

math

MAMMOTH

Math Mammoth Grade 6 Review Workbook

R eview of the basic operations

E xpressions and equations

D ecimals

R atios

P ercent

F actoring

F ractions

I ntegers

G eometry

S tatistics



By Maria Miller

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EDITION 1.0

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Math Mammoth Grade 6 Review Workbook

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Introduction

This workbook is intended to give students a thorough review of 6th grade math. It has both topical as well as mixed (spiral) review worksheets, and includes both topical tests and a comprehensive end-of-the-year test. The tests can also be used as review worksheets, instead of tests.

You can use this workbook for various purposes: for summer math practice, to keep the child from forgetting math skills during other break times, to prepare students who are going into seventh grade, or to give sixth grade students extra practice during the school year.

The topics reviewed in this workbook are:

- review of the four basic operations
- expressions and equations
- decimals
- ratios
- percent
- factoring
- fractions
- integers
- geometry
- statistics

In addition to the topical reviews and tests, the workbook also contains many cumulative (spiral) review pages.

The content for these is taken from the *Math Mammoth Grade 6 Complete Curriculum*, so this workbook works especially well to prepare students for grade 7 in Math Mammoth. However, the content follows a typical study for grade 6, so this workbook can be used no matter which math curriculum you follow.

Please note this book does not contain lessons or instruction for the topics. It is not intended for initial teaching. It also will not work if the student needs to completely re-study these topics (the student has not learned the topics at all). For that purpose, please consider the *Math Mammoth Grade 6 Complete Curriculum*, which has all the necessary instruction and lessons.

I wish you success with teaching math!

Maria Miller, the author

The Basic Operations Review

1. Divide and indicate the remainder, if any. Use long division.

a. $6,764 \div 81$

b. $309,855 \div 46$

2. How many times can you subtract 9 from 23,391 before you “hit” zero?

3. If you spend exactly \$2.25 every day to make a phone call, how much will those phone calls cost you in a year?

4. If 5,000 people need to be moved from place A to place B by buses, and one bus seats 46 people, how many buses are needed?

5. An airplane travels at a constant speed of 880 km per hour. *Estimate* about how long it will take for it to fly 5,800 km.

[illegible]

6. Three boxes of tea bags cost \$15.90.
How much do two boxes cost?

7. Write the expressions using an exponent. Then solve.

a. $5 \times 5 \times 5 \times 5$

d. $100 \times 100 \times 100$

b. $1 \times 1 \times 1 \times 1 \times 1 \times 1$

e. two to the sixth power

c. 30 squared

f. three cubed

8. a. The perimeter of a square is 80 cm. What is its area?

- b. One edge of a cube measures 11 m. What is its volume?

9. Fill in.

a. 25^3 gives us the _____ of a _____ with edges _____ units long.

b. 3×9^2 gives us the _____ of _____ with sides _____ units long.

10. Write in normal form (as a number).

a. $2 \times 10^5 + 3 \times 10^2 + 9 \times 10^0$

b. $2 \times 10^7 + 8 \times 10^6 + 3 \times 10^4 + 1 \times 10^3$

11. Write in order from the smallest to the largest.

a. 10^7 707,000 7,000,000

b. 4×10^5 5×10^4 450,000

12. Round to the place of the underlined digit. Be careful with the nines!

a. $14\underline{2},601 \approx$ _____

b. $2,9\underline{2}9,307 \approx$ _____

c. $59\underline{7},104,865 \approx$ _____

d. $559,9\underline{2}8,000 \approx$ _____

The Basic Operations Test

A calculator is not allowed. My suggestion for grading is as follows. The total is 23 points. You can give partial points for partial solutions.

Divide the student's score by 23 and multiply by 100 to get a percentage score. For example, if the student scores 17, divide $17 \div 23$ with a calculator to get 0.7391. The percentage score is then 73.9% or 74%.

Question #	Max. points	Student score
1	2 points	
2	2 points	
3	2 points	
4	4 points	
5	4 points	

Question #	Max. points	Student score
6	2 points	
7	2 points	
8	2 points	
9	3 points	
TOTAL	23 points	/ 23

The Basic Operations Test

1. Divide $758,908 \div 72$ and indicate the remainder, if any.
Use long division.
2. Solve $21 \div 11$ round to three decimal digits.
3. A box of 75 flashlights costs \$937.50. Find the cost of one flashlight.
4. You can scan one page of a book in 43 seconds. Working at the same speed, how long will it take you to scan all 234 pages of the book?
Give your answer in minutes and seconds.
5. Solve.
 - a. 3^3
 - b. 1^{10}
 - c. 50^2
 - d. 10^5

[illegible]

6. The perimeter of a square is 56 cm. What is its area?

7. Write in normal form (as a number).

a. $5 \times 10^8 + 4 \times 10^6 + 3 \times 10^5$

b. $1 \times 10^9 + 6 \times 10^8 + 2 \times 10^4 + 1 \times 10^2$

8. Write in expanded form, using exponents (as in the original in #7).

a. 560,000

b. 9,108,000

9. Round the numbers.

a. 2,998,601 to the nearest ten thousand

b. 483,381,902 to the nearest ten million

c. 19,993,740 to the nearest million

Expressions and Equations Review

1. Write an expression.

- a. the difference of 6 and x , squared
- b. the quotient of 5 and the sum of x and 6
- c. 3 times the quantity 5 minus p

2. Find the value of the expressions.

a. $(1 + 6)^2 + (10 - 2)^2$	b. $5^2 \cdot 2^3$
c. $\frac{21 + 6}{2 \cdot 1 + 1}$	d. $\frac{16}{2} \cdot (120 - 50)$

3. Find the value of the expressions.

a. $2x + 18$ when $x = 5$	b. $\frac{35}{z} \cdot 13$ when $z = 5$
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4. Write an expression for each situation.

- a. Three friends purchased a scuba diving outfit together for p dollars. They shared the cost equally. How much did each person pay?
- b. You bought play dough for \$3 and six packages of crayons for c dollars each. What was the total cost?

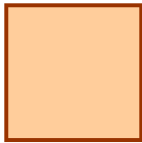
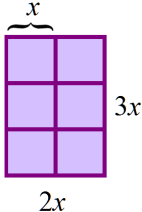
5. Label each thing below as an equation, inequality, or expression.

$$2x + 17 \quad 8 = 8 \quad y < 5 \quad 4x - 3 = 8 \quad \frac{4}{5}x - 16 \quad 4x + y^2 \geq 9 \quad M = \frac{44 - x}{5}$$

6. Simplify the expressions.

a. $t + t + t + 3$	b. $8d - 3d$
c. $x \cdot x \cdot x$	d. $12x - 6 - 6x$
e. $z \cdot z \cdot 8 \cdot z \cdot 2$	f. $3x^2 + 5 + 11x^2$

7. Write an expression for *both* the area and perimeter of each rectangle. Give them in simplified form.

<div style="text-align: center;">  </div> <p>a. $A =$</p> <p>$P =$</p>	<div style="text-align: center;">  </div> <p>b. $A =$</p> <p>$P =$</p>
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8. Multiply using the distributive property.

a. $3(2x + 7) =$	b. $8(9b + 5) =$
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9. Think of the distributive property “backwards,” and factor these sums.

a. $5x + 10 = \underline{\hspace{1cm}} (x + \underline{\hspace{1cm}})$	b. $6y + 10 = \underline{\hspace{1cm}} (\underline{\hspace{1cm}} + \underline{\hspace{1cm}})$
c. $24b + 4 = \underline{\hspace{1cm}} (\underline{\hspace{1cm}} + \underline{\hspace{1cm}})$	d. $25w + 40 = \underline{\hspace{1cm}} (\underline{\hspace{1cm}} + \underline{\hspace{1cm}})$

10. Solve the equations.

a. $7x = 784$	b. $3 + z = 119$	c. $\frac{x}{6} = 12$
d. $5y + 8y = 784$	e. $32 + x = 9 \cdot 40$	f. $\frac{r}{6+4} = 7$

11. Write an equation for each situation EVEN IF you could easily solve the problem without an equation. Then solve the equation.

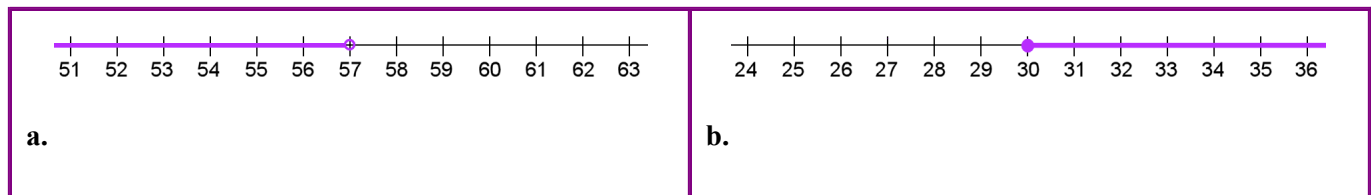
a. The value of a certain number of quarters is 1675 cents.
How many quarters are there?

b. The perimeter of a rectangle is 128 meters. One side is 21 meters.
How long is the other side?

12. The formula $F = \frac{9C}{5} + 32$ is used to convert temperatures given in Celsius degrees into Fahrenheit degrees.

C denotes the temperature in Celsius degrees, and F denotes the temperature in Fahrenheit. If the temperature in Celsius is 25°C (nice summer weather), find the corresponding temperature in Fahrenheit.

13. Write an inequality that corresponds to the number line plot.



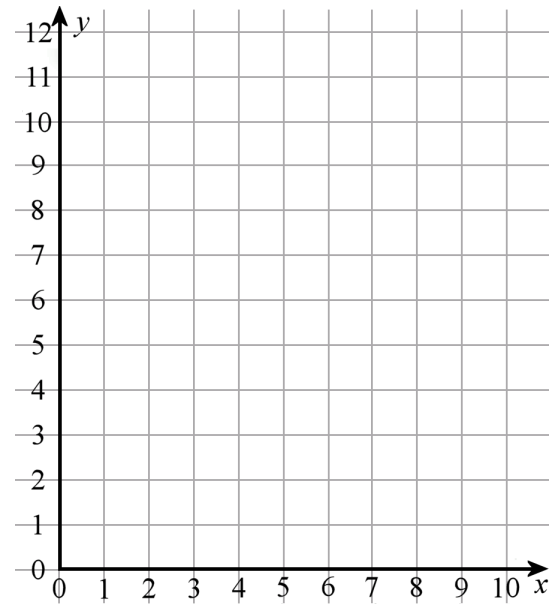
14. a. Solve the inequality $y + 2 > 24$ in the set $\{55, 44, 22, 23, 30\}$.

b. What solutions does the inequality $x + 7 \leq 14$ have in the set of even whole numbers?

15. Calculate the values of y according to the equation $y = x + 3$.

x	1	2	3	4	5	6
y						

Now, plot the points.



16. A train is traveling with a constant speed of 70 miles per hour. Consider the variables of time (t), measured in hours, and the distance traveled (d), measured in miles.

a. Fill in the table.

t (hours)	0	1	2	3	4	5	6
d (miles)							

b. Plot the points on the coordinate grid.

c. Write an equation that relates t and d .

d. Which of the two variables is the independent variable?

