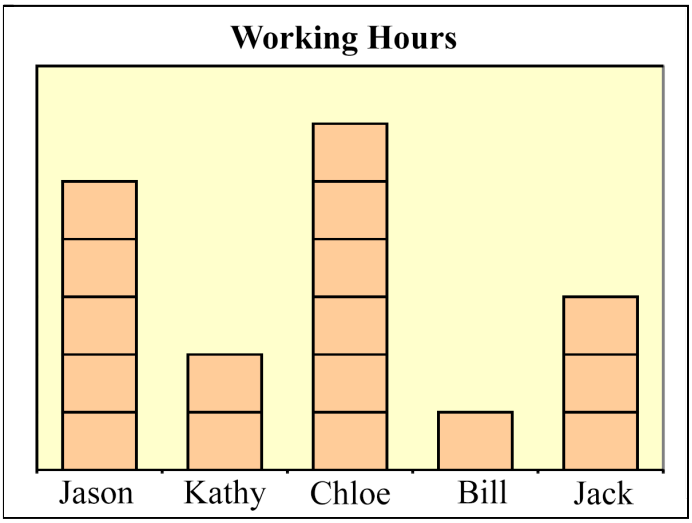
b. from 11:33 AM to 12:06 PM

24. **a.** Jess started to watch an animal video at 4:35 PM and she stopped at 4:52 PM. How long did she watch it?

b. A casserole dish needs to bake for 45 minutes. If it needs to be ready at 6:30 PM, when should it go to the oven?

Graphs

25. The graph shows some people's working hours on Uncle Ted's apple farm. **Each block means 5 hours of work.**



a. How many hours did Chloe and Kathy work in total?

b. How many more hours did Jason work than Jack?

c. How many less hours did Bill work than Jack?

d. How many hours did Jason, Bill and Jack work in total?

26. The table below lists how many hours of tennis practice each person did in a month. Make a pictograph from the data. Use a tennis ball for the picture. Choose how many hours each tennis ball picture represents.

Tennis Practice (hours)	
Ava	6
Juan	3
Greg	9
Adelaide	12

Tennis Practice	
Ava	
Juan	
Greg	
Adelaide	

 = ____ hours

Money

27. Solve using mental math.

a. You buy a book for $7.10 and stickers for $2.50. You give $10. Your total: $_____ Change: $_____	**b.** You buy two baskets for $4.45 each. You give $10. Your total: $_____ Change: $_____

28. Find the total cost of buying the items listed. Line up the numbers carefully when you add.


$9.90


$8.95


$1.25


$16.59

a. a stuffed elephant and a bag	**b.** two pens and a book	**c.** three stuffed elephants

29. A pencil case costs $5.85. If Mark buys three of them and pays $20, what will his change be?

Four-Digit Numbers

30. These numbers are written as sums. Write them in the normal way.

a. 5,000 + 200 + 5 = _____	**b.** 90 + 2,000 + 4 = _____
c. 300 + 7,000 = _____	**d.** 2 + 8,000 = _____

31. Fill in the missing part.

a. 2,000 + 60 + _____ = 2,760	**b.** 700 + 20 + _____ + 9 = 2,729

32. Compare and write < , > , or = in the box.

a. 6,034 ☐ 3,064	**b.** 5,156 ☐ 5,516	**c.** 9,079 ☐ 9,097
d. 6,000 + 3 + 40 ☐ 400 + 60 + 3,000	**e.** 900 + 7,000 ☐ 90 + 7,000 + 2	

33. Add and subtract.

a. 5,400 + 300 = _____ 7,800 + 800 = _____	**b.** 2,900 – 1,700 = _____ 8,100 – 300 = _____

34. Solve. Check your work by adding.

a.

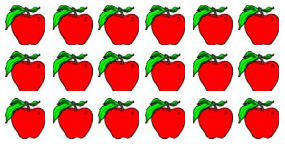
$$\begin{array}{r} 8\ 1\ 4\ 9 \\ -\ 2\ 8\ 8\ 8 \\ \hline \end{array} \qquad + \_\_\_\_\_$$

b.

$$\begin{array}{r} 6\ 4\ 3\ 6 \\ -\ 3\ 7\ 4\ 9 \\ \hline \end{array} \qquad + \_\_\_\_\_$$

Division and Related Concepts

35. Write two multiplications and two divisions for the same picture.



____ × ____ = _____ _____ ÷ ____ = ____

____ × ____ = _____ _____ ÷ ____ = ____

36. Fill in the missing numbers.

a. 50 ÷ _____ = 5	**b.** 6 × _____ = 48	**c.** 64 ÷ _____ = 8
d. 5 = 45 ÷ _____	**e.** 20 = 4 × _____	**f.** _____ ÷ 5 = 8
g. _____ × 9 = 54	**h.** _____ ÷ 9 = 12	**i.** 32 ÷ _____ = 4

37. Divide, but CROSS OUT all the problems that are impossible!

a. 17 ÷ 1 = _____ 17 ÷ 0 = _____	**b.** 17 ÷ 17 = _____ 0 ÷ 0 = _____	**c.** 1 ÷ 1 = _____ 0 ÷ 1 = _____

38. Solve. Write an equation for each problem, using a letter for the unknown.

a. Camila, Leo, and Daniel decided to buy a gift that cost $16 and flowers that cost $14 for Mom. The children shared the total cost equally. How much did each child pay?

_____ Each child paid $_____.

b. Each minibus holds ten passengers. There are six full minibuses, and one with one empty seat. How many passengers are there in total?

_____ There are _____ passengers.

c. The Smith family made 24 sandwiches for a picnic. They packed them in containers, six sandwiches in each. How many containers did they use?

_____ They used _____ containers.

Measuring

39. Draw lines:

a. 6 1/4 inches long

b. 75 mm long

40. Write in order from the smallest to the biggest unit: *cm km m mm*

41. Anna put three apples on a scale, one at a time.
The scale read 120 g, 105 g, and 130 g.
What is the total mass of her apples?

42. Samuel filled three 4-liter pitchers with water.
How much water is in those pitchers, in total?

43. Fill in the blanks with units of measure. Sometimes several different units are possible.

a. The family drove 50 _____ to visit a beach.

b. The pencil is 14 _____ long.

c. Jeremy bought 5 _____ of potatoes.

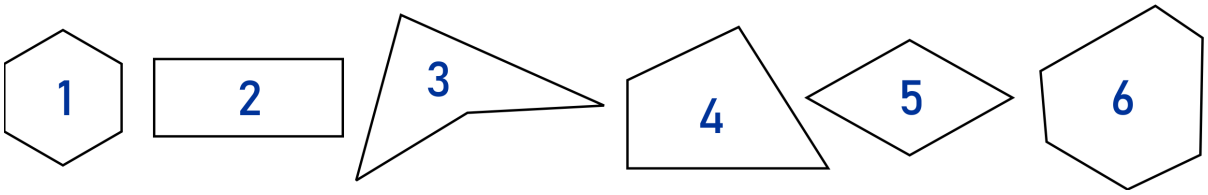
d. The teacher weighs 68 _____ .

e. The large glass holds 3 _____ of liquid.

f. A dropper measures 2 _____ .

Geometry

44. Match each description to one shape.



a. A quadrilateral with four right angles.

b. A quadrilateral with no right angles.

c. A regular hexagon.

d. A quadrilateral with exactly one right angle.

e. A hexagon that is not regular.

f. A rhombus.

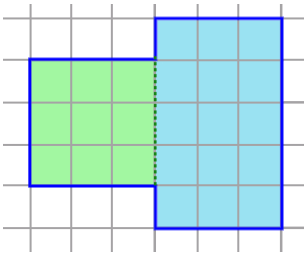
45. Sketch here:

a. A triangle that doesn't have any equal sides.

b. A quadrilateral that has four right angles,
and not all its sides are equal.

c. A rhombus that doesn't have any right angles.

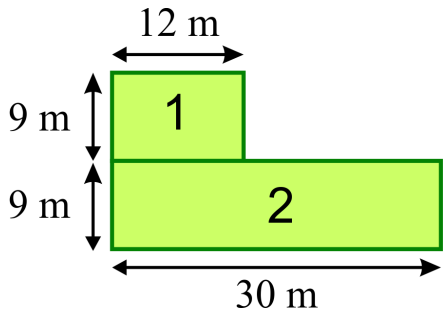
46. Find the perimeter and area of this shape.



Perimeter: _____

Area : _____

47. The picture shows a two-part lawn that is made of two rectangles.



a. Find the areas of rectangles 1 and 2.

_____ and _____

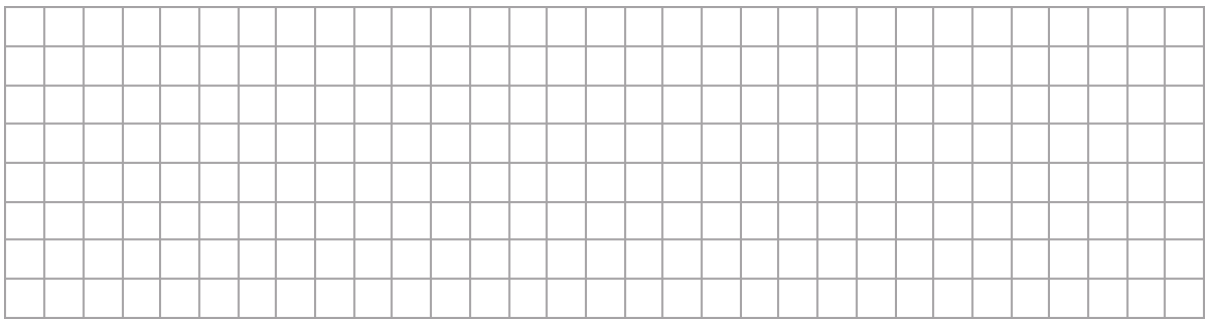
b. Find the perimeter of the whole lawn.

48. The perimeter of a rectangle measures 26 inches. Find the other side length, if one side measures 4 in.

49. Draw in the grid below:

a. a rectangle with an area of 15 square units

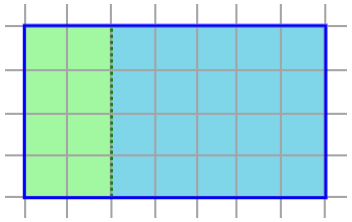
b. a rectangle with a perimeter of 10 units.



50. Write a number sentence for the total area, thinking of one rectangle or two.

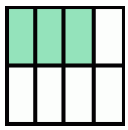
___ × (___ + ___) = ___ × ___ + ___ × ___ = _____

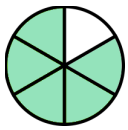
area of the whole rectangle | area of the first part | area of the second part

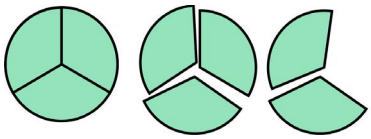


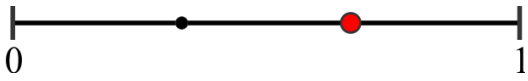
Fractions

51. Write the fraction.

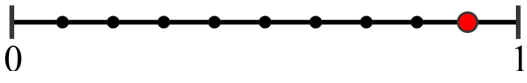
a. 

b. 

c. 



d.



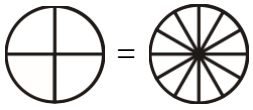
e.

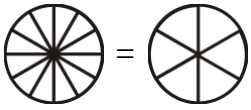
52. Mark these fractions on the number line: $\frac{5}{3}$, $\frac{8}{3}$, $\frac{9}{3}$, $\frac{11}{3}$, $\frac{3}{3}$.

53. Find the fractions that are equal to some whole number.

a. $\frac{6}{4}$	**b.** $\frac{8}{8}$	**c.** $\frac{8}{2}$	**d.** $\frac{2}{8}$	**e.** $\frac{13}{3}$	**f.** $\frac{24}{4}$	**g.** $\frac{27}{3}$	**h.** $\frac{20}{6}$

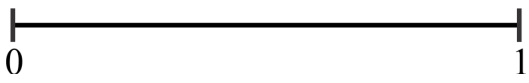
54. Write an equivalent fraction, based on the illustration.

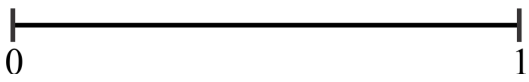
a.  $\frac{3}{4} =$

b.  $\frac{10}{12} =$

c. $\frac{2}{3} =$ 

55. Show that the fractions $\frac{3}{6}$ and $\frac{1}{2}$ are equivalent, using the number lines.



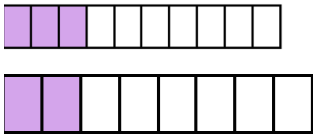


56. Compare the fractions, and write > , < , or = in the box.

a. $\frac{2}{8}$ ☐ $\frac{2}{3}$ **b.** $\frac{5}{10}$ ☐ $\frac{7}{10}$ **c.** $\frac{6}{3}$ ☐ 2 **d.** $\frac{1}{6}$ ☐ $\frac{1}{8}$ **e.** $\frac{3}{6}$ ☐ $\frac{1}{2}$

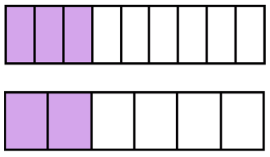
57. Compare the fractions, writing > , < , or = between them. If you cannot make a valid comparison, then cross the whole problem out.

a.



$\frac{3}{10}$ $\frac{2}{8}$

b.



$\frac{3}{9}$ $\frac{2}{6}$

c.