math MAMMOTH

Grade 3-A Worktext
International Version (Canada)

Light Blue Series

- Addition and subtraction
- Multiplication concept
- Multiplication tables
- Clock
- Money

Sample worksheet from
https://www.mathmammoth.com

By Maria Miller

Contents

Chapter 3: Multiplication Tables

Chapter 4: Telling Time

Chapter 5: Money

Foreword

Math Mammoth Grade International Version 3-A and Grade 3-B worktexts comprise a complete maths curriculum for the third grade mathematics studies.

This curriculum is essentially the same as the version of *Math Mammoth Grade 3* sold in the United States (US version), only customised for international use. The US version is aligned to the "Common Core" Standards, so it may not be properly aligned to the third grade standards in your country. However, you can probably find material for any missing topics in neighbouring grades. For example, let's say multiplication tables are studied in grade or year 4 in your country. They are not found in Math Mammoth Grade 4. Instead, you will need to use Math Mammoth Grade 3-A to study them.

The International version of Math Mammoth differs from the US version in these aspects:

- The currency used in the money chapters in grades 1-3 is the Canadian dollar. (The download version of this curriculum for grades 1-3 includes the chapter on money for Australian, British, European, New Zealand, South African, and US currencies.)
- The curriculum teaches the metric measurement units. Imperial units, such as inches and pounds, are not used.
- The spelling conforms to British international standards.
- The paper size is Letter.

Third grade is a time for learning and mastering two (mostly new) operations: multiplication and division within 100. The student also deepens his understanding of addition and subtraction, and uses those in many different contexts, such as with money, time, and geometry.

The main areas of study in Math Mammoth Grade 3 are:

1. Students develop an understanding of multiplication and division of whole numbers through problems involving equal-sized groups, arrays, and area models. They learn the relationship between multiplication and division, and solve many word problems involving multiplication and division (chapters 2, 3, and 9).

2. Students develop an understanding of fractions, beginning with unit fractions. They compare fractions by using visual models and strategies based on noticing equal numerators or denominators (chapter 10).

3. Students learn the concepts of area and perimeter. They relate area to multiplication and to addition, recognise perimeter as a linear measure (in contrast with area), and solve problems involving area and perimeter (chapter 7).

4. Students fluently add and subtract within 1 000, both mentally and in columns. They also learn to add and subtract 4-digit numbers, and use addition and subtraction in problem solving in many contexts, such as with money, time, and geometry.

Additional topics we study are time, money, measuring, and bar graphs and pictographs.

This book, 3-A, covers addition and subtraction (chapter 1), multiplication concept (chapter 2), multiplication tables (chapter 3), time (chapter 4), and money (chapter 5). The other topics are in the 3-B worktext.

Some important points to keep in mind when using the curriculum:

- The two books (parts A and B) are like a "framework", but you still have a lot of liberty in planning your child's studies. In grade 3, it is best to study the first three chapters in the order they are presented, and early during the school year (so that children will learn multiplication before most of the other chapters). Then, it is also necessary to study place value before the chapters on geometry and measurement. Other than that, feel free to go through the chapters in most any order you like.

  Using that as a guideline, you can change the order of the topics somewhat, or have your child study in several of the chapters simultaneously, such as studying measuring and division at the same time. Jumping into another topic (chapter) "out of order" is especially advisable if your child is either "stuck" on some particular topic. Sometimes the concept the child was stuck on can become clear after a break from the topic.

- Math Mammoth is mastery-based, which means it concentrates on a few major topics at a time, in order to study them in depth. However, you can still use it in a *spiral* manner, if you prefer. Simply have your child study in 2-3 chapters simultaneously. This type of flexible use of the curriculum enables you to truly individualise the instruction for your child.

- Don't automatically assign all the exercises. Use your judgement, trying to assign just enough for your child's needs. You can use the skipped exercises later for revision. For most children, I recommend to start out by assigning about half of the available exercises. Adjust as necessary.

- For revision, the curriculum includes a worksheet maker (Internet access required), mixed revision lessons, additional cumulative revision lessons, and the word problems continually require usage of past concepts. Please see more information about revision (and other topics) in the FAQ at **https://www.mathmammoth.com/faq-lightblue.php**

I heartily recommend that you view the full user guide for your grade level, available at **https://www.mathmammoth.com/userguides/**

And lastly, you can find free videos matched to the curriculum at **https://www.mathmammoth.com/videos/**

I wish you success in your maths teaching!

Maria Miller, the author

Chapter 1: Addition and Subtraction
Introduction

This first chapter of *Math Mammoth Grade 3-A* covers a lot of territory. We revise and learn more about mental addition and subtraction strategies, revise regrouping in addition and subtraction, learn to regroup twice in subtraction, and then study Roman numerals, rounding, the order of operations, and graphs.

Through it all, students solve lots of word problems and practise some algebra in disguise, where they use a symbol or a " ? " for the unknown thing in the problem.

I have included several lessons on mental maths, including revision of many of the strategies from second grade, so that even students who perhaps did not study mental maths strategies in earlier grades can now catch up.

Also, children learn and practise regrouping in addition and subtraction. In subtraction, the focus is on regrouping twice and regrouping with zero tens when subtracting three-digit numbers. The lessons illustrate the processes with the help of pictures that relate to base-ten blocks. You can also use physical manipulatives (such as base 10 blocks) if you prefer. The basic idea of regrouping in subtraction is that a unit gets broken into 10 smaller units: a hundred into 10 tens or a ten into 10 ones, and that is what allows you to subtract. Make sure the student masters this topic.

This chapter also introduces rounding to the nearest ten and brackets with the order of operations as new topics. Then we study the connection between addition and subtraction with bigger numbers, which also aims to help students think algebraically.

Lastly, students get to practise their adding and subtracting skills in a practical way through reading a distance table and other types of graphs.

The Lessons

Helpful Resources on the Internet

We heartily recommend you take a look at the list. Many of our customers love using these resources to supplement the bookwork. You can use the resources as you see fit for extra practice, to illustrate a concept better, and even just for some fun. Enjoy!

https://links.mathmammoth.com/gr3ch1

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Revision: Mental Subtraction

1. Practise basic subtraction facts with this drill! Point to the problem and think of the answer.

a.	b.	c.	d.	e.
12 – 5	13 – 8	14 – 5	15 – 6	16 – 7
12 – 7	13 – 4	14 – 7	15 – 8	16 – 9
12 – 8	13 – 5	14 – 9	15 – 9	16 – 8
12 – 6	13 – 6	14 – 6	15 – 7	
12 – 4	13 – 9	14 – 8		f.
12 – 9	13 – 7			17 – 8
12 – 3				17 – 9

<u>Strategy 1:</u> Use known subtraction facts

Since 14 – 6 = 8, we know that the answer to 74 – 6 will end in 8, but it will be in the sixties (sixty-something). So it is 68.

Since 15 – 8 = 7, we know that the answer to 55 – 8 will end in 7, but it will be in the forties (forty-something). So it is 47.

2. Subtract.

a.	b.	c.
14 − 5 = _____	12 − 8 = _____	15 − 6 = _____
54 − 5 = _____	92 − 8 = _____	35 − 6 = _____

3. Subtract and compare the results!

a.	b.	c.	d.
14 − 7 = _____	12 − 8 = _____	16 − 7 = _____	15 − 7 = _____
34 − 7 = _____	42 − 8 = _____	56 − 7 = _____	75 − 7 = _____
64 − 7 = _____	82 − 8 = _____	156 − 7 = _____	675 − 7 = _____

Strategy 2: First subtract to the *previous whole ten*, then subtract the rest.	
$62 - 8$ $= 62 - 2 - 6$ $= 60 - 6 = 54$ Subtract 8 in two parts: first 2, then 6.	$72 - 6$ $= 72 - 2 - 4$ $= 70 - 4 = 66$ Subtract 6 in two parts: first 2, then 4.

4. Subtract part-by-part: first to the previous whole ten, and then the rest.

a. $64 - 7$ $64 - 4 - 3 =$ _____	**b.** $72 - 8$	**c.** $54 - 8$
d. $75 - 7$	**e.** $27 - 9$	**f.** $43 - 5$

Strategy 3: Subtract in parts: tens and ones	
Break the number being subtracted into its tens and ones. Subtract in parts.	
$75 - 21$ $= 75 - 20 - 1$ $= 55 - 1 = 54$ First subtract 20, then 1.	$87 - 46$ $= 87 - 40 - 6$ $= 47 - 6 = 41$ First subtract 40, then 6.

5. Subtract in parts: Break the second number into its tens and ones.

a. $89 - 26$ $89 - 20 - 6$ $=$ _____	**b.** $56 - 35$ $56 -$ ____ $-$ ____ $=$ _____	**c.** $75 - 51$ $75 -$ ____ $-$ ____ $=$ _____
d. $69 - 19$	**e.** $67 - 36$	**f.** $64 - 33$

Strategy 4: Add.	
You can "add backwards". This works well if the two numbers are close to each other. Instead of subtracting, think how much you need to add to the number being subtracted (the subtrahend) in order to get the number you are subtracting from (the minuend).	
71 − 67 = ?? Think: 67 + ____ = 71	558 − 556 = ?? Think: 556 + ____ = 558

6. Subtract.

a. 78 − 75 = _____ 61 − 58 = _____	**b.** 112 − 108 = _____ 692 − 688 = _____	**c.** 505 − 499 = _____ 1000 − 994 = _____

7. You had $50. You purchased two bouquets of roses for $13 each.
How much do you have left after the purchase?

8. What if you bought three bouquets of roses for $13 each with your $50?
How much would you have left after the purchase?

9. Fifteen children were playing on the playground. Seven of them left.
Then, ten more children came. How many are playing on the playground now?

10. A lion chased an antelope for 400 metres, then another 200 metres, and lastly metres more. Then the lion pounced on the antelope.
What was the total number of metres that the lion chased the antelope?

Puzzle Corner

What is this three-digit number? The tens digit is half of 10. The hundreds digit is double the ones digit. And the ones digit is half the amount of letters in the word "June."

That was the easy puzzle. Now comes the real one. :)

What is this three-digit number?
Here are the clues for the digits: September, October, November.

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Chapter 2: Multiplication Concept
Introduction

The second chapter of *Math Mammoth Grade 3-A* covers the concept of multiplication. (However, memorising and drilling "times tables" is postponed until chapter 3.)

The first lessons introduce the concept of multiplication as repeated addition of groups of the same size. *Multiplication on a Number Line* illustrates repeated addition as consecutive jumps or skips on a number line. The child learns to connect skip-counting with multiplication.

Then, the lesson *Multiplication as an Array* shows a different model for multiplication: objects arranged in rows and columns. This lesson teaches the student to think of the rows as groups, showing the fundamental unity of the two models. The whole lesson is presented in pictures.

Order of operations is studied in two lessons. In the first one, students learn that multiplication is to be done before addition or subtraction and that addition and subtraction are to be done from left to right. Later, in the second lesson, we also use brackets.

Understanding Word Problems shows how problems that involve multiplication have the idea of "each," "every," or "all." For example, *each* item does or has the same number of something. If students find these problems difficult, they can draw pictures to help, such as drawing flowers in pots, slices of pizza, *etc*.

Understanding Word Problems, Part 2 gives problems that are more challenging. The word problems in traditional school texts are often so easy that children learn just to take the numbers in the problem and mechanically apply the operation that the lesson is about without really understanding what they are doing. If this lesson is too difficult, skip it for the time being and come back to it later. You can help your student to draw a picture for each problem.

Multiplication in Two Ways concentrates on the fact that it does not matter in which order the factors appear (the *commutative property* of multiplication). Objects in an array illustrate this fact nicely: either the row or the column can be taken as the group being multiplied. This lesson also deals with jumping on the number line.

Multiplying by Zero is illustrated both with the group model (either several groups of zero size or zero groups of any size) and with the jump-on-a-number-line model (either several jumps of zero distance or zero jumps of any distance).

The Lessons

Helpful Resources on the Internet

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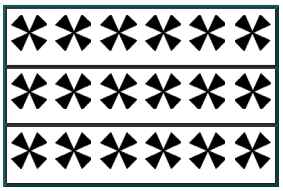
Multiplication as an Array

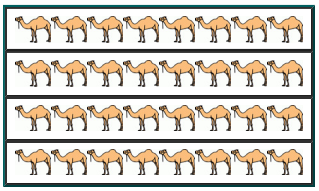
An **array** is an orderly arrangement of things in rows and columns.
When things are neatly aligned in an array, we can think of the *rows as groups*, so an array still pictures multiplication as repeated addition.



3 rows, 6 crosses in each row.

$6 + 6 + 6 =$

$3 \times 6 = 18$

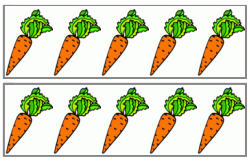


4 rows, 8 camels in each row.

$8 + 8 + 8 + 8 =$

$4 \times 8 = 32$

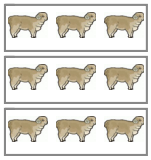
1. Fill in the missing numbers.



a. _____ rows, _____ carrots in each row.

_____ + _____

_____ × _____ = _____ carrots.



b. _____ rows, _____ rams in each row.

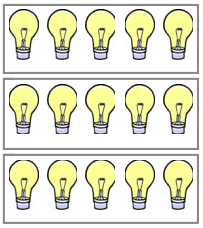
_____ + _____ + _____

_____ ×_____ = _____ rams.

c. _____ rows, _____ bear in each row.

_____ + _____

_____ × _____ = _____ bears.



d. _____ rows, _____ bulbs in each row.

_____ + _____+ _____

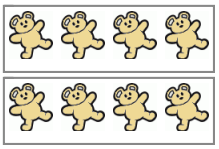
_____ × _____ = _____ bulbs.

2. Write the addition and multiplication facts that the pictures are illustrating.
The box with a "T" is a ten.

a.

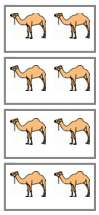
$4 + 4 =$ _____

$2 \times 4 =$ _____

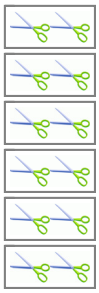


b.

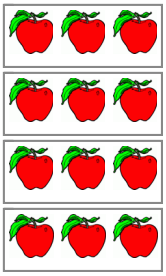
c.



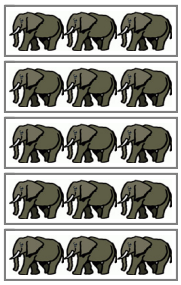
d.



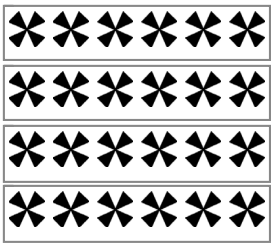
e.



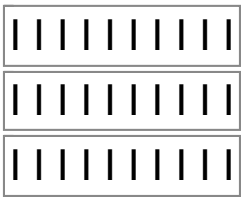
f.



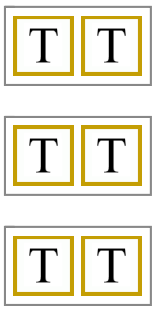
g.



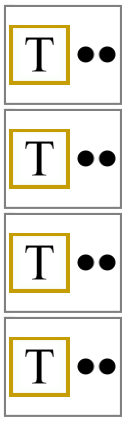
h.



i.



j.



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Chapter 3: Multiplication Tables
Introduction

In the third chapter we concentrate on memorising the times tables. This chapter includes lots of repetition, drill and practice. Therefore, you are welcome to mix the lessons from this chapter with lessons from the chapters on geometry, place value, clock & time, or measuring, in order to prevent boredom. For example, the student could study time (chapter 4) and topics of this chapter each day, or study the two different chapters on alternate days. This is not compulsory but just a suggestion to "mix things up" in a somewhat spiral fashion.

I also provide free videos for the study of the multiplication tables at
https://www.mathmammoth.com/videos/multiplication_tables.php

and some free online tools for practising the times tables:

- **https://www.mathmammoth.com/practice/multiplication**
- **https://www.mathmammoth.com/practice/multiplication-matching**

Tips for Effective Oral Drilling

When you are doing memorisation drills, be sure to explain to the student that the goal is to *memorise* the facts—to recall them from memory—and not to get the answers by counting or any other method. Just as your child has probably already memorised your address and phone number, now she or he is going to memorise some maths facts. You can easily see if the student is trying to count, because producing the answer by counting takes much more time. You should expect the child to answer fairly quickly when you are drilling. If the child doesn't know the answer by heart, then tell the child the right answer.

Short drill sessions are usually best. For example, you might drill for five or ten minutes at a time, depending on the attention span of the child.

However, try to have at least two sessions during the day as your schedule permits. Scientific research about how the brain learns has shown that new memories are forgotten soon, and that new information is best retained when it is revised *within 4-6 hours* of the time it is initially learned. (This principle applies to anything new that a person is learning.)

Pencil and paper activities alone do not work well for memorising facts because the child can get the answers by counting and not from memory. Proper drill requires an investment in time from the instructor. If you can, have older siblings help with the task of drilling. Moreover, computers are great drillmasters; they never get tired or bored and you can usually choose a timed session in which the child must produce the answers quickly. Computer-based drilling can be very rewarding to children when they notice that they are truly learning the facts and are able to complete the drills successfully. They can actually come to enjoy the process of memorisation.

Here is a five-step method for memorisation. Normally, only a few of the steps would be included in any one session, depending on the child's concentration and ability.

Structured Drilling of the Table of 3—in steps

Write on paper or on the board the times table to be learned. We will use the table of 3 as an example. You can view a video explaining the main points of the drill here: https://www.mathmammoth.com/lessons/multiplication_tables.php

$1 \times 3 = 3$
$2 \times 3 = 6$
$3 \times 3 = 9$
$4 \times 3 = 12$
$5 \times 3 = 15$
$6 \times 3 = 18$
$7 \times 3 = 21$
$8 \times 3 = 24$
$9 \times 3 = 27$
$10 \times 3 = 30$
$11 \times 3 = 33$
$12 \times 3 = 36$

1. The first task is to memorise the list of answers. Have the student study the first half of the skip-counting list (3, 6, 9, 12, 15, 18), saying the numbers aloud while pointing to the answers one by one with their finger or a pen. You may also use a number line. This technique uses the senses of seeing, hearing, and touch simultaneously to fix the information in the brain.

   After the student has gone through the list a few times, ask him or her to repeat it from memory. Expect the student to answer, and don't give the answers too easily, because only by putting forth an effort will the student memorise the facts. The same as the muscles, the mind needs exercise to become stronger.

   Require the student to memorise the skip-counting list both forwards and backwards. Keep practicing until he or she can easily recite the first list of 3, 6, 9, 12, 15, 18. With some tables, such as the tables of 2, 5, and 10, it helps to point out the pattern in them. The pattern in the table of 9 is more subtle but still useful.

2. Tackle the last half of the list: 21, 24, 27, 30, 33, 36. Do the same things you did with the first half of the list.

3. Next, work with the entire list of answers. Practice the list counting up *and* down until it goes smoothly and easily. These steps may be enough for one session, but *be sure to review* again later in the day.

4. In this stage, the goal is to associate each answer 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, with a certain multiplication fact (such as 7×3). So, keep the whole table visible (without the answers) and practise individual problems randomly by pointing to them. Ask orally ("What is 5 times 3?"), while pointing to the problem—again, using both the sense of hearing and seeing (multiple senses).

5. The next step is to do this the other way around. Now *you* say the answer ("21"), and the student has to produce the problem ("3×7"). Keep the table handy, but hide the *problems* from sight, and point to the answers in a random order.

   This technique can also work the other way around, where the child says the answers, and you produce the problems. Be sure to give wrong multiplication facts occasionally to check the student's accuracy.

   As an optional extension, you can say answers from several tables that you have studied, and the student gives the corresponding problem. Sometimes there are several answers. For example, 36, 30, 24, and 20 are in several different times tables. This is an especially good exercise as it prepares for the concepts of division and factoring.

6. The last step is totally random drilling using flash cards, oral problems or apps.

The memorisation probably will not happen overnight. On subsequent days, you can mix steps 1-5 (normally you will not need to concentrate too much on steps 1 and 2 after the initial practice). This kind of drilling takes a little time and effort from the teacher, but it can be very effective. You might also be able to do some of the practice while going about other tasks, such as travelling in the car.

Another tip is to try to teach the process to the student, so that he or she will learn how to do the memorisation on his or her own, hiding the answers and trying to reproduce the list in the mind.

Other helpful ideas

- Hang a poster with the 12×12 or 10×10 table on the wall. Remind your child to glance at it a few times a day. It can work wonders for students who learn best by visualizing things!
- Hang another poster beside it, with an empty grid, in which the child fills in the facts he has mastered.
- Recite the skip-counting lists or multiplication facts aloud just before going to bed. This can turn them into mastered facts by the next morning.

Are timed drills necessary?

I feel that timed drills are just one tool among many when it comes to learning maths facts. Some children will thrive on them. Perhaps they like the challenge of racing against the clock. Timed computer games can work very well for drilling facts (for example the games at **https://www.sheppardsoftware.com/math.htm**).

For other children, timed drills may be counterproductive and end up in tears and frustration. Try them and see how it goes. Use your your judgement as to their usefulness as a learning tool.

Should one table be memorised before going on to the next?

The basic idea is to stay on one table until it is mastered. That can take a varying amount of days depending on the child, the number of practice sessions, and other constraints on the child's time. It is best to practise each table at least two times a day (because the brain will memorise things much quicker that way), but each session doesn't have to take a long time.

However, the child can study other math topics, such as geometry, measuring, addition or clock, at the same time, as long as these other topics do not rely heavily on multiplication tables (division does).

Also, incorporate games to keep the learned facts fresh in their mind. The old idiom "use it or lose it" comes into play here. As the student masters more facts, he or she will probably enjoy playing a variety of multiplication games.

The Lessons

Helpful Resources on the Internet

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https://links.mathmammoth.com/gr3ch3

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Multiplication Table of 3

1. Skip-count by threes. Practise this pattern until you can say it from memory. Also practise it backwards (up-down). You may practise one-half of it at first, and the other half later.

0, 3, ____, ____, ____, ____, ____, ____, ____, ____, ____, ____, 36

2. **a.** Fill in the table of 3. **b.** Fill in the missing factors. Then cover the answers. Choose problems in random order and practise. You may first practise only the part from 1 × 3 to 6 × 3, and the rest at a later time, such as the next day.

a.

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

b.

____ × 3 = 3	____ × 3 = 21
____ × 3 = 6	____ × 3 = 24
____ × 3 = 9	____ × 3 = 27
____ × 3 = 12	____ × 3 = 30
____ × 3 = 15	____ × 3 = 33
____ × 3 = 18	____ × 3 = 36

Note: the fact 2 × 3 = 6 or 3 × 2 = 6 is in both the table of three and the table of two.

3. Do not write the answers down. Use these problems for random drill practice.

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

4. Do not write the answers down. Use these problems for random drill practice.

☐ × 3 = 15	☐ × 3 = 12	☐ × 3 = 27	☐ × 3 = 36	☐ × 3 = 30
☐ × 3 = 33	☐ × 3 = 36	☐ × 3 = 33	☐ × 3 = 3	☐ × 3 = 6
☐ × 3 = 9	☐ × 3 = 24	☐ × 3 = 27	☐ × 3 = 18	☐ × 3 = 21

5. Continue the patterns.

a.

12 × 2 = _____

13 × 2 = _____

14 × 2 = _____

_____ × _____ = _____

_____ × _____ = _____

_____ × _____ = _____

_____ × _____ = _____

_____ × _____ = _____

_____ × _____ = _____

_____ × _____ = _____

b.

1 × 2 – 1 = _____

2 × 2 – 2 = _____

3 × 2 – 3 = _____

_____ × _____ – _____ = _____

_____ × _____ – _____ = _____

_____ × _____ – _____ = _____

_____ × _____ – _____ = _____

_____ × _____ – _____ = _____

_____ × _____ – _____ = _____

_____ × _____ – _____ = _____

6. Solve the word problems.

a. John takes care of his neighbour's cat when the neighbour is away. He earns $3 each day. John wants to buy a toy train that costs $14. How many days will he have to work so he can buy it?

b. John took care of the cat for five days. Then his grandfather gave him $5 as a present. How much money does John have now?

So, he bought the train for 14 dollars. How much money does he have left now?

c. John has $6. Then he takes care of the neighbour's cat for four days. Does he have enough money now to buy a book about nesting birds that costs $16?

d. Roses are sold in bunches of three. Dad bought eleven bunches and one extra rose for Mom's birthday—a rose for each year. How old is Mom?

e. How many bunches of roses and extra roses would Dad need to buy if Mom was 31 years old?

f. How about *your* mom? How many bunches of roses and extra roses would you need to buy for your mom?

7. Fill in the parts of the multiplication table that we have studied.

×	0	1	2	3	4	5	6	7	8	9	10	11	12
0													
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													

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Chapter 4: Telling Time
Introduction

This chapter covers reading the clock to the minute, finding time intervals (elapsed time), using the calendar and making simple conversions between units of time.

We revise the topic of reading the clock to the five-minute intervals, first using numbers in telling the time, such as 6:45 or 12:15. Then, children learn about quarter hours, such as a quarter to 6 or a quarter past 9. We also revise the topic of using "past" and "to", such as in 20 to 6 or 10 past 11. Next, we study elapsed time in more detail in the lesson "How Many Minutes Pass."

The lesson "Reading the Clock to the Minute" completes the topic (begun in earlier grades) of reading the clock, because the student will now be able to tell the complete time. From that point on, the focus switches to finding time intervals and other time-related calculations.

The next two lessons about calculating elapsed time emphasise dividing the time interval into easily-calculated parts: For example, to find the time elapsed from 10:30 AM to 7:00 PM, the child learns to find the elapsed time from 10:30 AM to 12:00 noon and then from 12:00 noon to 7 PM. The same principle is followed when the time-interval looks more complex. This chapter does not yet introduce the idea of adding or subtracting hours and minutes vertically in columns.

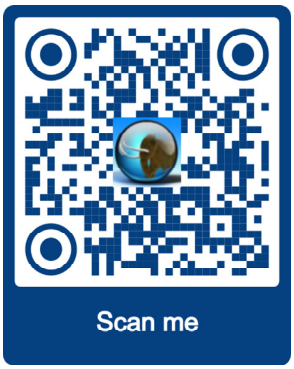
We also study using the calendar, and converting between time units, such as changing 2 hours to 120 minutes or changing 340 minutes to 5 hours and 40 minutes.

The Lessons

Helpful Resources on the Internet

We heartily recommend you take a look at the list. Many of our customers love using these resources to supplement the bookwork. You can use the resources as you see fit for extra practice, to illustrate a concept better, and even just for some fun. Enjoy!

https://links.mathmammoth.com/gr3ch4



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More on Elapsed Time

Full hours

Sometimes the time that elapses between two different times is so many full hours. You will know that is the case if the two times have the same amount of minutes.

Example 1. From 2:45 to 3:45 the minute hand makes one full circle, starting and ending in the same position (45 minutes). Therefore, from 2:45 to 3:45 is one hour.

Example 2. How much time passes from 7:20 to 10:20?

The minute-amounts are the same (20 minutes), and the hour-amounts differ by 3 hours. This means the minute hand has made 3 full rounds around the clock. So, three hours have passed.

1. The minute hand makes full rounds around on the clock. How many whole hours pass?

from	10:30	8:30	1:40	5:45	3:20 AM
to	11:30	12:30	7:40	11:45	12:20 PM
elapsed time					

If two different times have the same hour, you can subtract to find how many minutes pass.

Example 3. How many minutes pass from 11:10 to 11:45?

Since the hours are both 11, just look at the minute-amounts (10 and 45), and subtract them. $45 - 10 = 35$. So, 35 minutes pass between those two times.

2. How many minutes pass? You can subtract (find the difference).

from	1:25	2:00	3:05	7:30	5:10
to	1:55	2:15	3:25	7:50	5:50
elapsed time	*30 min*				

from	2:00	7:05	8:25	6:40	11:15
to	2:35	7:35	8:50	6:55	11:40
elapsed time					

Use your practice clock if necessary to solve the problems on this page.

3. Solve.

a. It takes Mom 15 minutes to drive to the grocery store.
If she leaves at 3:55, when will she arrive at the store?

b. She leaves the store at 4:40, and this time it takes her 20 minutes to drive home.
What time will she get home?

c. Joshua started math homework at 4:40, and finished it at 5:05.
How much time did he spend doing his math homework?

4. **a.** The bus trip started at 4:10 and ended at 4:30. How many minutes did it take?

b. Music class starts at 10:15 and ends at 10:45. How long is the class?

c. Sergio said, "Oh, I just spent 2 full hours answering emails, and now it's already 11:35!"
At what time did Sergio start answering emails?

5. The clock shows the time now. Write the later times.

TIME NOW:

- 15 min later _____ : _____
- 30 min later _____ : _____
- 2 hours later _____ : _____
- 5 hours later _____ : _____

6. The clock shows the time now. Write the *earlier* times.

TIME NOW:

- 2 hours earlier _____ : _____
- 1 hour earlier _____ : _____
- 40 min earlier _____ : _____
- 25 min earlier _____ : _____

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Chapter 5: Money
Introduction

This chapter of *Math Mammoth Grade 3-A* teaches counting coins, working out the change and solving simple problems about money.

We start out by revising counting Canadian coins and banknotes.

The lesson *Working Out the Change* explains two basic ways of working out the change: (1) counting up and (2) subtracting (finding the difference). This is all done with mental maths. The following lesson, *Mental Maths and Money Problems*, also uses mental maths, this time in solving simple money problems.

The lesson *Solving Money Problems* introduces the concept of adding and subtracting amounts of money vertically in columns.

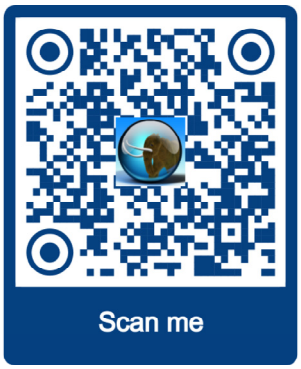
We also learn to add money amounts in columns.

The Lessons

Helpful Resources on the Internet

We heartily recommend you take a look at the list. Many of our customers love using these resources to supplement the bookwork. You can use the resources as you see fit for extra practice, to illustrate a concept better, and even just for some fun. Enjoy!

https://links.mathmammoth.com/gr3ch5#ca-money



Revision: Count Coins and Banknotes


5 cents
Nickel


10 cents
Dime


25 cents
Quarter


1 dollar
Loonie


2 dollars
Toonie

5 dollars

10 dollars

20 dollars

50 dollars

100 dollars

Write "$" in front of dollar-amounts. A decimal point separates the dollars from the cents.


= $20.30


= $100.10

1. How much money is shown in the picture? Write the amount.

a.  $_____

b. 

 $_____

c.  $_____

d.  $_____

e. $_____

f. $_____

g. $_____

h. $_____

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Making Sense with No Cents

Canada does not use one-cent coins any longer. This means that the clerk in the store *may not be able* to give you change to the *exact cent*. So, the total cost will have to be **rounded to the nearest five or ten cents**.

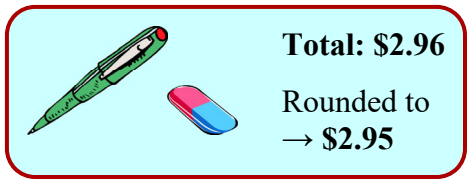
Example 1. Glue costs 42¢. You cannot give exactly 42¢ because there are no one-cent coins with which to make it. Let's say you give 50¢. The change would be 8¢, but the clerk cannot give you that for the same reason.

So, the clerk rounds the price of the glue to the nearest ten cents, to 40¢, and your change is ten cents.

50¢

10¢

Example 2. You buy two items, which cost a total of $2.96. The clerk **rounds** that price **down** to $2.95, to the nearest five cents. That way, the clerk can use a nickel to give you change!



$3.00

5¢

Rounding rules:

- If the total cost ends in 1¢ or 2¢, it will be rounded **down** to the previous 10¢.
- If it ends in 3¢ or 4¢, it will be rounded **up** to the next 5¢.
- If it ends in 6¢ or 7¢, it will be rounded **down** to the previous 5¢,
- If it ends in 8¢ or 9¢, it will be rounded **up** to the next 10¢.

This way, the total will always end in 5 or 0, and the clerk can give you change!

Examples of rounding to the nearest five or ten cents:

$5.42 ≈ $5.40 $5.44 ≈ $5.45 $3.86 ≈ $3.85 $3.89 ≈ $3.90

1. Round the cost to find how much you paid.

a. You bought an orange for 62¢. Rounded price: _____ ¢	**b.** You bought raisins for 89¢. Rounded price: _____ ¢
c. You bought a stamp for 63¢. Rounded price: _____ ¢	**d.** You bought a basket for 94¢. Rounded price: _____ ¢
e. You bought crayons for 96¢. Rounded price: _____ ¢	**f.** You bought chalk for 88¢. Rounded price: _____ ¢

2. Round these prices to the nearest five or ten cents.

a. \$0.67 ≈	**b.** \$1.24 ≈	**c.** \$8.09 ≈	**d.** \$13.04 ≈
e. \$20.86 ≈	**f.** \$4.53 ≈	**g.** \$54.28 ≈	**h.** \$33.51 ≈

3. Be the clerk and figure out the change. First, round the price. Then give change.

a.  \$1.56
Customer gives \$2.
rounded price: ≈ _____
Change: _____

b.  \$6.67
Customer gives \$8.
rounded price: ≈ _____
Change: _____

c.  \$1.88
Customer gives \$2.
rounded price: ≈ _____
Change: _____

d.  \$4.23
Customer gives \$5.
rounded price: ≈ _____
Change: _____

e.  \$0.94
Customer gives \$1.
rounded price: ≈ _____
Change: _____