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Foreword

Math Mammoth International Version Grade 2-A and Grade 2-B worktexts comprise a complete maths curriculum for the second grade mathematics studies.

This curriculum is essentially the same as the version of Math Mammoth Grade 2 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 second 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 Australian dollar. (The download version of this curriculum for grades 1-3 include the chapter on money for European, South African, Canadian, US, and British currencies.)
- The curriculum teaches the metric measurement units. Imperial units, such as inches and pounds, are not taught.
- The spelling conforms to British international standards.
- Paper size is A4.

The main areas of study for second grade are:

1. Understanding of the base-ten system within 1000. This includes place value with three-digit numbers, skip-counting in fives, tens, and multiples of hundreds, tens, and ones (within 1000) (chapters 6 and 8);
2. Develop fluency with addition and subtraction, including solving word problems, regrouping in addition, and regrouping in subtraction (chapters 1, 3, 4, and 8);
3. Using standard units of measure (chapter 7);
4. Describing and analysing shapes (chapter 5).

Additional topics we study are time, money, introduction to multiplication, and bar graphs and picture graphs.

This book, 2-B, covers three-digit numbers (chapter 6), measuring (chapter 7), regrouping in addition and subtraction (chapter 8), counting coins (chapter 9) and an introduction to multiplication (chapter 10). The rest of the topics are covered in the 2-A student worktext.

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

- These two books (parts A and B) 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 sections on shapes, measurement, clock and money in any order you like.

This is especially advisable if your child is either “stuck” or is perhaps getting bored with 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/>

Lastly, you can find free videos matched to the curriculum at <https://www.mathmammoth.com/videos/>

I wish you success in teaching math!

Maria Miller, the author

User Guide

Note: You can also find the information that follows online, at <https://www.mathmammoth.com/userguides/> .

Basic principles in using Math Mammoth Complete Curriculum

Math Mammoth is mastery-based, which means it concentrates on a few major topics at a time, in order to study them in depth. 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. You can even use it in a *spiral* manner, if you prefer. Simply have your student study in 2-3 chapters simultaneously. In second grade, the addition and subtraction topics are best studied in the order they are presented, but feel free to go through the chapters on geometry, measurement, clock and money in any order you like.

Math Mammoth is not a scripted curriculum. In other words, it is not spelling out in exact detail what the teacher is to do or say. Instead, Math Mammoth gives you, the teacher, various tools for teaching:

- **The two student worktexts** (parts A and B) contain all the lesson material and exercises. They include the explanations of the concepts (the teaching part) in blue boxes. The worktexts also contain some advice for the teacher in the introduction of each chapter.

The teacher can read the teaching part of each lesson before the lesson, or read and study it together with the student in the lesson, or let the student read and study on his own. If you are a classroom teacher, you can copy the examples from the “blue teaching boxes” to the board and go through them on the board.

- There are a lot of **videos** matched to the curriculum available at <https://www.mathmammoth.com/videos/> . There isn’t a video for every lesson, but there are dozens of videos for each grade level. You can simply have the author teach your child or student!
- Don’t automatically assign all the exercises. Use your judgement, trying to assign just enough for your student’s needs. You can use the skipped exercises later for revision. For most students, I recommend to start out by assigning about half of the available exercises. Adjust as necessary.
- For each chapter, there is a **link list to various free online games** and activities. These games can be used to supplement the maths lessons, for learning maths facts, or just for some fun. Each chapter introduction (in the student worktext) contains a link to the list corresponding to that chapter.
- The student books contain some **mixed revision lessons**, and the curriculum also provides you with additional **cumulative revision lessons**.
- There is a **chapter test** for each chapter of the curriculum, and a comprehensive end-of-year test.
- The **worksheet maker** allows you to make additional worksheets for most calculation-type topics in the curriculum. You will need Internet access to be able to use it. In the digital version, the worksheet maker is found in the folder titled “For revision”. In the print version, a link to it is found in the introduction just before the cumulative revisions.
- You can use the free online exercises at <https://www.mathmammoth.com/practice/>
This is an expanding section of the site, so check often to see what new topics we are adding to it!
- Some grade levels have **cut-outs**, such as to make fraction manipulatives or geometric solids.
- And of course there are answer keys to everything.

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

How to get started

Have ready the first lesson from the student worktext. Go over the first teaching part (within the blue boxes) together with your child. Go through a few of the first exercises together, and then assign some problems for your child to do on their own.

Repeat this if the lesson has other blue teaching boxes. Naturally, you can also use the videos at <https://www.mathmammoth.com/videos/>

Many children can eventually study the lessons completely on their own — the curriculum becomes self-teaching. However, children definitely vary in how much they need someone to be there to actually teach them.

Pacing the curriculum

The lessons in Math Mammoth complete curriculum are NOT intended to be done in a single teaching session or class. Sometimes you might be able to go through a whole lesson in one day, but more often, the lesson itself might span 3-5 pages and take 2-3 days or classes to complete.

Therefore, it is not possible to say exactly how many pages a student needs to do in one day. This will vary. However, it is helpful to calculate a general guideline as to how many pages per week you should cover in the student worktext in order to go through the curriculum in one school year (or whatever span of time you want to allot to it).

The table below lists how many pages there are for the student to finish in this particular grade level, and gives you a guideline for how many pages per day to finish, assuming a 180-day school year.

Example:

Grade level	Lesson pages	Number of school days	Number of days for tests and revisions	Number of days for studying the student book	Pages to study per day	Pages to study per week
2-A	131	89	10	79	1.66	8.3
2-B	136	91	10	81	1.68	8.4
Grade 2 total	267	180	20	160	1.67	8.34

The table below is for you to fill in. First fill in how many days of school you intend to have. Also allow several days for tests and additional revision before the test — at least twice the number of chapters in the curriculum. For example, if the particular grade has 8 chapters, allow at least 16 days for tests & additional revision. Then, to get a count of “pages/day”, divide the number of pages by the number of available days. Then, multiply this number by 5 to get the approximate page count to cover in a week.

Grade level	Lesson pages	Number of school days	Number of days for tests and revisions	Number of days for studying the student book	Pages to study per day	Pages to study per week
2-A	131					
2-B	136					
Grade 2 total	267					

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

Now, let's assume you determine that you need to study about 1.6 pages a day, 8 pages a week in order to get through the curriculum. As you study each lesson, keep in mind that sometimes most of the page might be filled with blue teaching boxes and very few exercises. You might be able to cover two pages on such a day. Then some other day you might only assign one page of word problems. Also, you might be able to go through the pages quicker in some chapters, for example when studying graphs or telling time, because the large pictures fill the page so that one page does not have many problems.

When you have a page or two filled with lots of similar practice problems ("drill") or large sets of problems, feel free to **only assign 1/2 or 2/3 of those problems**. If your child gets it with less amount of exercises, then that is perfect! If not, you can always assign him/her the rest of the problems some other day. In fact, you could even use these unassigned problems the next week or next month for some additional revision.

In general, 1st-2nd graders might spend 20-40 minutes a day on maths. Third-fourth graders might spend 30-60 minutes a day. Fifth-sixth graders might spend 45-75 minutes a day. If your child finds maths enjoyable, he/she can of course spend more time with it! However, it is not good to drag out the lessons on a regular basis, because that can then affect the child's attitude towards maths.

Working space, the usage of additional paper and mental maths

The curriculum generally includes working space directly on the page for students to work out the problems. However, feel free to let your students to use extra paper when necessary. They can use it, not only for the "long" algorithms (where you line up numbers to add, subtract, multiply, and divide), but also to draw diagrams and pictures to help organise their thoughts. Some students won't need the additional space (and may resist the thought of extra paper), while some will benefit from it. Use your discretion.

Some exercises don't have any working space, but just an empty line for the answer (e.g. $200 + \underline{\quad} = 1000$). Typically, I have intended that such exercises to be done using MENTAL MATHS.

However, there are some students who struggle with mental maths (often this is because of not having studied and used it in the past). As always, the teacher has the final say (not me!) as to how to approach the exercises and how to use the curriculum. We do want to prevent extreme frustration (to the point of tears). The goal is always to provide SOME challenge, but not too much, and to let students experience success enough so that they can continue enjoying learning maths.

Students struggling with mental maths will probably benefit from studying the basic principles of mental calculations from the earlier levels of Math Mammoth curriculum. To do so, look for lessons that list mental maths strategies. They are taught in the chapters about addition, subtraction, place value, multiplication, and division. My article at https://www.mathmammoth.com/lessons/practical_tips_mental_math also gives you a summary of some of those principles.

Using tests

For each chapter, there is a **chapter test**, which can be administered right after studying the chapter. **The tests are optional**. Some families might prefer not to give tests at all. The main reason for the tests is for diagnostic purposes, and for record keeping. These tests are not aligned or matched to any standards.

In the digital version of the curriculum, the tests are provided both as PDF files and as html files. Normally, you would use the PDF files. The html files are included so you can edit them (in a word processor such as Word or LibreOffice), in case you want your student to take the test a second time. Remember to save the edited file under a different file name, or you will lose the original.

The end-of-year test is best administered as a diagnostic or assessment test, which will tell you how well the student remembers and has mastered the mathematics content of the entire grade level.

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

Using the cumulative revisions and the worksheet maker

The student books contain mixed revision lessons which revise concepts from earlier chapters. The curriculum also comes with additional cumulative revision lessons, which are just like the mixed revisions in the student books, with a mix of problems covering various topics. These are found in their own folder in the digital version, and in the Tests & Cumulative Revisions book in the print version.

The cumulative revisions are optional; use them as needed. They are named indicating which chapters of the main curriculum the problems in the revision come from. For example, “Cumulative Revision, Chapter 4” includes problems that cover topics from chapters 1-4.

Both the mixed and cumulative revisions allow you to spot areas that the student has not grasped well or has forgotten. When you find such a topic or concept, you have several options:

1. Check if the worksheet maker lets you make worksheets for that topic.
2. Check for any online games and resources in the Introduction part of the particular chapter in which this topic or concept was taught.
3. If you have the digital version, you could simply reprint the lesson from the student worktext, and have the student restudy that.
4. Perhaps you only assigned 1/2 or 2/3 of the exercise sets in the student book at first, and can now use the remaining exercises.
5. Check if our online practice area at <https://www.mathmammoth.com/practice/> has something for that topic.
6. Khan Academy has free online exercises, articles, and videos for most any maths topic imaginable.

Concerning challenging word problems and puzzles

While this is not absolutely necessary, I heartily recommend supplementing Math Mammoth with challenging word problems and puzzles. You could do that once a month, for example, or more often if the student enjoys it.

The goal of challenging story problems and puzzles is to **develop the student’s logical and abstract thinking and mental discipline**. I recommend starting these in fourth grade, at the latest. Then, students are able to read the problems on their own and have developed mathematical knowledge in many different areas. Of course I am not discouraging students from doing such in earlier grades, either.

Math Mammoth curriculum does contain a lot of word problems. Even so, the problems I have created are usually tied to a specific concept or concepts. I feel students can benefit from solving problems and puzzles that require them to think “out of the box” or are just different from the ones I have written.

I recommend Math Stars problem-solving newsletters (free) as a main resource for challenging problems: <https://www.homeschoolmath.net/teaching/math-stars.php>

I have also compiled a list of other resources for problem solving practice, which you can access at this link: <https://l.mathmammoth.com/challengingproblems>

Another idea: search online for “brain puzzles for kids,” “logic puzzles for kids” or “brain teasers for kids.”

Frequently asked questions and contacting us

If you have more questions, please first check the FAQ at <https://www.mathmammoth.com/faq-lightblue>

Additionally, you can contact us using the contact form at the Math Mammoth.com website.

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

Chapter 6: Three-Digit Numbers

Introduction

This sixth chapter of *Math Mammoth Grade 2* deals with numbers up to one thousand and with place value.

The first three lessons provide the basis for understanding three-digit numbers, by using a visual model of hundred-flats, ten-pillars, and one-cubes. If you prefer, you can use manipulatives instead (base ten blocks). Students also place three-digit numbers on the number line, and in the following lesson, *Forming Numbers—and Breaking Them Apart*, practice writing numbers in expanded form.

Next, it is time to study *Skip-Counting by Tens*, and soon also by twos and fives. Following that, students compare and order three-digit numbers.

After this, it is time for some mental math. First, students add and subtract multiples of hundred using mental math (e.g. $200 + 500$). They complete the next hundred (e.g. $260 + \underline{\quad} = 300$), and add and subtract multiples of tens. Along the way, the lessons also present word problems and other types of problems.

The chapter ends with some bar graphs and pictographs, which provide a nice application for the recently learned three-digit numbers.

A friendly reminder: at <https://www.mathmammoth.com/videos/> you will find free videos matching the curriculum (choose 2nd grade). Also, don't automatically assign all the problems and exercises, but use your judgment. Many children can learn these topics perfectly fine by doing about half of the exercises.

Pacing Suggestion for Chapter 6

Please add one day to the pacing for the test if you will use it. Note that the specific lessons in the chapter can take several days to finish. They are not “daily lessons.” As a general guideline, second graders should finish 8-10 pages a week. Please also see the user guide at <https://www.mathmammoth.com/userguides/>.

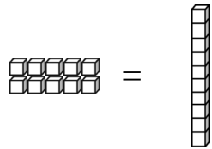
The Lessons in Chapter 6	page	span	suggested pacing	your pacing
Three-Digit Numbers	14	4 pages	2 days	
Hundreds on the Number Line	18	2 pages	1 day	
Forming Numbers—and Breaking Them Apart	20	2 pages	1 day	
Skip-Counting by Tens	22	3 pages	1 day	
More Skip-Counting	25	2 pages	1 day	
Which Number Is Greater?	27	3 pages	2 days	
Comparing Numbers and Some Revision	30	3 pages	2 days	
Add and Subtract Whole Hundreds	33	2 pages	1 day	
Practice with Whole Hundreds	35	3 pages	2 days	
Completing the Next Hundred	38	3 pages	2 days	
Adding Whole Tens	41	3 pages	1 day	
Subtracting Whole Tens	44	3 pages	2 days	
Patterns and Problems	47	3 pages	2 days	
Bar Graphs and Pictographs	50	4 pages	2 days	
Mixed Revision Chapter 6	54	2 pages	1 day	
Revision Chapter 6	56	3 pages	2 days	
Chapter 6 Test (optional)				
TOTALS		45 pages	25 days	

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

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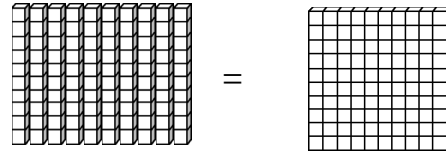
Three-Digit Numbers

Ten ones make a ten:



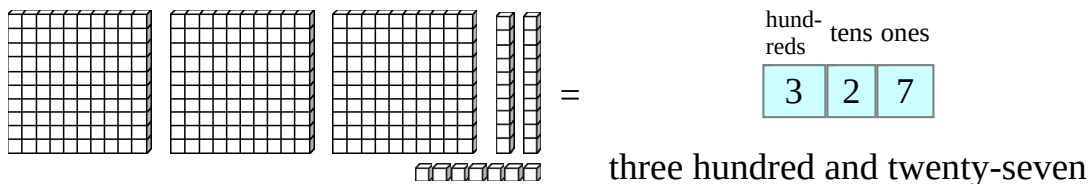
10 ones = 10

Ten ten-pillars make ONE HUNDRED:



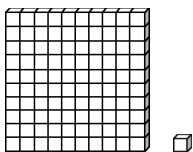
10 tens = 100

Write hundreds, tens, and ones in their own columns:



1. Count the ones, tens, and hundreds, and fill in the missing parts.

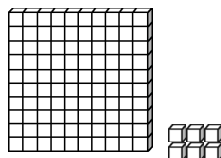
a. one hundred and one



hundreds tens ones

1	0	1
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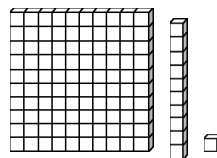
b. one hundred and six



hundreds tens ones

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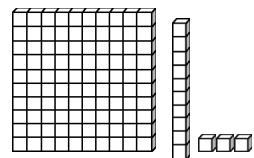
c. one hundred and eleven



hundreds tens ones

1	1	1
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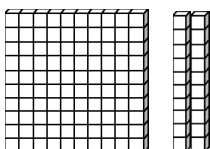
d. one hundred and thirteen



hundreds tens ones

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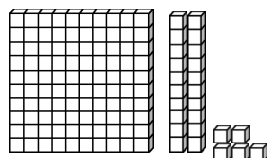
e. one hundred and twenty



hundreds tens ones

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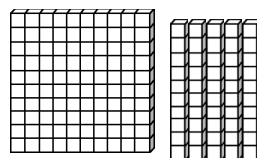
f. one hundred and twenty-five



hundreds tens ones

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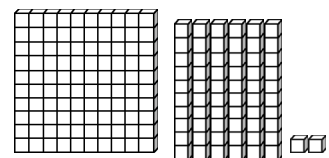
g. one hundred and fifty



hundreds tens ones

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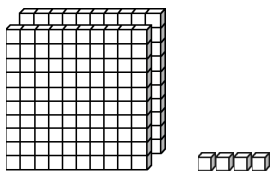
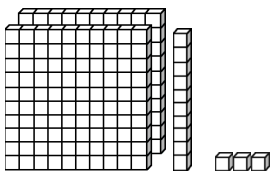
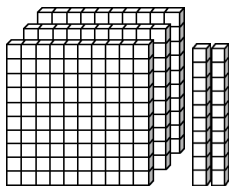
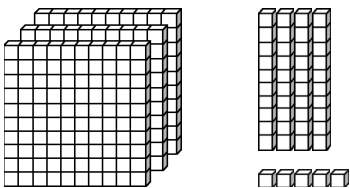
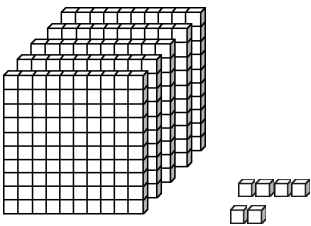
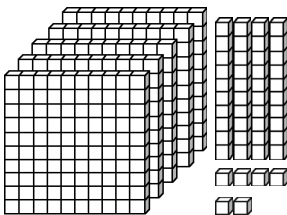
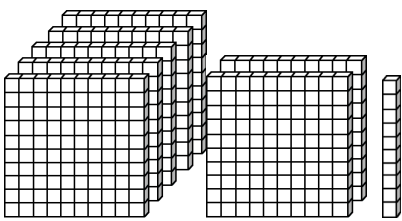
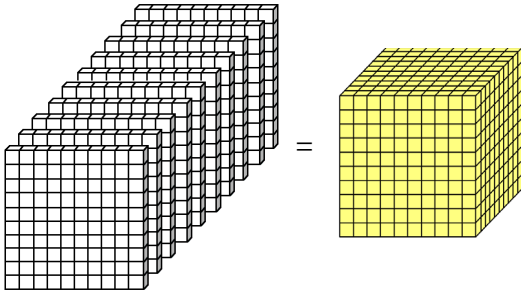
h. one hundred and sixty-two



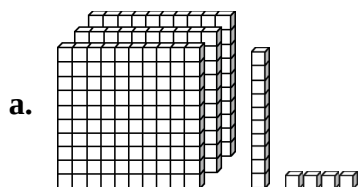
hundreds tens ones

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2. Count the ones, tens, and hundreds, and fill in the missing parts.

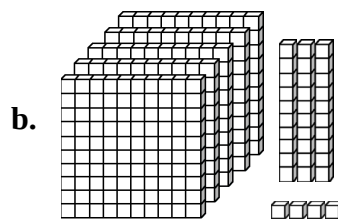
a. <u>two hundred</u> <u>and four</u>  hundreds tens ones <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;">2</td> <td style="width: 33%;">0</td> <td style="width: 33%;">4</td> </tr> </table>	2	0	4	b. <u>two hundred</u> <u>and thirteen</u>  hundreds tens ones <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%; height: 30px;"></td> <td style="width: 33%; height: 30px;"></td> <td style="width: 33%; height: 30px;"></td> </tr> </table>				c. _____ _____  hundreds tens ones <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%; height: 30px;"></td> <td style="width: 33%; height: 30px;"></td> <td style="width: 33%; height: 30px;"></td> </tr> </table>			
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g. _____  H T O <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%; height: 30px;"></td> <td style="width: 33%; height: 30px;"></td> <td style="width: 33%; height: 30px;"></td> </tr> </table>				h. <u>Ten hundreds = One thousand</u>  Th H T O <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;">1</td> <td style="width: 25%;">0</td> <td style="width: 25%;">0</td> <td style="width: 25%;">0</td> </tr> </table>	1	0	0	0			
1	0	0	0								

3. Write a sum of the hundreds, tens, and ones shown in the picture.
Also write the number.



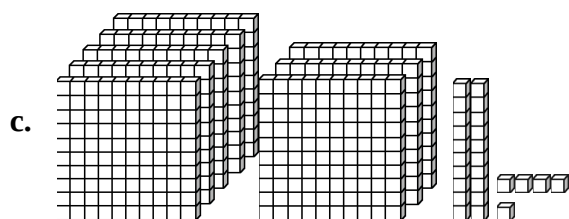
_____ + _____ + _____

H	T	O



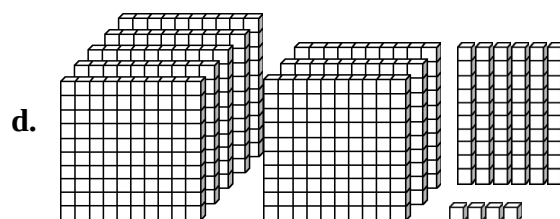
_____ + _____ + _____

H	T	O



_____ + _____ + _____

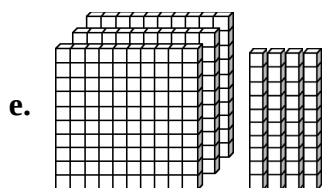
H	T	O



_____ + _____ + _____

H	T	O

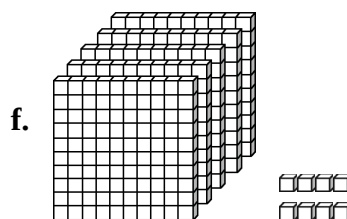
Notice: There are NO ones.
Write a zero for ones in the sum.



_____ + _____ + 0

H	T	O

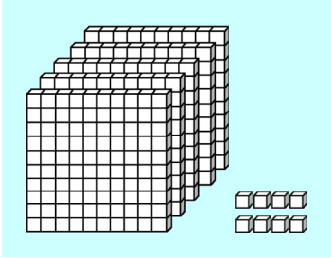
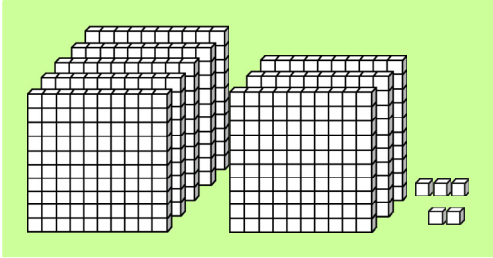
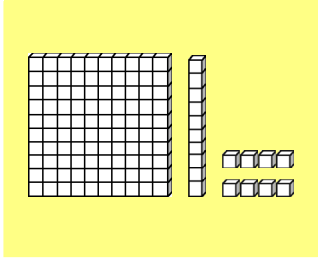
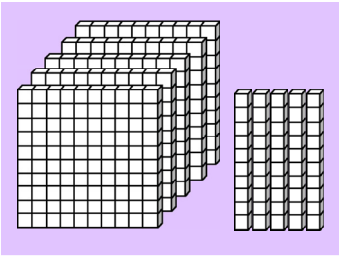
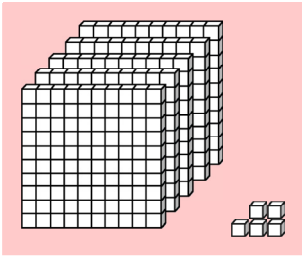
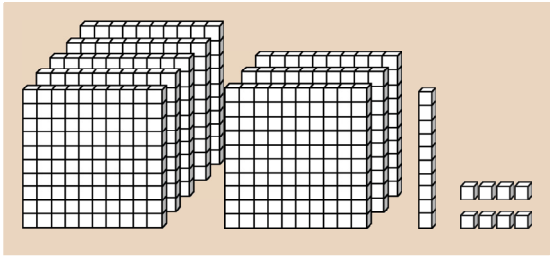
Notice: There are NO tens.
Write a zero for tens in the sum.



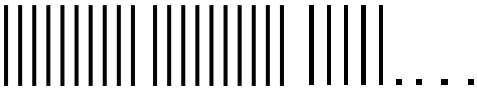
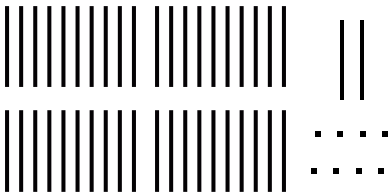
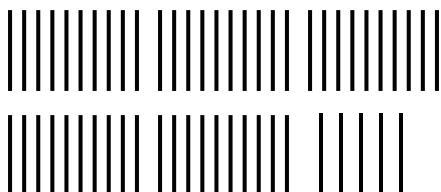
_____ + 0 + _____

H	T	O

4. Match the numbers and the sums to the correct pictures.

505 	818 	550 	805 
 500 + 8	 500 + 5	 100 + 10 + 8	

5. The dots are ones, the pillars are tens. Group together 10 ten-pillars to make a hundred.

a.  235	b.  _____
c.  _____	d.  _____

How many tens are in a thousand?

Puzzle Corner

Hundreds on the Number Line

1. Use the number lines to help. What number is...

a. one more than 118? _____

b. ten more than 108? _____

one more than 134? _____

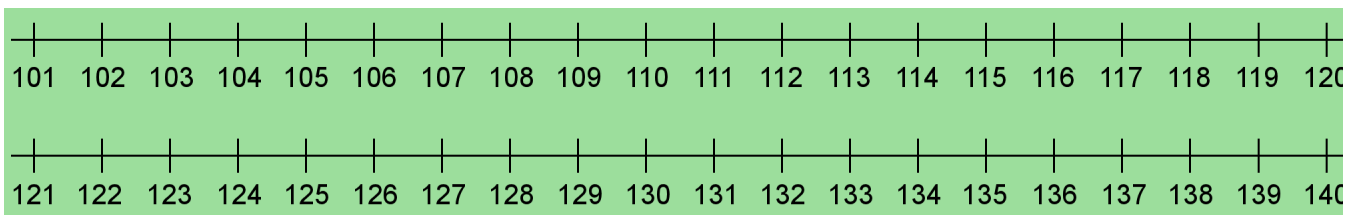
ten more than 125? _____

one less than 103? _____

ten less than 140? _____

one less than 130? _____

ten less than 127? _____



c. two more than 193? _____

d. ten more than 164? _____

two more than 178? _____

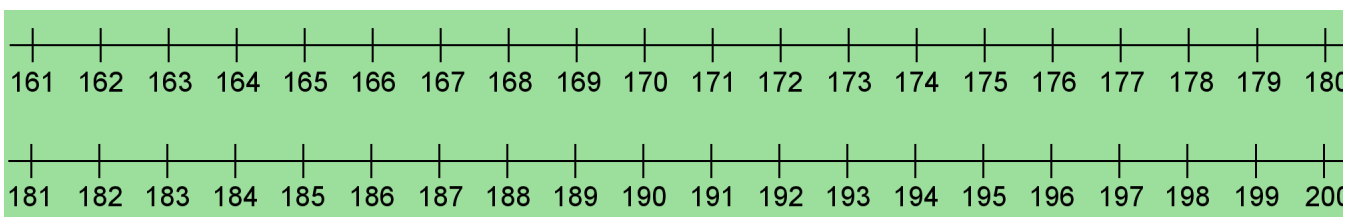
ten more than 188? _____

two less than 170? _____

ten less than 200? _____

two less than 190? _____

ten less than 177? _____



2. Find the differences.

a. The difference between 165 and 171

b. The difference between 185 and 192

c. The difference between 200 and 191

d. The difference between 140 and 124

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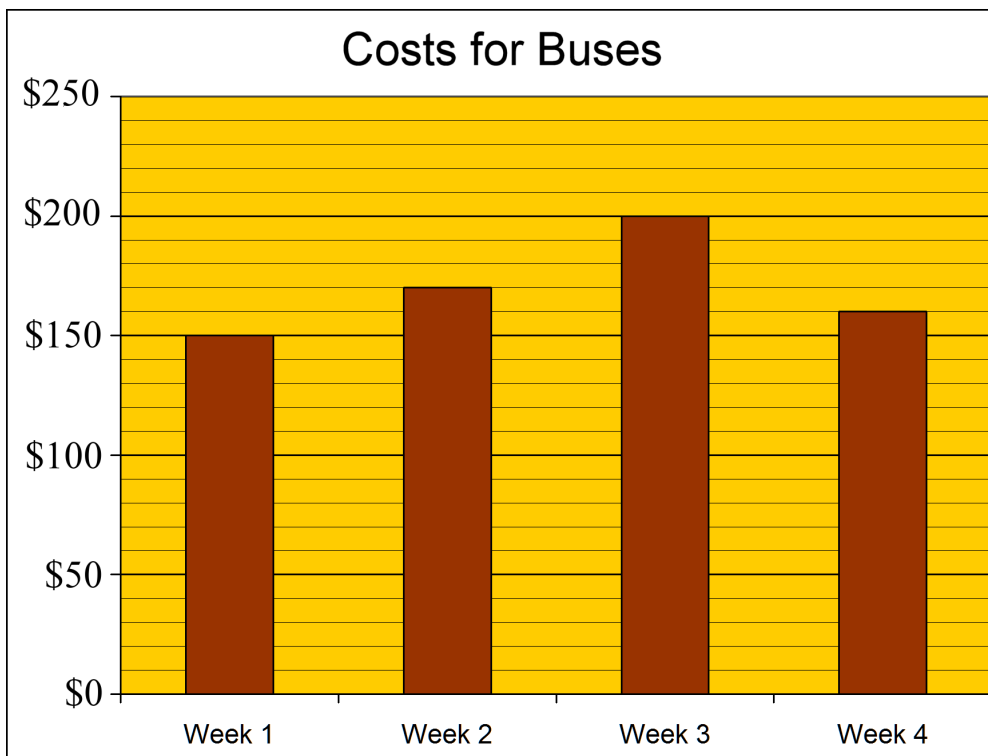
Patterns and Problems

1. Three children played a card game where you get points for the cards left in your hand. The person who has the least points at the end of the game is the winner. The table shows the point count at a certain time in the game:

Then, Daniel got 100 more points and Brian got 30 more points (Jerry got none). Add those to their point counts and write the new point counts in the grid. Who won the game?

Jerry	Daniel	Brian
540	270	330

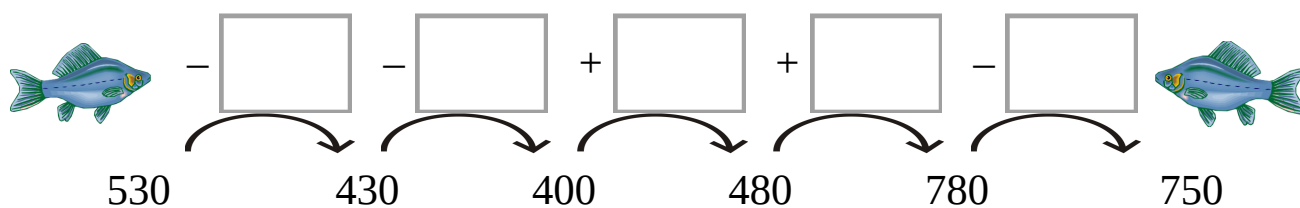
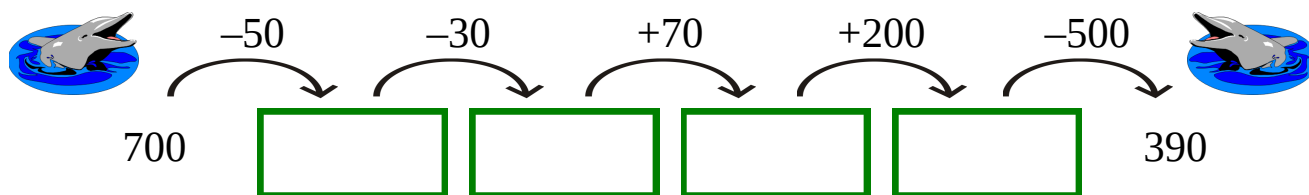
2. The bar graph shows how much money the Smith family spent for riding buses in four different weeks.
- Mark above each bar how much they spent for buses in dollars.
 - How much more did they pay for week 3 than for week 4?
 - How much more did they pay for week 2 than for week 1?



3. Count by 20s, and fill in the grid.

520	540	560		
620				
820				
				1000

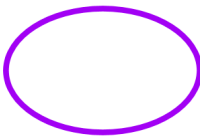
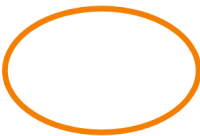
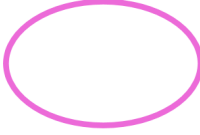
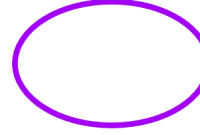
4. Fill in.

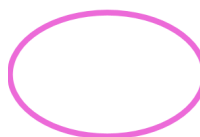
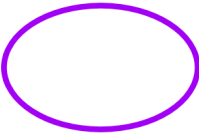


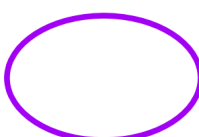
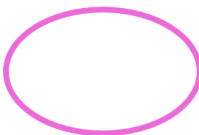
5. Continue the patterns!

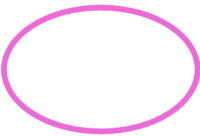
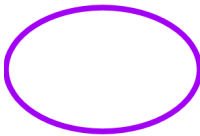
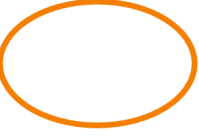
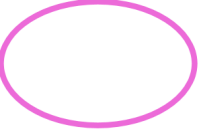
a.	b.
590 - 60 = _____	770 + 10 = _____
590 - 70 = _____	770 + 20 = _____
590 - 80 = _____	770 + 30 = _____
590 - _____ = _____	770 + _____ = _____
590 - _____ = _____	770 + _____ = _____
590 - _____ = _____	770 + _____ = _____

6. Find what number goes in the oval.

Subtractions where the TOTAL is missing:	a.  - 60 = 220	b.  - 80 = 510
	c.  - 500 = 100	d.  - 310 = 60

e. 450 +  = 750	f. 716 +  = 776	"How many more" additions
g. 530 +  = 590	h. 637 +  = 697	

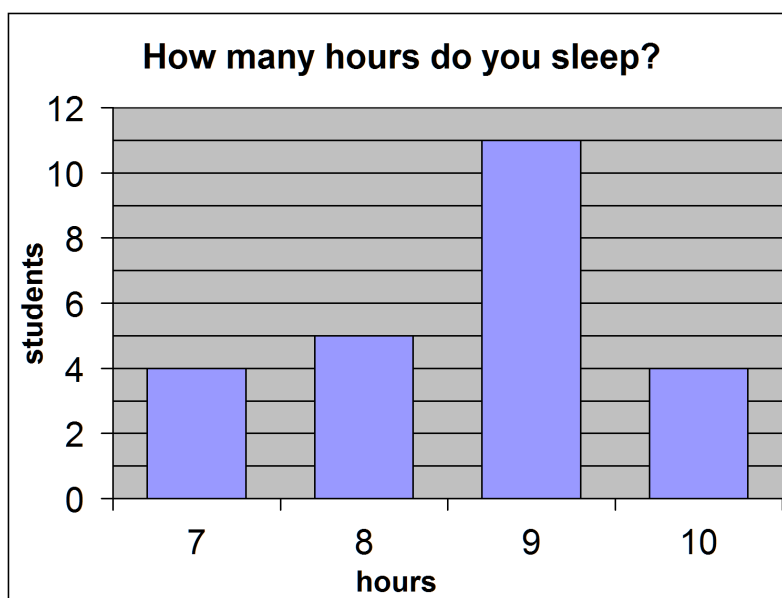
What was subtracted is missing:	i. 1 000 -  = 700	j. 740 -  = 40
	k. 667 -  = 607	l. 999 -  = 299

Find what number goes into the oval!		Puzzle Corner
a. 980 - 200 -  = 80	b. 784 -  - 40 = 704	
c. 210 + 50 +  = 310	d. 600 +  + 30 = 720	

Bar Graphs and Pictographs

Bar graphs use “bars” or rectangles in them to show some information.

1. This bar graph shows how many hours some second grade students slept last night.



- How many students slept 8 hours last night?
- How many students slept 10 hours last night?
- How many more* students slept 9 hours than the ones who slept 10 hours?
- A school nurse said that children need to sleep well for at least 8 hours.
How many students slept *less than* 8 hours last night?
- How many students slept *at least* 8 hours last night?
- Make a pictograph. Draw ONE sleepy face 😊 to mean 2 students.

	Students
Students who slept less than 8 hours	
Students who slept at least 8 hours	

2. Below, you see page counts for 14 different second grade maths books.

217 388 365 290 304 315 243 352 289 392 346 308 329 323

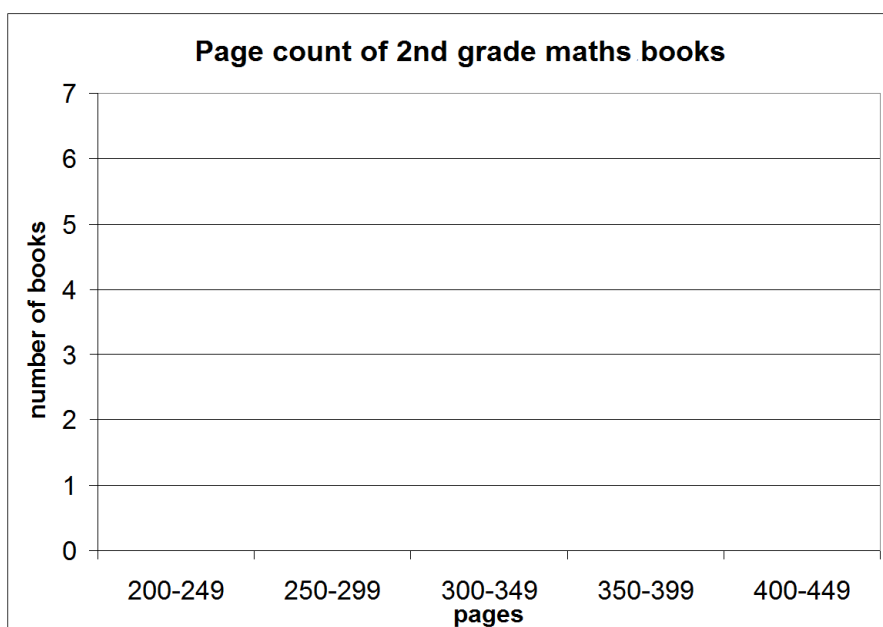
Count how many books have between 200 and 249 pages.

Count how many books have between 250 and 299 pages.

Continue. Write your counts in the chart.

Page count	Number of books
200-249	
250-299	
300-349	
350-399	

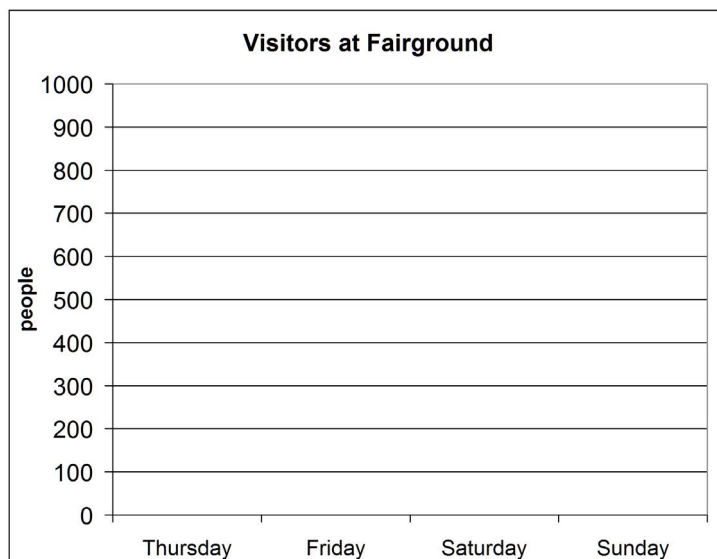
After that, draw a bar graph using the numbers in the above chart.



- How many books had their page count between 350 and 399 pages?
- How many books had 300 pages or more?
- How many books had less than 250 pages?
- What was the lowest page count?

3. The *pictograph* shows how many people visited the fairgrounds on different days. Each  symbol means 100 people. Half a symbol  means 50 people. Draw a bar graph.

Day	
Thursday	
Friday	
Saturday	
Sunday	



- What was the most popular day of the fair?
How many people visited on that day?
- How many more people visited on Sunday than on Friday?
- What was the total number of visitors on Thursday and Friday?
- Which day would you have gone, if you didn't like to be in a crowd?

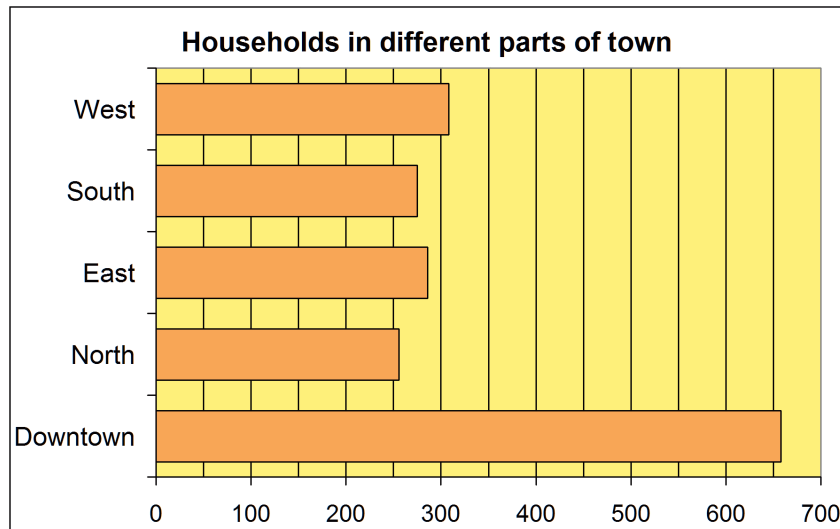
Which day would you have gone, if you liked to be in a crowd?

4. Joe practised basketball. Make a *pictograph* showing how many baskets he made each day. First choose a picture. Then choose how many baskets that picture represents.

Day	Baskets
Mon	80
Tue	60
Wed	100
Thu	30

Day	Baskets
Mon	
Tue	
Wed	
Thu	

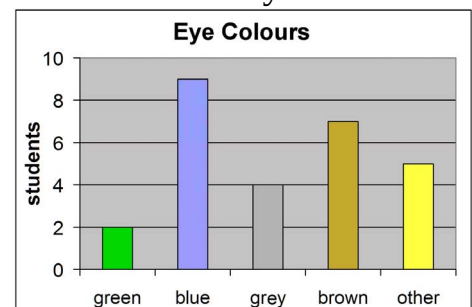
5. The bars in a bar graph can be this way too, (sideways) like they are lying down.



These numbers are in *scrambled* order, and they tell us *how many* households are in different parts of town: 275, 658, 256, 308, 286. Write the correct number after each bar on the graph.

6. (Optional) If you would like, make a *survey* among your class or friends. A survey means you ask many people the same question and write down what they answer. Then you make a graph. Some ideas:

- Ask many people what their favourite colour is. Then make a bar graph.
- Ask many people what their eye colour is. Then make a bar graph.
- Ask many people if they have a pet, and what pet it is. Then make a bar graph.
- Ask many people what their favourite game or sport is. Then make a bar graph.



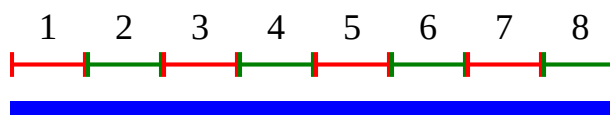
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Measuring to the Nearest Centimetre

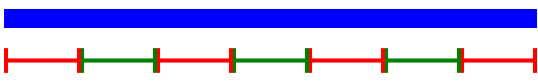
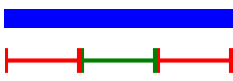
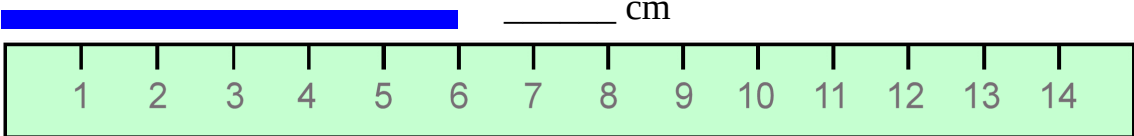
Remember? We can measure how long things are using *centimetres*.

This line is 1 centimetre long: 

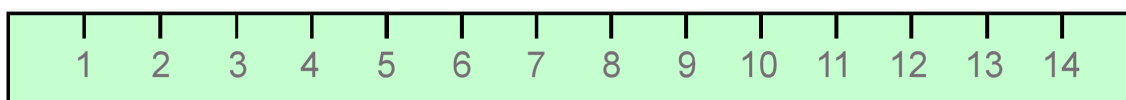
A centimetre is written in short form as “cm.” This blue line is 8 cm long. →



1. How many centimetres long are these lines?

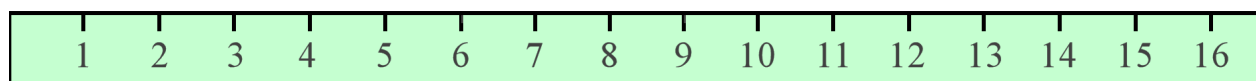
a.  _____ cm	b.  _____ cm
c.  _____ cm	
d.  _____ cm	

2. Measure the pencils with a centimetre ruler. If you don't have one, you can cut out the one from the bottom of this page. Then answer the questions.



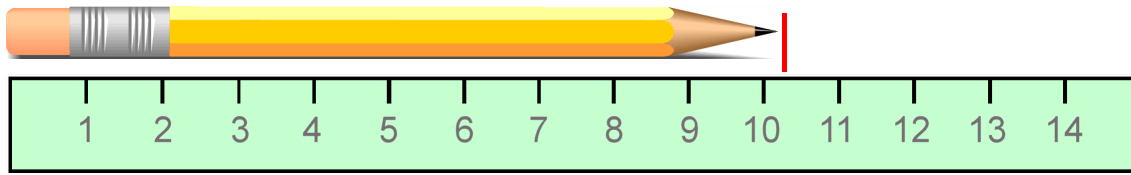
a. How much longer is pencil #1 than pencil #2? _____ cm

b. How much longer is pencil #3 than pencil #2? _____ cm

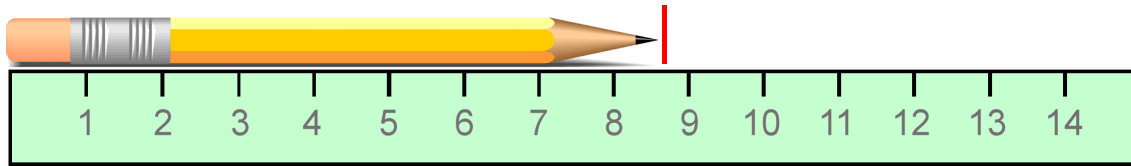


Most things are NOT exactly a certain number of whole centimetres.
You can measure them to the nearest centimetre.

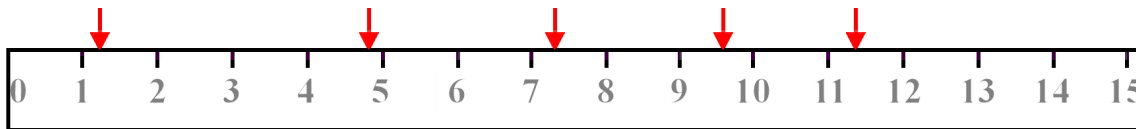
The pencil below is a little over 10 cm long. It is about 10 cm long.



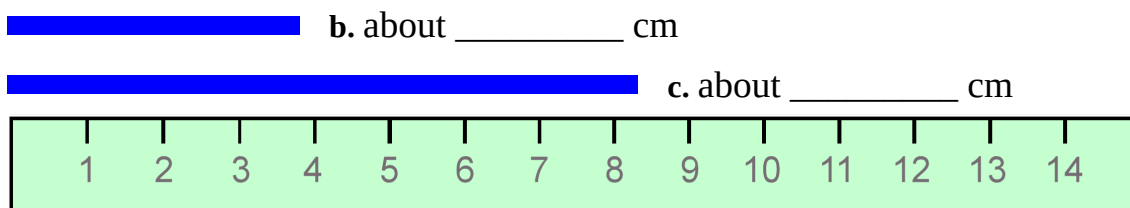
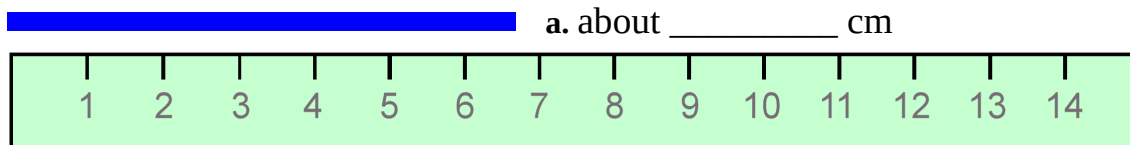
This pencil is about 9 cm long. The end of the pencil is closer to 9 cm than to 8 cm.



3. Circle the number that is nearest to each arrow.



4. Measure the lines to the nearest centimetre.



5. This line is 1 cm long: . Your finger is probably about that wide; put it on top of the 1-cm line and check! Guess how long these lines are. Then measure.

	<u>My guess:</u>	<u>Measurement:</u>
a. _____	about _____ cm	about _____ cm
b. _____	about _____ cm	about _____ cm
c. _____	about _____ cm	about _____ cm

6. a. Find two small objects. Measure to find *about* how many centimetres longer one is than the other.

The _____ is *about* _____ cm longer than the _____.

- b. Find two other small objects. Measure to find *about* how many centimetres longer one is than the other.

The _____ is *about* _____ cm longer than the _____.

7. Draw some lines here or on blank paper. Use a ruler. Hold the ruler down tight with one hand, while drawing the line with the other. It takes some practice!

a. 6 cm long

b. 3 cm long

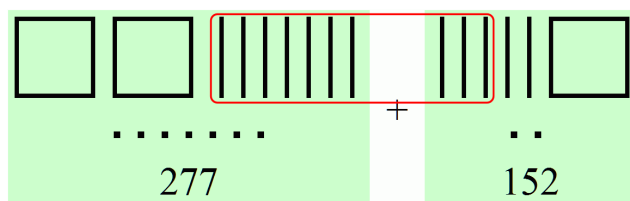
c. 12 cm long

8. Find some small objects. First GUESS how long or tall they are. Then measure. If the item is not exactly so-many centimetres long, then measure it to the nearest centimetre and write “about” before the centimetre-amount, such as *about 8 cm*.

Item	GUESS	MEASUREMENT
	cm	cm
	cm	cm
	cm	cm
	cm	cm
	cm	cm

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Regrouping 10 Tens as a Hundred



Ten TENS are grouped to make a new hundred!

	hundreds	tens	ones
	1		
	2	7	7
+	1	5	2
	4	2	9

In the TENS, there are 7 tens and 5 tens to add (277 has 7 tens, and 152 has 5 tens).

That is 12 tens. And, **10 tens makes a hundred!** So, we make a new hundred, and regroup that with the other hundreds, writing the new hundred with a little “1” in the hundreds column.

(We have 2 tens left over from that, and they stay in the tens column.)

1. Circle 10 ten-sticks to make a new hundred. Write the addition.

Alternatively, you can do these exercises using base-ten blocks or similar manipulatives.

a.  + 

_____ + _____ = _____

b.   + 

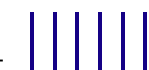
_____ + _____ = _____

c.   + 
 

_____ + _____ = _____

d.   + 
  + 

_____ + _____ = _____

e.   + 
  

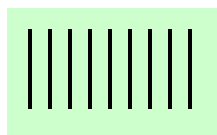
_____ + _____ = _____

f.   + 
  + 

_____ + _____ = _____

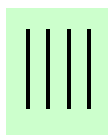
2. Write the numbers in the grid, and add. Regroup. You can circle 10 ten-sticks in the picture to help you. Alternatively, you can do these exercises using base-ten blocks or similar manipulatives.

a.



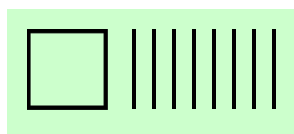
90

+



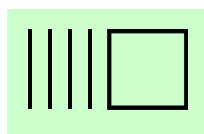
40

b.



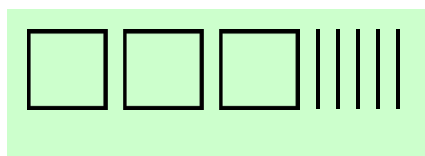
180

+



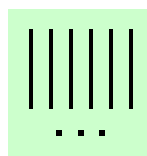
140

c.



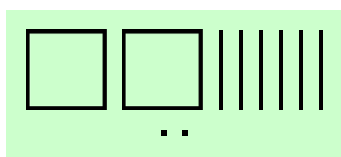
350

+



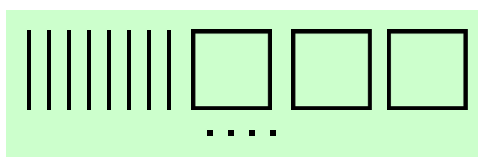
63

d.



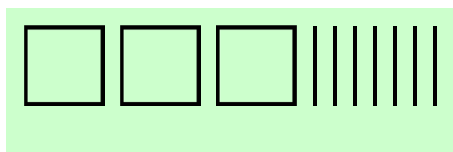
262

+



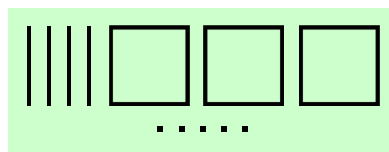
384

e.



370

+



345

3. Add mentally. Compare the problems. Notice you get a NEW hundred from the tens!

a.	b.	c.
$70 + 40 = \underline{\hspace{2cm}}$	$50 + 60 = \underline{\hspace{2cm}}$	$90 + 50 = \underline{\hspace{2cm}}$
$170 + 40 = \underline{\hspace{2cm}}$	$150 + 60 = \underline{\hspace{2cm}}$	$290 + 50 = \underline{\hspace{2cm}}$
$270 + 40 = \underline{\hspace{2cm}}$	$250 + 60 = \underline{\hspace{2cm}}$	$490 + 50 = \underline{\hspace{2cm}}$

4. Add. You need to regroup 10 tens as a new hundred.

a. $\begin{array}{r} 80 \\ + 30 \\ \hline \end{array}$	b. $\begin{array}{r} 220 \\ + 90 \\ \hline \end{array}$	c. $\begin{array}{r} 64 \\ + 53 \\ \hline \end{array}$	d. $\begin{array}{r} 370 \\ + 74 \\ \hline \end{array}$	e. $\begin{array}{r} 533 \\ + 282 \\ \hline \end{array}$
f. $\begin{array}{r} 67 \\ + 72 \\ \hline \end{array}$	g. $\begin{array}{r} 224 \\ + 193 \\ \hline \end{array}$	h. $\begin{array}{r} 464 \\ + 392 \\ \hline \end{array}$	i. $\begin{array}{r} 355 \\ + 374 \\ \hline \end{array}$	j. $\begin{array}{r} 787 \\ + 82 \\ \hline \end{array}$

5. Add mentally. THINK of the new hundred you might get from adding the tens.

a.	b.	c.
$70 + 40 = \underline{\hspace{2cm}}$	$80 + 60 = \underline{\hspace{2cm}}$	$290 + 50 = \underline{\hspace{2cm}}$
$130 + 40 = \underline{\hspace{2cm}}$	$270 + 60 = \underline{\hspace{2cm}}$	$220 + 50 = \underline{\hspace{2cm}}$
$160 + 50 = \underline{\hspace{2cm}}$	$130 + 50 = \underline{\hspace{2cm}}$	$190 + 20 = \underline{\hspace{2cm}}$

6. What number was added? Think of regrouping!

a.	b.	c.	d.	e.
$\begin{array}{r} 167 \\ + 1\text{ } \boxed{\text{ }} 2 \\ \hline 359 \end{array}$	$\begin{array}{r} 240 \\ + 1\text{ } \boxed{\text{ }} 2 \\ \hline 422 \end{array}$	$\begin{array}{r} 391 \\ + 4\text{ } \boxed{\text{ }} 2 \\ \hline 813 \end{array}$	$\begin{array}{r} 653 \\ + 1\text{ } \boxed{\text{ }} 3 \\ \hline 846 \end{array}$	$\begin{array}{r} 375 \\ + 1\text{ } \boxed{\text{ }} 4 \\ \hline 559 \end{array}$

7. Add. Match the answers with the letters in the key, to to unravel the message.

W	L	P	T	S
$\begin{array}{r} 233 \\ + 758 \\ \hline \end{array}$	$\begin{array}{r} 553 \\ + 346 \\ \hline \end{array}$	$\begin{array}{r} 597 \\ + 330 \\ \hline \end{array}$	$\begin{array}{r} 191 \\ + 751 \\ \hline \end{array}$	$\begin{array}{r} 282 \\ + 647 \\ \hline \end{array}$
E	O	A	E	I
$\begin{array}{r} 111 \\ + 729 \\ \hline \end{array}$	$\begin{array}{r} 772 \\ + 132 \\ \hline \end{array}$	$\begin{array}{r} 474 \\ + 343 \\ \hline \end{array}$	$\begin{array}{r} 217 \\ + 639 \\ \hline \end{array}$	$\begin{array}{r} 470 \\ + 399 \\ \hline \end{array}$
G	N	R	F	H
$\begin{array}{r} 216 \\ 116 \\ + 529 \\ \hline \end{array}$	$\begin{array}{r} 231 \\ 240 \\ + 432 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ 205 \\ + 643 \\ \hline \end{array}$	$\begin{array}{r} 136 \\ 134 \\ + 589 \\ \hline \end{array}$	$\begin{array}{r} 105 \\ 301 \\ + 459 \\ \hline \end{array}$

Key:

817	840	856	859	861	865	869	899	903	904	927	929	933	942	991

- How do you put an elephant in the fridge?
 - You open the door, put the elephant in, and close the door. 😊
- How do you put a giraffe in the fridge?
 - You open the door, take the elephant out, put the giraffe in, and close the door. 😊
- When the elephant and the giraffe ran a race, who won?

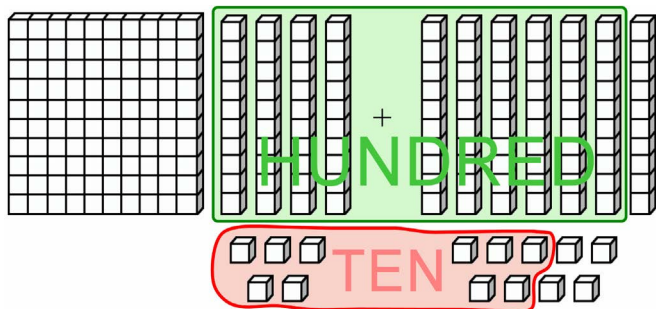
942	865	840	856	899	856	927	865	817	903	942				

because

942	865	856	861	869	933	817	859	859	840	991	817	929	869	903

942	865	856	933	840	859	933	869	861	856	933	817	942	904	933

Add in Columns: Regrouping Twice

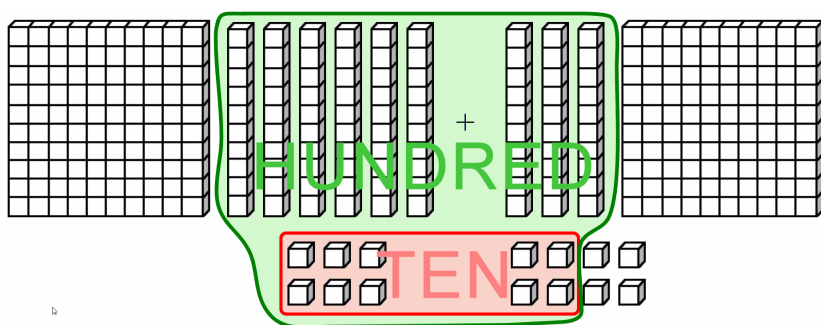


$$145 + 79$$

10 ones form a new ten.
10 tens form a new
hundred.

The total is 224. Can you see that in the picture?

(You can also use manipulatives to do this problem.)



$$166 + 138$$

10 ones form a new ten.
10 tens form a new
hundred.

The total is 304. Can you see that in the picture?

(You can also use manipulatives to do this problem.)

You have to regroup the ones and the tens. You have to regroup two times.

1. Circle ten one-dots to make a new ten, AND circle ten 10-sticks to make a new hundred. Write the addition. Or, you can do these exercises using base-ten blocks or similar manipulatives.

a. 

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

b. 

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

c. 

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

d. 

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

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Revision, Chapter 8

1. Add.

a.

$$\begin{array}{r} 215 \\ + 477 \\ \hline \end{array}$$

b.

$$\begin{array}{r} 192 \\ + 225 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 303 \\ 128 \\ + 287 \\ \hline \end{array}$$

d.

$$\begin{array}{r} 409 \\ 219 \\ + 136 \\ \hline \end{array}$$

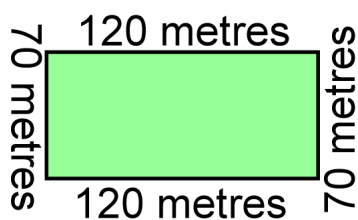
2. Susan bought three chairs.
Each chair cost \$154.
How much was the total cost?

+		

3. Add mentally. THINK of the new hundred you might get from adding the tens.

a.	b.	c.
$80 + 40 = \underline{\hspace{2cm}}$	$90 + 90 = \underline{\hspace{2cm}}$	$690 + 50 = \underline{\hspace{2cm}}$
$780 + 40 = \underline{\hspace{2cm}}$	$240 + 50 = \underline{\hspace{2cm}}$	$470 + 80 = \underline{\hspace{2cm}}$

4. Find how many metres it is if you walk all the way around this rectangle.



+		

5. Subtract. Regroup if necessary. Check each subtraction by *adding your answer and the number you subtracted*.

a. $\begin{array}{r} 88 \\ - 54 \\ \hline \end{array}$ $\begin{array}{r} + 54 \\ \hline \end{array}$	b. $\begin{array}{r} 63 \\ - 48 \\ \hline \end{array}$ $\begin{array}{r} + \\ \hline \end{array}$
c. $\begin{array}{r} 84 \\ - 49 \\ \hline \end{array}$ $\begin{array}{r} + \\ \hline \end{array}$	d. $\begin{array}{r} 882 \\ - 159 \\ \hline \end{array}$ $\begin{array}{r} + \\ \hline \end{array}$
e. $\begin{array}{r} 556 \\ - 391 \\ \hline \end{array}$ $\begin{array}{r} + \\ \hline \end{array}$	f. $\begin{array}{r} 550 \\ - 246 \\ \hline \end{array}$ $\begin{array}{r} + \\ \hline \end{array}$

6. Subtract using mental maths methods.

a. $15 - 7 = \underline{\hspace{2cm}}$	b. $13 - 5 = \underline{\hspace{2cm}}$	c. $82 - 77 = \underline{\hspace{2cm}}$
$55 - 7 = \underline{\hspace{2cm}}$	$93 - 5 = \underline{\hspace{2cm}}$	$45 - 41 = \underline{\hspace{2cm}}$
d. $80 - 71 = \underline{\hspace{2cm}}$	e. $56 - 40 = \underline{\hspace{2cm}}$	f. $78 - 35 = \underline{\hspace{2cm}}$
$100 - 95 = \underline{\hspace{2cm}}$	$56 - 43 = \underline{\hspace{2cm}}$	$33 - 4 = \underline{\hspace{2cm}}$

7. Find what numbers are missing.

a.	b.	c.	d.
$\begin{array}{r} 2 \text{ } \blacksquare 4 \\ + 477 \\ \hline 731 \end{array}$	$\begin{array}{r} 5 \text{ } \blacksquare 9 \\ + \text{ } \blacksquare 25 \\ \hline 914 \end{array}$	$\begin{array}{r} 20 \text{ } \blacksquare \\ + 6 \text{ } \blacksquare 6 \\ \hline 892 \end{array}$	$\begin{array}{r} 68 \text{ } \blacksquare \\ + \text{ } \blacksquare 19 \\ \hline 900 \end{array}$

8. Solve.

- a. Some people are riding on the bus. At the bus stop, 13 people get on. Now there are 52 people on the bus. How many were there originally?

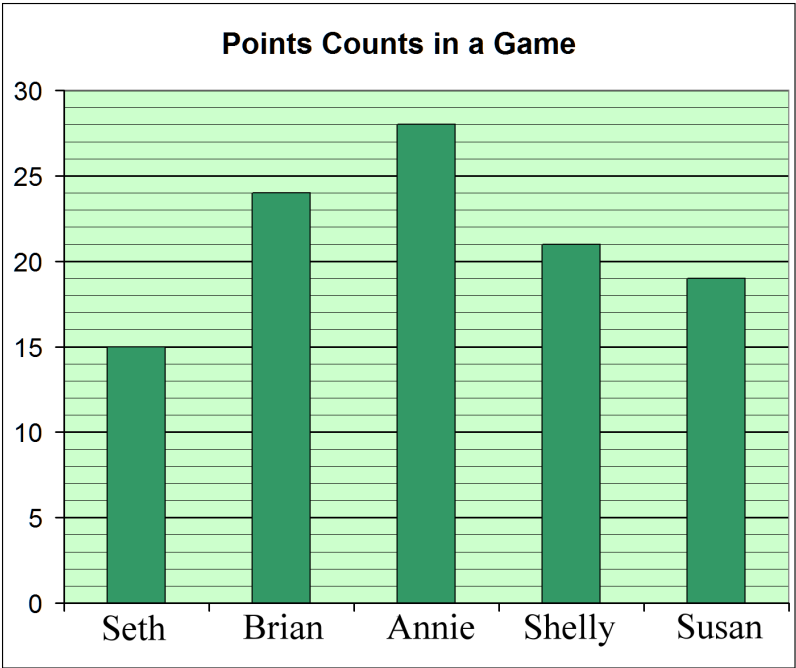
- b. Nancy has 23 stuffed toys that she likes, and 16 that she does not like.
How many stuffed toys does Nancy have?

- c. Nancy gave the 16 toys she does not like to her sister Alba. Now, Alba has 33 toys.
How many toys did Alba have before?

- d. Linda had 465 points in a computer game. She played and got 145 more points. Then she also got a 90-point bonus! How many points does Linda have now?

- e. Olivia did 26 jumping jacks, which was 14 fewer jumping jacks than what her brother Ben did. How many jumping jacks did Ben do?

9. a. Fill in the table with how many points the children got in the game.



CHILD	POINTS
Seth	15
Brian	
Annie	
Shelly	
Susan	

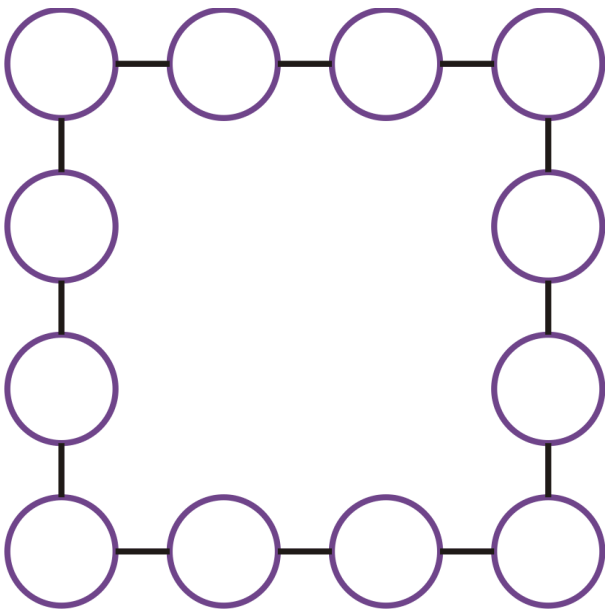
b. How many fewer points did Brian get than Annie?

c. How many more points did Shelly get than Seth?

Can you place numbers from 1 through 12 into the circles so that the sum of each connecting line is 26?

Hint: The numbers that go in the top corners are 7 and 6, and the numbers that go in the bottom corners are 5 and 8.

Puzzle Corner



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Adding Money Amounts

You can add money amounts in columns.

Make sure the decimal points are aligned.

Add the point to the answer in the same place.

Regrouping is done the same way as if there was no decimal point.

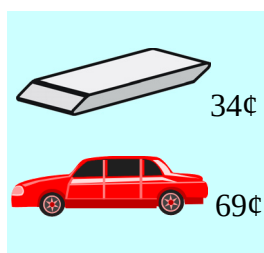
Align the decimal points! Align the decimal points!

$$\begin{array}{r} \downarrow \\ \$1.78 \\ + 2.20 \\ \hline \$3.98 \\ \uparrow \end{array}$$

Add a decimal point to the answer.

$$\begin{array}{r} \uparrow \\ \$0.58 \\ + 2.26 \\ \hline \$2.84 \\ \uparrow \end{array}$$

Add a decimal point to the answer.

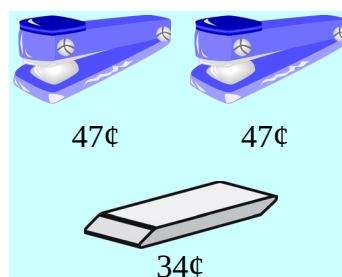


34¢

69¢

$$\begin{array}{r} \uparrow \uparrow \\ \$0.34 \\ + 0.69 \\ \hline \$1.03 \end{array}$$

Total cost \$1.03.



47¢

47¢

34¢

$$\begin{array}{r} \uparrow \uparrow \\ \$0.47 \\ 0.47 \\ + 0.34 \\ \hline \$1.28 \end{array}$$

Total cost \$1.28.

1. Add.

a. $\$0.29 + \0.56

b. $\$1.41 + \0.09

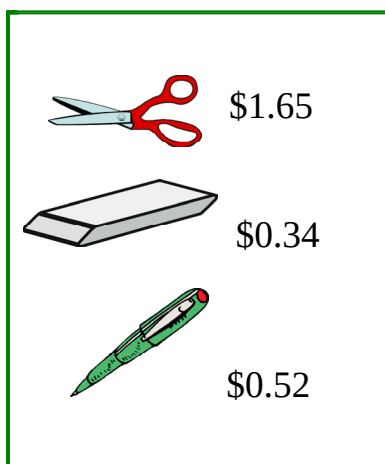
c. $\$0.77 + \$2.24 + \$1.80$

\$			
	.		
+			
	.		
\$			
	.		

\$			
	.		
+			
	.		
\$			
	.		

\$			
	.		
	.		
+			
	.		
\$			
	.		

2. Find the total cost of buying the things listed.



\$1.65

\$0.34

\$0.52

a. scissors and a pen

\$			
	.		
+			
	.		
\$			
	.		

b. two rubbers and a pen

\$			
	.		
	.		
+			
	.		
\$			
	.		

Cafeteria
Menu



\$0.88



\$1.52



\$2.20



\$2.75



\$1.05



\$0.62

3. Find the total cost in each case.

a. Mark bought a sandwich, an apple, and a bottle of water.

\$			
	.		
+	.		
	.		
\$			
	.		

b. Judy bought hot chocolate and a slice of pizza.

\$			
	.		
+			
	.		
\$			
	.		

c. Edward bought soup, a sandwich, and hot chocolate.

\$			
	.		
+	.		
	.		
\$			
	.		

d. What would you buy if you were at the cafeteria? Find the total cost.

\$			
	.		
+	.		
	.		
\$			
	.		

4. Find the change for the people in the previous exercise.

a. Mark paid with \$5.

b. Judy paid with \$4.

c. Edward paid with \$5.

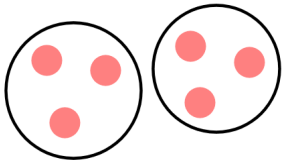
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Many Times the Same Group

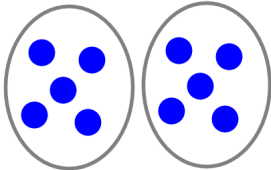
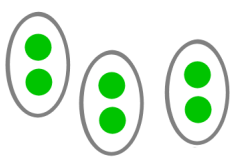
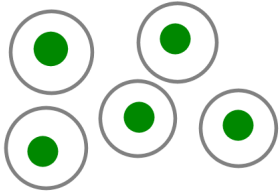
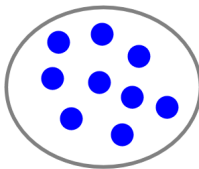
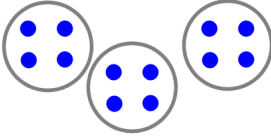
1. Write.

a. 2 times the word "CAT"	b. 3 times the word "ME"	c. 5 times the word "YOU"
d. 0 times the word "FROG"	e. 4 times the word "SCHOOL"	f. 1 time the word "HERE"

2. Draw groups of balls.

		
a. 2 times a group of 3 balls	b. 3 times a group of 5 balls	c. 1 time a group of 7 balls
d. 4 times a group of 1 balls	e. 0 times a group of 2 balls	f. 3 times a group of 3 balls
g. 0 times a group of 8 balls	h. 4 times a group of 0 balls	i. 5 times a group of 2 balls

3. Fill in the missing parts.

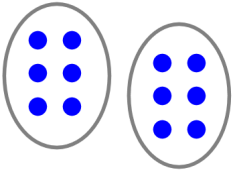
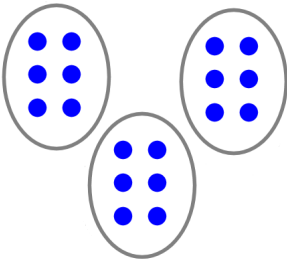
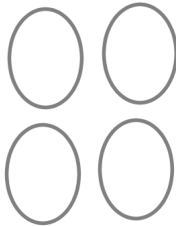
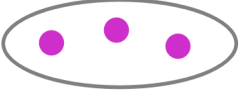
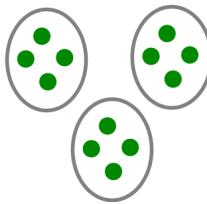
 a. <u>2</u> times <u>5</u>	 b. _____ times _____	 c. _____ times _____
 d. _____ times _____	 e. _____ times _____	 f. _____ times _____

5×3 This means “5 times a group of 3.” It is called multiplication .	2×7 This means “2 times a group of 7.” You <i>multiply</i> 2 times 7.
--	--

4. Now it’s your turn to draw! Notice also the symbol $\times$ which is read “times.”

a. 2 times 4 2×4	b. 3 times 6 3×6	c. 1 times 7 1×7
d. 6 times 1 6×1	e. 4 times 0 4×0	f. 2 times 2 2×2

5. Write the multiplication sentence. Write the total after the “ = ” sign.

a.  $2 \times 6 = 12$	b.  _____ $\times$ _____ = _____	c.  _____ $\times$ _____ = _____
d.  _____ $\times$ _____ = _____	e.  _____ $\times$ _____ = _____	f.  _____ $\times$ _____ = _____

6. Draw the groups. Write the total.

a. $8 \times 1 =$ _____	b. $1 \times 10 =$ _____	c. $2 \times 2 =$ _____
d. $5 \times 2 =$ _____	e. $2 \times 8 =$ _____	f. $3 \times 3 =$ _____

Multiplication and Addition

When the same group is repeated many times, you can write an addition sentence, and a multiplication sentence.

You add the same number many times.
Multiplication is repeated addition.

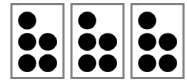


2

2

$$\begin{array}{r} + 2 \\ \hline 6 \end{array}$$

$$3 \times 2 = 6$$



$$5 + 5 + 5 = 15$$

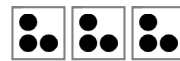
$$3 \times 5 = 15$$

1. Write an addition and a multiplication sentence for each problem.



a. $\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$



b. $\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

c.

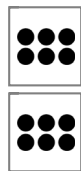


+



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

d.



+



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

e.



+



$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

2. Draw groups to match the sum. Then write a multiplication sentence.

a. $7 + 7$

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

b. $1 + 1 + 1 + 1$

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$

c. $5 + 5 + 5$

$$\underline{\quad} \times \underline{\quad} = \underline{\quad}$$