math MAMMOTH

Grade 1-B Worktext
South African Version

Light Blue Series

- Addition and subtraction facts within 0 - 10
- Clock and calendar
- Shapes and measuring
- Adding and subtracting within 0 - 100
- Counting coins

By Maria Miller

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Foreword

Math Mammoth South African Version Grade 1-A and *Grade 1-B* worktexts comprise a complete maths curriculum for the first grade mathematics studies.

Math Mammoth South African version has been **customised to South Africa** in the following manners:

- The names used are South African names (instead of Jack and Jill, there are Ansie and Mampho).
- The currency used in word problems is rand. The money chapter teaches both rand and cents.
- The material is all metric. In other words, the US customary measuring units are not used.
- Spelling is British English instead of American English.
- Paper size is A4.

Please note that the curriculum is not following the South African official syllabus for 1st grade maths. Instead, it is a copy of the US version of Math Mammoth Grade 1, aligned to the US Common Core Standards. This decision was made because of the great amount of work that would be involved in writing new lessons and reorganising old ones to match all the standards in the South African syllabus. For the most part, Math Mammoth is exceeding South African standards.

The four main areas of study for first grade are:

1. The concepts of addition and subtraction, and strategies for addition and subtraction facts (chapters 1-2 and chapter 4);

2. Developing understanding of whole number relationships and place value up to100 (chapter 3 and chapter 7);

3. Developing understanding of measuring lengths as iterating length units (chapter 6); and

4. Reasoning about attributes of geometric shapes, such as the number of sides and the number of corners, and composing and decomposing geometric shapes (chapter 6).

Additional topics we study in the first grade are the clock to the half hour (chapter 5) and counting coins (chapter 8).

This book, 1-B, covers strategies for addition and subtraction facts (chapters 4), using the clock and calendar (chapter 5), shapes and measuring (chapter 6), adding and subtracting with two-digit numbers and graphs (chapter 7), and counting coins (chapter 8).

When you use these two books as your only or main mathematics curriculum, they are like a "framework," but you still have a lot of liberty in planning your child's studies. While addition and subtraction topics are best studied in the order they are presented, feel free to go through the geometry, clock, and money sections in a different order. This might even be advisable if your child is "stuck" on some concept, or is getting bored. Given more time, the concept he/she was stuck on can become clear after a break.

Math Mammoth aims to concentrate on a few major topics at a time, and study them in depth and includes a lot of revision problems from past topics. This is totally the opposite to the continually spiralling step-by-step curricula, in which each lesson typically is about a different topic from the previous or next lesson.

This does not mean that your child would not need an occasional revision. However, when each major topic is presented in its own chapter, this gives yosu more freedom to plan the course of study *and* choose the revision times yourself. In fact, I totally encourage you to plan your mathematics school year as a set of certain topics, instead of a certain book or certain pages from a book.

For revision, the download version includes an html page called *Make_extra_worksheets_grade1.htm* that you can use to make additional worksheets for computation or for number charts. You can also reprint some previously studied pages. The third chapter forms the extra worksheets file, which practises addition and subtraction facts, contains a lot of pages with problems, so you might choose to "save" some of them for later revision.

I wish you success in your maths teaching!

Maria Miller, the author

Chapter 4: Addition and Subtraction Facts
Introduction

This chapter provides lots of practice for learning and memorising the basic addition and subtraction facts within 0-10. The Common Core Standards call for students to demonstrate fluency for addition and subtraction within 10 in the first grade, and this is what this chapter is for.

Since this chapter is somewhat repetitive, consider studying this chapter simultaneously with some other chapter, such as clock or shapes and measuring. For example, you could study a little shapes and measuring and a little from this chapter each day, or study the two different chapters on alternate days. This is not mandatory; it is just a suggestion to "mix things up" in a somewhat spiral fashion to avoid students getting bored with all the repetition.

The lessons titled Addition and Subtraction Facts With... aim at memorisation of the basic facts within 0-10. We approach it from the concept of "fact families," which makes the process to be logical and structured. These lessons have a lot of repetition and practice for both subtraction and addition facts.

Some students may not need all of the practice. Use your judgment and skip some pages in this section if you feel it is necessary. You can also "save" some of the pages to be completed later, as a revision.

With this book, you can also use maths games or flashcards to reinforce these facts. You will find a list of some free online games below.

While your child does not absolutely have to learn these facts by heart while studying this chapter, it is advisable to learn them fairly well now. Mathematics builds upon previously learned concepts and facts, and learning addition and subtraction facts is essential for later study, such as when students add 24 + 2 (in chapter 7 of this curriculum). However, if the child does not memorise these facts yet, do not worry. Go on with the curriculum, but keep practising the facts with games, worksheets, drills, etc., on the side during the rest of first grade.

Besides practising the facts with the help of fact families, students also solve word problems, fill in number patterns, get used to a symbol, such as $\triangle$, for the unknown number, compare expressions (such as $5-2 < 2+5$), and subtract many numbers.

The Lessons

	page	span
Addition and Subtraction Facts with 4 and 5	11	*2 pages*
Addition and Subtraction Facts with 6	13	*3 pages*
Addition and Subtraction Facts with 7	16	*2 pages*
Addition and Subtraction Facts with 8	18	*4 pages*
Addition and Subtraction Facts with 9	22	*3 pages*
Addition and Subtraction Facts with 10	25	*4 pages*
Subtracting Many Numbers	29	*2 pages*
Revision - Facts with 6, 7, and 8	31	*2 pages*
Revision - Facts with 9 and 10	33	*3 pages*

Games for Addition and Subtraction Facts

10 Out (or *5 Out* or *6 Out etc.)*

You need: lots of number cards with numbers 1-10, such as regular playing cards without the picture cards, etc.

Rules: Give seven cards to each player. Place the rest in a stack in the middle, face down.

During his turn, each player *may* first take one card from the deck. Then, each player *may* ask for one card from the player on their right (like in 'Go Fish'), and the person has to give the player the card if the person has it. Then the player may discard any two cards in his hand that add up to 10, or the "10" card itself.

The winner is the player who is the first to discard all cards from his hand.

Adaptations:
* Give more than seven cards.
* Give fewer cards if there are very many players or the players are young.
* Allow players to discard three cards that add up to 10.
* Instead of ten, players discard cards that add up to 9, 8, 11, or some other number. Use the picture cards for 11, 12, and 13.

Some Went Hiding

You need: An amount of small objects that is equal to the sum you are studying. For example, to study the sums with 12, you need 12 marbles, or 12 blocks, etc.

Rules: The first player shows the objects, and quickly hides SOME behind his/her back without showing how many. Then he/she shows the remaining objects to the next player, who has to tell how many went hiding. If the player gives the right answer, it is then his/her turn to hide some and ask the next player to answer. If he gives the wrong answer, he misses his turn. This game appeals best to young students.

Adaptations:
* Instead of getting a turn, the player may gain points or other rewards for the right answer.

Addition (or Subtraction) Battle

You need: A standard deck of playing cards from which you remove the picture cards, and perhaps also some of the other higher number cards such as tens, nines, and eights. Alternatively, a set of dominoes works well for students who do not yet know their numbers beyond 12.

Rules: In each round, each player is given two cards face up, and has to calculate the sum (subtract/ add). The player with the highest sum gets all the cards from the other players. After enough rounds so that all of the cards are used, the player with the most cards wins.

If there is a tie, such as two players both having the sum of 11, those players get an additional two cards and "battle" with those to resolve the tie.

Adaptations:
* This game is easily adapted for subtraction, and fractions. You can also use dominoes instead of two playing cards.

Helpful Resources on the Internet

Use these free online resources to supplement the "bookwork" as you see fit.

Disclaimer: *These links were valid at the time of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.*

Fun 4 The Brain
Practise your basic facts with these simple games that appeal to children.
http://www.fun4thebrain.com/addition.html
http://www.fun4thebrain.com/subtraction.html

Mental Maths Practice
Online practice of sets of 10 addition and subtraction questions; timed.
http://www.teachingtreasures.com.au/maths/mental-maths/yr1-maths-pg1.htm

Maths Facts Practice at playKidsgames.com
Timed practice with various skill levels.
http://www.playkidsgames.com/games/mathfact/default.htm

Number Bond Machines
Practise which two numbers add up to a given number.
http://www.amblesideprimary.com/ambleweb/mentalmaths/numberbond.html

Online Subtraction Flash Cards
http://www.thegreatmartinicompany.com/WebMozilla/subtractionm.html and
http://www.thegreatmartinicompany.com/WebMozilla/subtractionmfill.html

Addition Eaters and **Subtraction Eaters**
Eat the addition (or subtraction) problems if the sum (difference) is a given number.
http://www.hoodamath.com/games/addition.php
http://www.hoodamath.com/games/subtraction.php

Sum Stacker
Drag dice from stack to stack until the sums of each stack equal the sums given.
http://www.carstensstudios.com/mathdoodles/sumsstacker.html

An addition/subtraction card game
This card game is an easy, cheap and fun alternative to drill.
http://diosadotada.homeschooljournal.net/2008/05/15/easy-cheap-alternative-to-drill-kill

Fun maths card game
A simple and fun card game for addition/subtraction.
http://blog.aussiepumpkinpatch.com/2010/03/meal-ticket-math.html

Face off! and other card and board games
Students place markers on the numbers 2-12, toss two dice, find the sum and remove a marker from that number. The page has other addition games also.
http://www.mathwire.com/games/addsubgames.html

Number Line Bounce
Arrange the given bounce arrows on a number line using addition and subtraction until you reach the target number. Since it uses several operations, it *is challenging* for first graders, but give it a try.
http://nlvm.usu.edu/en/nav/frames_asid_107_g_1_t_1.html

Tux Math
A versatile arcade game for maths facts with many options. Includes all operations. You need to shoot falling comets that can damage penguins' igloos. **Price:** Free.
http://sourceforge.net/projects/tuxmath
See also my review: http://homeschoolmath.blogspot.com/2011/05/tux-math.html

Addition and Subtraction Facts with 4 and 5

Facts with 4		4 + 0 = 4 0 + 4 = 4 4 – 4 = 0 4 – 0 = 4
		1 + 3 = 4 3 + 1 = 4 4 – 3 = 1 4 – 1 = 3
		2 + 2 = 4 4 – 2 = 2
Facts with 5		5 + 0 = 5 ____ + ____ = 5 5 – 5 = 0 5 – ____ = ____
		4 + 1 = 5 1 + 4 = 5 5 – 4 = ____ 5 – ____ = ____
		3 + 2 = 5 ____ + ____ = 5 5 – 3 = ____ 5 – ____ = ____

1. Find the missing numbers.

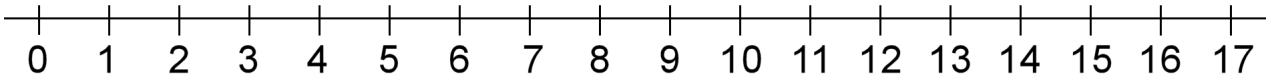
a.	b.	c.	d.
3 + _____ = 4	2 + _____ = 5	5 – 0 = _____	4 – 0 = _____
1 + _____ = 4	1 + _____ = 5	5 – 4 = _____	4 – 3 = _____
1 + _____ = 5	4 + _____ = 5	5 – 2 = _____	5 – 1 = _____
2 + _____ = 4	3 + _____ = 5	4 – 1 = _____	4 – 2 = _____

2. Colour in the square:

- yellow if the answer is 0.
- red if the answer is 1,
- blue if the answer is 2,
- green if the answer is 3,
- purple if the answer is 4,
- orange if the answer is 5.

5 – 4	2 + 3	4 – 4	1 + 2	4 – 2	1 + 3
2 + 2	3 – 2	5 – 0	0 + 0	5 – 2	1 + 1
0 + 2	5 – 1	0 + 1	1 + 4	0 – 0	4 – 1

3. Continue the patterns as long as you can!



a.	**b.**	**c.**
17 – 0 = _____	10 + ____ = 10	5 – 2 = _____
17 – 1 = _____	10 + ____ = 11	6 – 2 = _____
17 – 2 = _____	10 + ____ = 12	7 – 2 = _____
17 – ____ = _____	10 + ____ = ____	_____ – 2 = _____
17 – ____ = _____	____ + ____ = ____	_____ – ____ = _____
_____ – ____ = _____	____ + ____ = ____	_____ – ____ = _____
_____ – ____ = _____	____ + ____ = ____	_____ – ____ = _____

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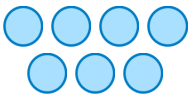
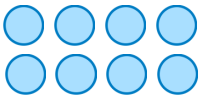
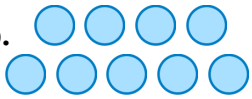
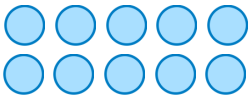
Subtracting Many Numbers



7 – 1 – 2 = ?

You have 7 circles. First you take away 1 circle, and then you take away 2 more circles. You will have 4 circles left. 7 – 1 – 2 = 4.

1. Subtract two times, taking away circles. You can cover or cross out the circles to help.

a. 	b. 	c. 
8 – 2 – 3 = _____	9 – 3 – 1 = _____	10 – 5 – 3 = _____
8 – 5 – 2 = _____	9 – 4 – 2 = _____	10 – 6 – 2 = _____
8 – 1 – 3 = _____	9 – 2 – 5 = _____	10 – 1 – 4 = _____

2. Solve. You can draw pictures to help.

a. Mary had ten cookies. She gave two to her brother, and two to her sister. How many does she have left?

b. Seven birds were in the tree. Three flew away. After a while, one more flew away. How many birds are left in the tree?

c. Eight cars were in the parking lot. Then, three cars left. After that, two more cars left. How many cars are there now?

d. John had R10. Then, he bought two oranges for R4 each and an apple for R2. How many rand does John have now?

You can subtract two numbers this way:	OR you can subtract them this way:
8 – 2 – 3 \ / 6 – 3 = 3 First take away 2. That leaves 6. Then, from 6, subtract 3. That leaves 3.	8 – 2 – 3 \ / 8 – 5 = 3 Check how much you need to subtract or take away *in total*. You need to subtract 2 and 3, or a total of 5. So, subtract 8 – 5 = 3.

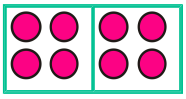
3. Subtract using either way.

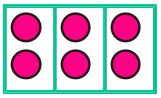
a.	**b.**	**c.**
7 – 2 – 3 = _____	9 – 7 – 1 = _____	7 – 5 – 1 = _____
9 – 2 – 6 = _____	6 – 2 – 2 = _____	10 – 6 – 1 = _____

4. Solve. Compare the two problems and their results.

a.	**b.**	**c.**
10 – 3 – 2 = _____	7 – 3 – 3 = _____	9 – 6 – 1 = _____
10 – 3 – 3 = _____	7 – 4 – 3 = _____	8 – 6 – 1 = _____

5. Match the subtraction problems to the right pictures.



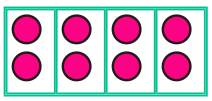


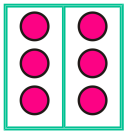
a. 8 – 2 – 2 – 2 – 2 = 0

b. 8 – 4 – 4 = 0

c. 6 – 2 – 2 – 2 = 0

d. 6 – 3 – 3 = 0





Puzzle Corner Here are some problems with four numbers!

9 – 3 – 2 – 1 = _____ 10 – 1 – 2 – 1 = _____ 8 – 4 – 1 – 2 = _____

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Chapter 5: Clock
Introduction

The fifth chapter covers reading the clock (whole hours and half hours) and some basics of time and calendar.

Reading the clock - whole and half hours

The main goal of this chapter is to learn the whole and half hours on the clock.

In the first lesson we use an analogue clock without the minute hand. The child learns whole and half hours with this special clock, and also practises what time it is one hour or a half-hour later than a given time.

The next lesson talks about the minutes. While it does have some clock reading to the nearest five minutes, the main focus in this lesson is to learn that one hour is 60 minutes, a half-hour is 30 minutes, and how the phrases “o'clock” and “half past” relate to the hours and minutes.

For example, the child is to learn that half past eight is written 8:30, and that the “30” part means minutes, and that half an hour IS 30 minutes.

The book has a few exercises about reading the clock to the five-minute intervals; however this can be skipped. The second grade book has much more practice on reading the clock to the nearest five minutes.

I have included one lesson about time order. The topics in this lesson are hopefully already familiar to the student. The next lesson deals with morning and afternoon hours: AM and PM. The goal is to understand that at midnight, the clock starts at 12 hours, and goes through all the hours from 1 to 12, and then it is noon, and after that the hours again go from 1 to 12 until it is midnight again.

We will also briefly look at the calendar and practise the names of the months.

Reading the clock is a skill that can and should be practised in everyday situations from now on so that children can learn by experience and not just by filling in maths book pages.

The Lessons

	page	span
Whole and Half Hours	39	*4 pages*
The Minutes and Half Hours.....	43	*4 pages*
Time Order	47	*2 pages*
AM and PM	49	*3 pages*
The 2013 Calendar	52	*2 pages*
Revision - Half Hours	54	*1 page*

Helpful Resources on the Internet

Use these free online resources to supplement the "bookwork" as you see fit.

Disclaimer: *These links were valid at the time of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.*

Flashcard Clock
Read the analogue and type in the time in digital. Very clear clock and good fast response!
http://www.teachingtreasures.com.au/maths/FlashcardClock/flashcard_clock.htm

Teaching Time
Analogue/digital clock games and worksheets. Also an interactive "class clock" to demonstrate time.
http://www.teachingtime.co.uk/

A Matter of Time
Lesson plans for telling time, interactive activities, and some materials to print.
http://www.fi.edu/time/Journey/JustInTime/contents.html

Clockwise
Plug in a time, and the clock runs till it reaches it, or the clock runs to a time and you type it in.
http://www.shodor.org/interactivate/activities/clock2/index.html

Clock
(*The words "Evaluation version" are across the screen*). Use the buttons to advance the clock in 5, 10, 15, 30 minute increments or drag the hands. Shows digital time also. For illustrations only; it does not have any quiz or questions.
http://www.interactive-resources.co.uk/mathspack1/clock/clock.html

The Right Time
A couple of interactive exercises about reading the clock.
http://www.pitara.com/activities/math/time/time.asp?QNum=3

What Time Is It?
Look at the analogue clock and pick the digital clock that shows the same time.
http://www.primarygames.com/time/start.htm

Time-for-Time
Resource site to learn about time: worksheets, games, quizzes, time zones.
http://www.time-for-time.com/default.htm

That Quiz: Time
Online quizzes for all time-related topics: reading the clock, time passed, adding/subtracting with time, conversion of time units, and time zones practice. The quizzes have many levels, can be timed or not, and include lots of options for customisation. Easy to use and set up.
www.thatquiz.org/tq-g/math/time

On Time
Set the clock's hands to the given time. Four different levels.
http://www.sheppardsoftware.com/mathgames/earlymath/on_time_game1.htm

Clock Shoot
A game where you need to click on the clock with the matching time (analogue/digital). Three different levels: whole hours, half hours, or quarter hours.
http://www.sheppardsoftware.com/mathgames/earlymath/clock_shoot.htm

Calendar Song
This girls sings the months of the year with gestures.
http://www.youtube.com/watch?v=IwdQegySW-0

Calendar Quiz
Click on the correct date on the calendar to answer questions such as what is the first Monday of this month.
http://www.softschools.com/math/calendar/activities/calendar_game/

Create Your Own Calendar
Choose a month and a year, then add your own text to each day, and generate the calendar.
http://www.janbrett.com/calendar/calendar1.php4

Months Game
Help Tom the Zebra get ready for bed by clicking and dragging the months into the correct order.
http://www.roythezebra.com/reading-games/high-frequency-words-months.html

Days of the Week Game
Help Tom the Zebra get ready for bed by clicking and dragging the days of the week into the correct order.
http://www.roythezebra.com/reading-games/high-frequency-words-days.html

It's a Date
An online quiz about dates on a calendar.
http://www.beaconlearningcenter.com/WebLessons/ItsADate/default.htm

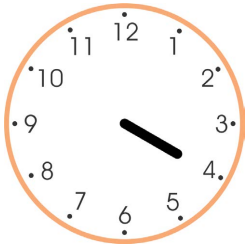
12 Months of the Year
Drag the months into the correct order and help the monkeys get a banana.
http://www.abcya.com/months_of_the_year.htm

Monkey Fun Game
Practice months of the year and ordinal numbers with this interactive game**.**
http://www.eslgamesplus.com/months-and-ordinal-numbers-esl-vocabulary-game-activity-online/

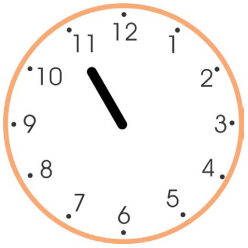
Memory Game
For the days of the week.
http://www.eslgamesplus.com/days-of-the-week-esl-vocabulary-game/

Whole and Half Hours

In this lesson, the clock only has one hand - the HOUR hand.



The hour hand points to four -
it is four o'clock, or “four hours.”

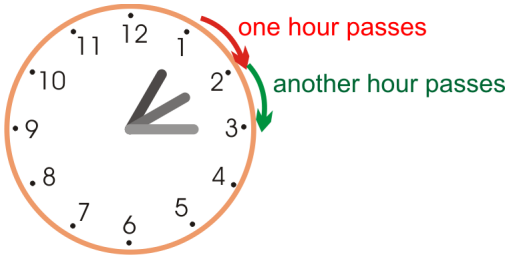


The hour hand points to eleven -
it is eleven o'clock, or “eleven hours.”

The hour hand slowly moves around the clock face: from 1 to 2 to 3, and so on.

When the hour hand moves from 1 to 2, exactly one hour of time has passed.

The same is true when the hour hand moves from 2 to 3. It takes the hour-hand one hour to do that.



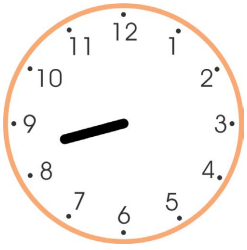
On this clock, the hour hand has first pointed to 5 —it was five o'clock.

Then it has moved **halfway** between 5 and 6.
We say it is **half past five**.

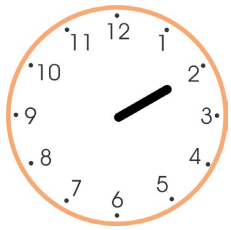
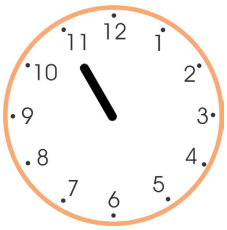
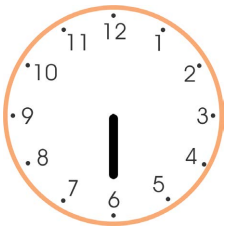
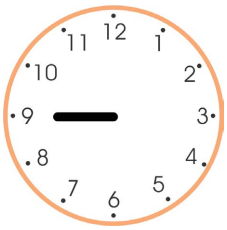
It takes the hour hand one-half hour to move from five to halfway between five and six.

The hour hand has moved past eight o'clock, and is halfway between 8 and 9. We say it is half past eight.

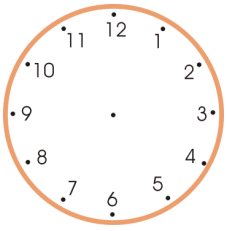
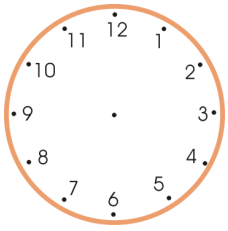
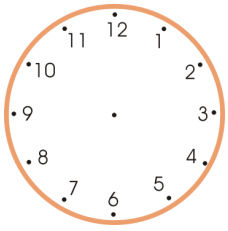
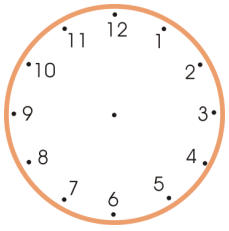
In half an hour it will be nine o'clock.



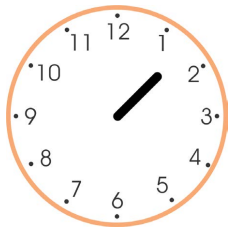
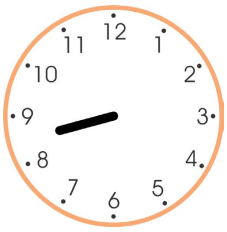
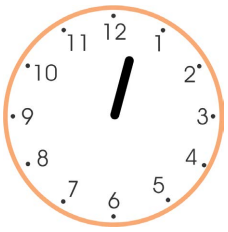
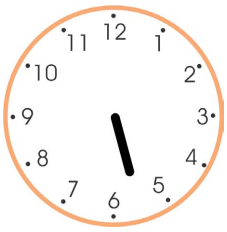
1. Write the time under each clock face.

			
a. _____ o'clock	**b.** _____ o'clock	**c.** _____ o'clock	**d.** _____ o'clock

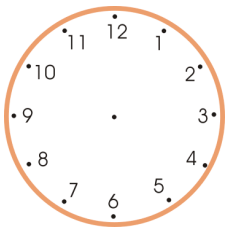
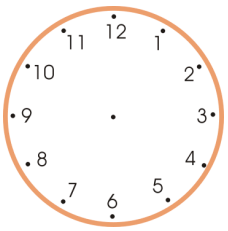
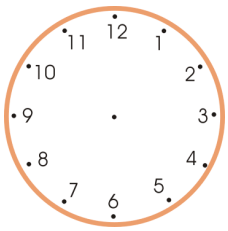
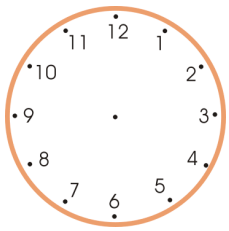
2. Draw the hour hand.

			
a. five o'clock	**b.** eight o'clock	**c.** twelve o'clock	**d.** seven o'clock

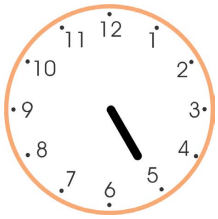
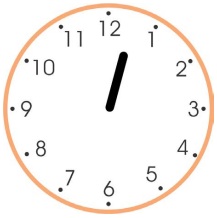
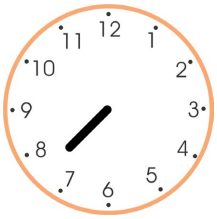
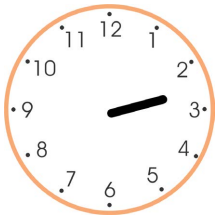
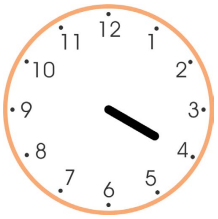
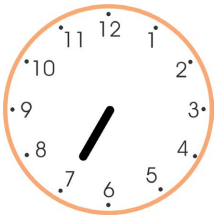
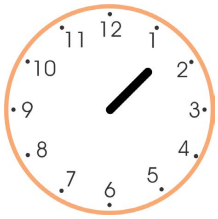
3. Write the time.

			
a. half past _____	**b.** half past _____	**c.** half past _____	**d.** half past _____

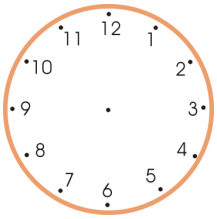
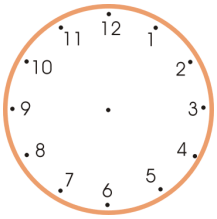
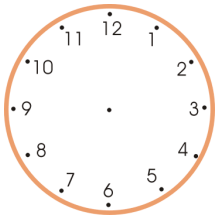
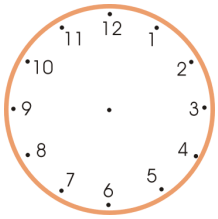
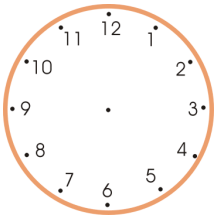
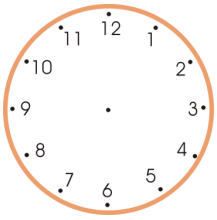
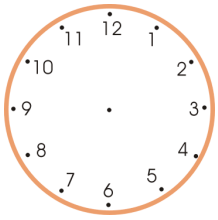
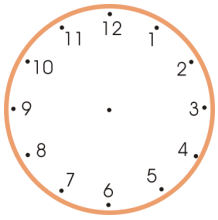
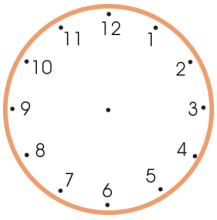
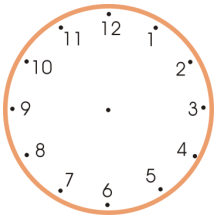
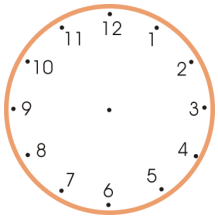
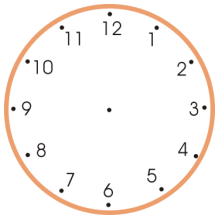
4. Draw the hour hand.

			
a. half past six	**b.** half past three	**c.** half past two	**d.** half past four

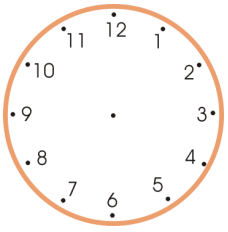
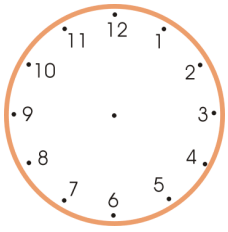
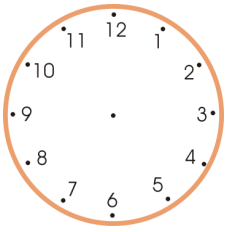
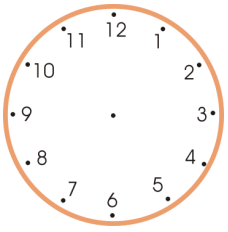
5. Write the time!

a. 	**b.** 	**c.** 	**d.** 
e. 	**f.** 	**g.** 	**h.** 

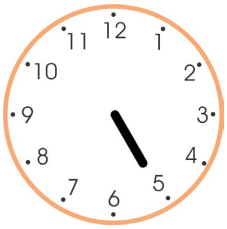
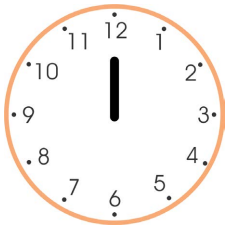
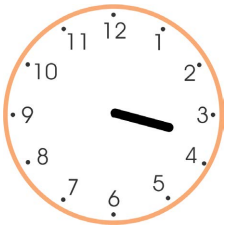
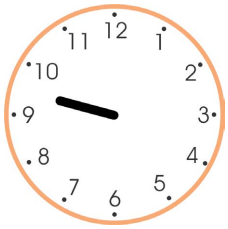
6. Draw the hour hands on the clocks. On the second row, show the time a half-hour later. On the third row, show the time another half-hour later (compared to the second row).

Draw the hour hand.	 **a.** Five o'clock	 **b.** One o'clock	 **c.** Half-past six	 **d.** Half-past three
A half-hour later →				
Another half-hour later →				

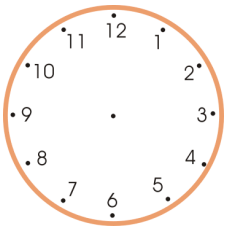
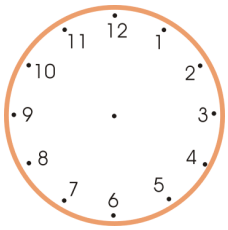
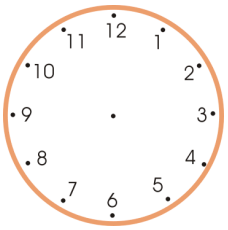
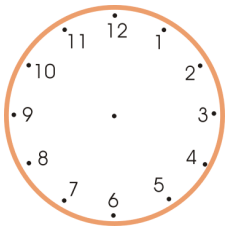
7. Draw the hour hand on the clocks. Then write the time that the clock shows a half-hour later.

				
1/2 hour later →	**a.** three o'clock	**b.** eleven o'clock	**c.** half-past five	**d.** half-past eleven
	half past _____	half past _____	_____ o'clock	_____ o'clock

8. Write the time that the clock shows. Then write the time an hour later.

				
An hour later →	**a.** _____ o'clock	**b.** _____ o'clock	**c.** half past _____	**d.** half past _____
	_____ _____	_____ _____	_____ _____	_____ _____

9. Draw the hour hand on the clock face. Write what time it would be an hour later.

				
An hour later →	**a.** three o'clock	**b.** eleven o'clock	**c.** half-past five	**d.** half-past eleven
	_____ _____	_____ _____	_____ _____	_____ _____

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Chapter 6: Shapes and Measuring
Introduction

The sixth chapter of *Math Mammoth Grade 1* covers basic shapes and the basic idea of measuring. We will also study three-dimensional shapes, halves and fourths, and centimetres.

If you have the downloadable version of this book (PDF file), you need to print this file as 100%, not "shrink to fit," "print to fit," or similar. If you print "shrink to fit", some exercises about measuring in centimetres will not come out right, but will be "shrunk" compared to reality.

The goals of this section are:

- The student can identify common shapes, such as triangles, squares, rectangles, circles, and quadrilaterals.
- The student can draw lines with a ruler.
- The student develops understanding of measuring lengths as iterating (repeating) a measuring unit.

These are fairly simple goals, and the lessons in this chapter can be quite easy, but they are laying a foundation for later studies. For example, dividing shapes into parts helps build an understanding of part-whole relationships *and* fractions, as well as the properties of the original shape and of the parts. They may seem easy to us (and even to your child), but are necessary for a proper foundation for geometric understanding.

For additional practice, students can draw lines and other shapes however they are able to, divide them into other shapes, and draw patterns on grid paper. A tangram or block shapes are also excellent aids.

The Lessons

	page	span
Basic Shapes	58	*3 pages*
Printable Shapes	61	*1 page*
Playing with Basic Shapes	63	*3 pages*
Drawing Basic Shapes	64	*3 pages*
Practising Basic Shapes and Patterns	67	*3 pages*
Halves and Quarters	70	*4 pages*
Measuring Length	74	*4 page*
Exploring Measuring	78	*2 pages*
Measuring Lines in Centimetres	80	*2 pages*
Three-Dimensional Shapes	82	*2 pages*
Revision	84	*1 page*

Helpful Resources on the Internet

Use these free online resources to supplement the "bookwork" as you see fit.

Disclaimer: *These links were valid at the time of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.*

Buzzing with Shapes
Tic tac toe with shapes; drag the counter to the shape that has that amount of sides.
http://www.harcourtschool.com/activity/buzz/buzz.html

Patch Tool
An online activity where the student designs a pattern using geometric shapes.
http://illuminations.nctm.org/ActivityDetail.aspx?ID=27

Shape Cutter
Draw any shape (polygon), cut it, and manipulate the cut pieces. You can have the computer mix them up, and then try to recreate the original shape.
http://illuminations.nctm.org/ActivityDetail.aspx?ID=72

Shifting Shapes
Figure out what shape it is when viewing through a small opening! Click on the "eye" button to see it in its entirety.
http://www.ictgames.com/YRshape.html

Polygon Matching Game
http://www.mathplayground.com/matching_shapes.html

Polygon Playground
Drag various colourful polygons to the work area to make your own creations!
http://mathcats.com/explore/polygons.html

Shapes Identification Quiz from ThatQuiz.org
An online quiz in a multiple-choice format, asking to identify common two-dimensional shapes. You can modify the quiz parameters to your liking.
www.thatquiz.org/tq-f/math/shapes/

Tangram puzzles for kids
Use the seven pieces of the Tangram to form the given puzzle.
Complete the puzzle by moving and rotating the seven shapes.
http://www.abcya.com/tangrams.htm

Logic Tangram game
Note: this uses four pieces only. Use logic and spatial reasoning skills to assemble the four pieces into the given shape.
http://www.mathplayground.com/tangrams.html

Interactive Tangram Puzzle
Place the tangram pieces so they form the given shape.
http://nlvm.usu.edu/en/nav/frames_asid_112_g_2_t_1.html

Online Kaleidoscope
Create your own kaleidoscope creation with this interactive tool.
http://www.zefrank.com/dtoy_vs_byokal/

Measure It!
Click on the ruler to measure a red bar.
http://www.funbrain.com/measure/index.html

Measure Lines
Move the ruler to measure the line in centimetres
http://www.freewebtown.com/weddell/mw/ruler/ruler_cm.swf

Elementary Teddy Bear Measurement Game
Measure the teddy bear with the ruler.
http://www.apples4theteacher.com/measure.html

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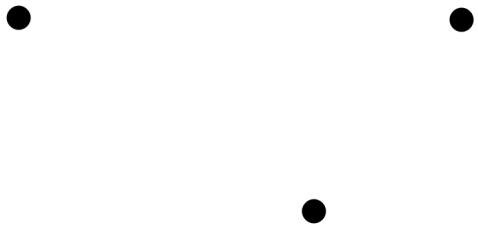
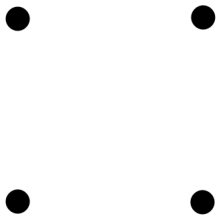
Drawing Basic Shapes

1. Use a ruler to join the dots carefully with straight lines. What shape do you get?



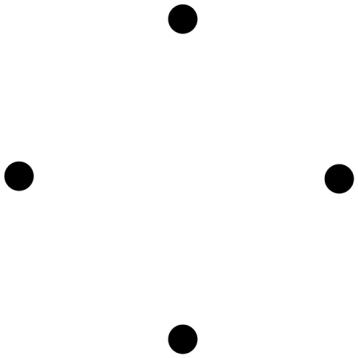
a. triangle / square / rectangle / other four-sided shape



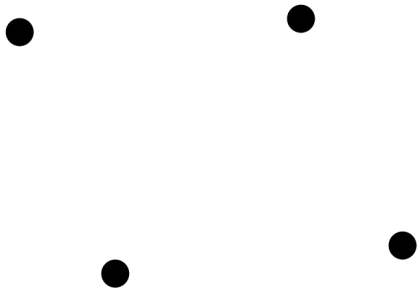
b. triangle / square / rectangle / other four-sided shape

c. triangle / square / rectangle / other four-sided shape

d. triangle / square / rectangle / other four-sided shape



e. triangle / square / rectangle / other four-sided shape



f. triangle / square / rectangle / other four-sided shape

2. **a.** Draw four dots anywhere in this space.

Join the dots with lines. Use a ruler!

What shape did you get? A square, a rectangle, or just a four-sided shape?

b. This time try to draw four dots in this space so that you would get a rectangle.

c. Draw a rectangle. This time, use a BOOK to draw straight corners.

3. The shapes (a), (b), (c), and (d) below are four-sided shapes (quadrilaterals).
In each shape, draw a line from one corner to the opposite corner.

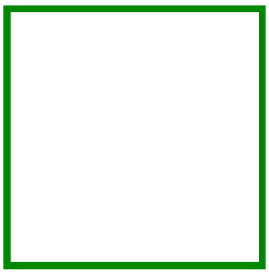
What kind of shapes do you get now? _____

Now draw another line from corner to corner in each shape, using the two other corners you have not used yet.

How many parts does each four-sided shape have now? _____

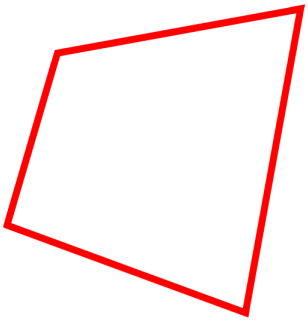
What kind of shapes are these parts? _____

a.

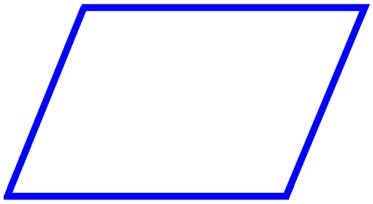


b.

c.



d.

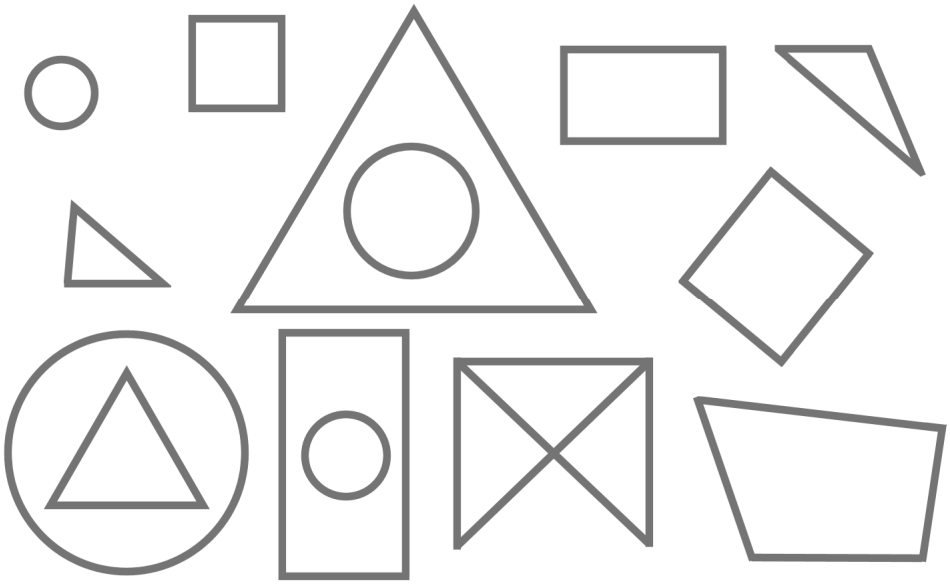


4. Choose a colour for each shape, and colour in!

Triangles are _____. Circles are _____.

Squares are _____. Rectangles are _____.

Other four-sided shapes are _____.



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Chapter 7: Adding and Subtracting Within 0-100

Introduction

The seventh chapter deals mostly with easy addition and subtraction problems within 0-100. Topics studied include:

- Adding a two-digit number and a single-digit number without completing the next ten: For example, 23 + 4 or 56 + 3.
- Subtracting a two-digit number and a single-digit number without changing the ten (for example, 45 − 3 or 67 − 6).
- Adding and subtracting two-digit numbers in columns (under each other) without regrouping (carrying or borrowing).
- Recognising that sometimes in adding two-digit numbers we need to compose a new ten (go over to the next ten). We approach this concept using visual models, and do not proceed into the abstract form yet.
- Strategies for adding and subtracting within 20 (such as 7 + 9 or 15 − 8): a trick with nine and eight, adding just one more than a known sum, and using the relationship between addition and subtraction to subtract. Actually memorising these basic addition and subtraction facts is left for second grade.

The Lessons

	page	span
Refresh Your Memory	87	*2 pages*
Adding Within the Same Ten	89	*3 pages*
Subtracting Within the Same Ten	92	*3 pages*
Add and Subtract Two-Digit Numbers	95	*4 pages*
Completing the Next Ten	99	*3 pages*
Going Over Ten	102	*4 pages*
Subtract from Whole Tens	106	*2 pages*
Add Using “Just One More”	108	*2 pages*
A “Trick” with Nine and Eight	110	*3 pages*
Adding within 20	113	*4 pages*
Subtract to Ten	117	*2 pages*
Subtract Using Addition	119	*3 pages*
Some Mixed Revision	122	*3 pages*
Pictographs	125	*2 pages*
Revision	127	*4 pages*

Helpful Resources on the Internet

Use these free online resources to supplement the "bookwork" as you see fit.

Disclaimer: *These links were valid at the time of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.*

Add 'em Up
A game where you choose the correct answer to addition problems.
http://www.primarygames.com/add_up/2a.htm

Maths Games from AplusMath
Practise two-digit addition and subtraction with Matho, Hidden Picture, and Concentration.
http://www.aplusmath.com/games/

Speed Grid Addition
Find numbers on the grid that add up to the given number.
http://www.oswego.org/ocsd-web/games/SpeedGrid/Addition/urikares.html

Double Digit Addition
Match the addition problem with the correct sum. Enjoy!
http://www.quia.com/mc/818288.html

Addition Level 2
A matching game where you add a one-digit number and a two-digit number.
http://www.quia.com/mc/65798.html

Space Jumps
Adding two single-digit numbers, first jump to ten, then the rest to the spaceship. Practises addition that goes over ten.
http://www.ictgames.com/spacejumps.html

Bridging Shuttle
Bridging Through Ten means the same as adding to ten first, then the rest. Get a "flight plan", then first add to ten by typing the number needed into the oval, and press the red button. Then type the rest that the shuttle needs to go into the other oval, and press the red button.
http://www.ictgames.com/bridging.html

Froggy Hop
Find 10 more or 1 more of a given number.
http://www.ictgames.com/frog.html

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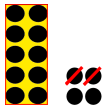
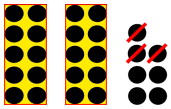
Subtracting Within the Same Ten

 **14 – 2 = 12** "I can subtract 4 – 2 = 2; the 10 stays the same."	 **27 – 3 = 24** "I can subtract 7 – 3 = 4; the 20 stays the same."	Think of the *ones digits* only. The tens do not change, because we don't have to subtract from the tens.

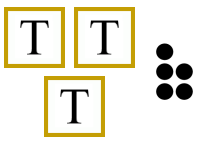
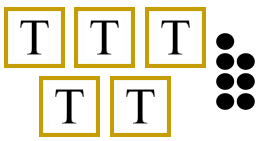
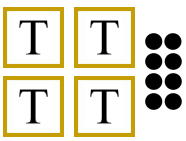
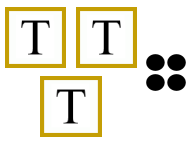
1. Subtract and compare. The top problem helps you solve the bottom one!

a. 8 – 2 = 6 28 – 2 = 26	**b.** 7 – 6 = _____ 17 – 6 = _____	**c.** 7 – 7 = _____ 67 – 7 = _____
d. 6 – 6 = _____ 56 – 6 = _____	**e.** 9 – 8 = _____ 49 – 8 = _____	**f.** 5 – 2 = _____ 95 – 2 = _____

2. Subtract. Think of the "helping problem" that only uses numbers less than 10.

a. 54 – 2 = _____ 4 – 2 = _____	**b.** 76 – 2 = _____ ____ – ____ = _____	**c.** 88 – 4 = _____ ____ – ____ = _____

3. Subtract. Cross out dots. The boxes with "T's" are tens.

a.  35 – 4 = _____ 35 – 3 = _____ 35 – 2 = _____	**b.**  57 – 7 = _____ 57 – 5 = _____ 57 – 3 = _____	**c.**  48 – 2 = _____ 48 – 4 = _____ 48 – 6 = _____	**d.**  34 – 1 = _____ 34 – 2 = _____ 34 – 4 = _____

4. Subtract.

a.	b.	c.	d.
77 – 6 = _____	47 – 2 = _____	57 – 4 = _____	15 – 3 = _____
22 – 1 = _____	75 – 1 = _____	86 – 2 = _____	98 – 4 = _____

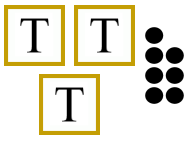
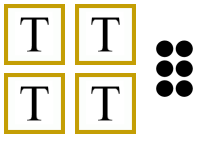
5. Find the missing numbers (addends).

a. 10 + _____ = 15	**b.** 21 + _____ = 22	**c.** 65 + _____ = 69
32 + _____ = 38	94 + _____ = 95	33 + _____ = 36
72 + _____ = 79	44 + _____ = 48	91 + _____ = 98

6. Solve.

a. In the morning, Ansie sold 21 pictures that she had painted and in the afternoon, she sold 7. How many pictures did she sell in total?
b. Ansie had 30 pictures to sell when she started. How many does she have left now?
c. Ansie can paint a picture in one hour. She started painting at 4:30 and painted three pictures. At what time did she stop painting?

7. Take away the ones (the dots) so that only the whole tens are left.

a.  37 – _____ = 30	**b.**  46 – _____ = 40	**c.**  28 – _____ = _____
d. 57 – ____ = _____	**e.** 85 – ____ = _____	**f.** 69 – ____ = _____

8. Solve. In the last row, make your own problems, and let a friend solve them!

a. 50 + ◯ = 57	**b.** ◯ + 2 = 88	**c.** 79 – 9 = ◯
d. ◯ – 5 = 20	**e.** 90 – ◯ = 85	**f.** 42 = 40 + ◯
◯ + _____ = _____	_____ + ◯ = _____	

9. Count in fives. Notice the patterns! A 100-chart or an abacus can help you.

a. 10, 15, _____, _____, _____, _____, _____, _____, _____

b. 1, 6, _____, _____, _____, _____, _____, _____, _____

c. 3, 8, _____, _____, _____, _____, _____, _____, _____

10. Continue the patterns.

a.	**b.**	**c.**
88 – 0 = _____	95 – 2 = _____	48 – 1 = _____
88 – 1 = _____	85 – 2 = _____	46 – 1 = _____
88 – 2 = _____	75 – 2 = _____	44 – 1 = _____
88 – _____ = _____	_____ – _____ = _____	_____ – 1 = _____
88 – _____ = _____	_____ – _____ = _____	_____ – _____ = _____
_____ – _____ = _____	_____ – _____ = _____	_____ – _____ = _____
_____ – _____ = _____	_____ – _____ = _____	_____ – _____ = _____
_____ – _____ = _____	_____ – _____ = _____	_____ – _____ = _____

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Chapter 8: Coins
Introduction

The goals of this chapter are:

- The student is able to identify the common coins (5 cents, 10 cents, 20 cents, 50 cents, 1 rand, 2 rand, and 5 rand).
- The student can count the money in rand and cent coins when the cent sum is at most 100 cents.

While the book has pictures for the coins, practising with real coins is of course advisable.

The student also practises making given money amounts with coins, and using coins in simple shopping situations. We will practise shopping and giving change more in grades 2 and 3.

The Lessons

	page	span
Five and Ten Cent Coins	132	*2 pages*
Twenty and Fifty Cent Coins	134	*3 pages*
Rand	137	*3 pages*
Practising with Coins	140	*2 pages*
Practising Shopping	142	*2 pages*
Mixed Revision, Chapters 1-8	144	*2 pages*
Revision—Coins	146	*1 page*

Helpful Resources on the Internet

Disclaimer: *These links were valid at the time of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.*

Counting South African coins worksheets
Create free worksheets for counting all South African coins and some banknotes. You can choose the number of coins, the maximum total amount, and the number of problems.
http://www.homeschoolmath.net/worksheets/south-african-money.php

South African Mint
See specially minted collector coins, such as the 2010 Natura Coin series with black rhinoceros, the Krugerrand Series, the Protea Series with Nadine Gordimer, and others. You will also find information about coin making and the current circulation coins.
http://www.samint.co.za

Five and Ten Cent Coins

This is a five cent coin.
It has the national bird of South Africa on it, the Blue Crane.
It can be written "5 c".

This is a ten cent coin.
It has an Arum Lily on it.

It can be written "10 c".

In the exercises, we use small pictures of these coins. The 5 c coin is larger than the 10 c coin. The 10 cent coin is lighter in colour.

Count up → 10 c 20 c 25 c 30 c 35 c 40 c

To find the total value, add the cent values. It's called counting up. Start counting with the coins of the largest value.

The total on the right is 40 c.

1. Count and write the total amount in cents.

a.

_____ cents

b.

_____ cents

c.

_____ cents

d.

_____ cents

e.

_____ cents

f.

_____ cents

g.

_____ cents

h.

_____ cents

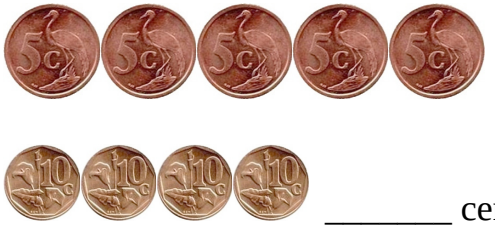
i.

_____ cents

10 c **20 c** **30 c** **40 c**

You can count each set of two fives as a ten.

2. Count and write the total amount in cents; especially notice all the fives.

a.  _____ cents	**b.**  _____ cents
c.  _____ cents	**d.**  _____ cents

3. Make these amounts of money in different ways using five cent and ten cent coins.
You can use real money or draw circles with 5 and 10 on them.

a. 80 cents	**b.** 60 cents	**c.** 100 cents
d. 75 cents	**e.** 35 cents	**f.** 55 cents

Twenty and Fifty-Cent Coins

This coin is worth twenty cents or 20 c.

This coin is worth fifty cents or 50 c.

The 20-cent coin usually has a King Protea flower on it.
It is the national flower of South Africa.
The 50-cent coin usually has a Strelitzia flower on it.

Count up →

50 70 80 85 90

Count up to find the total value of the cents. Start counting with the coins with the largest value. Here we have 90 cents.

1. Work out the coin value in cents.

a.  _____ cents

b.  _____ cents

c.  _____ cents

d.  _____ cents

e.  _____ cents

f.  _____ cents

g.  _____ cents

h.  _____ cents

i.  _____ cents

j.  _____ cents